

Increasing third grade WASL math scores by using
Parent Volunteers to tutor struggling students.

A Special Project

Presented to

Dr. Robert Kraig

Heritage University

In Partial Fulfillment

of the Requirement for the Degree of

Master of Education

Mandy L. Jessee

2008 - 2009

FACULTY APPROVAL

Increasing third grade WASL math scores by using
Parent Volunteers to tutor struggling students.

Approved for the Faculty

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ABSTRACT

The researcher decided to do this project because Tenino Elementary school did not make Adequate Yearly Progress in math in 2007. In addition, the purpose behind the project was to see if an improvement in scores could be made by utilizing parent volunteers more effectively. The researcher used a convenient sample of third grade students to perform the study. The students worked on math without the support of parent volunteers for the first portion of the study and then with parent volunteers for the second portion of the study. The results showed that in the area of calculations students did significantly better with the help of parent volunteers. In the area of applied math the students only did slightly better.

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CHAPTER 1

Introduction

Background for the Project

Tenino Elementary did not make Adequate Yearly Progress (AYP) in math in 2007. Each year schools need to show adequate progress in order to reach the goal of 100% academic proficiency by 2014 under the No Child Left Behind Act (NCLBA). The school has looked at different ways to increase math scores.

Tenino School District had looked at Response to Intervention (RTI) as a way to improve scores. The researcher looked at using parent volunteers to tutor during the school day as an intervention under RTI. This was a free tutoring program intended to address the needs of all students, including students who had the disadvantage of not being able to afford expensive tutoring.

NCLB was intended to direct the school's attention to where improvement was needed. Since not making AYP in math in 2007 Tenino's attention was pointed directly at learning improvements in math.

The Washington Assessment of Student Learning (WASL) Washington states high stakes test. Educators used WASL results to improve teaching and to do a better job of meeting every student's academic needs (OSPI, 2008). This test

was also a graduation requirement. For the graduating classes of 2008-2012, students had to pass the reading and writing WASL, a state-approved alternative to the WASL or an assessment for students in special education. Students could meet the state's math requirement by passing the math WASL, a state-approved alternative, or an assessment for students in special education, or, they could continue to earn math credits until they graduated. Students who passed the reading, writing, and math assessments earned a Certificate of Academic Achievement or Certificate of Individual Achievement and a high school diploma. Students who fulfilled the math requirement by earning math credits did not receive a certificate but did earn a diploma (OSPI, 2007).

All students need a solid foundation of reading, writing and math skills for whatever they plan to do after high school. Several statewide graduation requirements helped make sure students had this foundation. Recently, state lawmakers made changes to the Washington Assessment of Student Learning (WASL) graduation requirement, including postponing the passing of math and science until 2013 (OSPI, 2007).

Due to the pressures of high stakes testing, teachers were seeing more test anxiety at Tenino Elementary. Surely, the same could probably be said around the state. The added anxiety did not help the students' scores on their tests as well. This study was to see if the additional one on one parent volunteer tutors

helped the students exhibit more confidence in their math skills, therefore relieving them of some of their testing anxieties.

Parent volunteers were a valuable resource in the community that was often underused. Traditionally, parent volunteers came out for big events such as field trips, large art projects, field day, etc. The idea of this project was to have at least one parent in the classroom everyday working with students to close the achievement gap in math. They worked with the students in a variety of different ways in order to meet the needs of the students' different learning styles. The students' were met where their needs were. If they needed a lot of support they received more than students who needed less support, based on their Math Alert Pre-test.

Tenino used the Washington State K–8 Mathematics Standards April 2008 to guide the tutoring program in order to know what the new learning expectations were for math in 2008. These standards were like a compass that guided the school in the direction that was needed to go to close the achievement gap.

Statement of the Problem

Tenino Elementary did not make Adequate Yearly Progress (AYP) in math in 2007. Under NCLB schools were required to meet AYP. Even though the Saxon Math Curriculum that Tenino Elementary was using was a spiral design, which was intended to help students retain the information they had learned; students still struggled to pass the math portion of the WASL. This

struggle not only meant that Tenino did not make AYP, but an added anxiety of math and test taking arose.

Purpose of the Project

The purpose of this study was to look at the effectiveness of using parent volunteers who would provide additional one on one instruction to improve student achievement in math. This one on one instruction would help to make AYP with the math scores on the WASL.

Delimitations

This project was delimited to the researcher's third grade class at Tenino Elementary consisting of 21 students, (11 girls and 10 boys) during the 2008-2009 school year. The teacher with assistance of parent volunteers implemented interventions such as worksheets, flashcards, computer math programs, games, and math manipulatives in support of the Saxon Curriculum to close the achievement gap in math.

Assumptions

For the purpose of this study, the following assumptions were true:

1. Parent volunteers would show up consistently and on time.
2. Students did their best on math tests.
3. All students answered survey questions honestly.
4. Parent volunteers followed the instructions provided in the support notebook.

5. Parent volunteers accurately filled out the student assistance log to ensure that all students were getting the support they needed.
6. There was enough parent volunteers to provide the support needed.

Hypothesis or Research Question

Third grade students who receive extra support in math during their school day from parent volunteers will score higher on their math assessment, than students who do not. Students will exhibit more confidence in their math skills, based on a student survey.

Null Hypothesis

There will be no significant difference on the math assessment scores of students who receive extra support in math during their school day from parent volunteers, than students who do not. Students will not exhibit more confidence in their math skills, based on a student survey.

Significance of the Project

The purpose of this project was to provide a factual base of information regarding the effectiveness of parent volunteers on student achievement in math. Also provided was that parent support made students exhibit more confidence in their math skills.

Procedure

For the purpose of this project, the following procedures were implemented:

1. Permission to conduct research at Tenino Elementary was granted by David Ford, Principal (see Appendix A).
2. Excel charts of Pre-test and Post-test results. (See Appendix F)
3. A student survey of the confidence level in math was given (see Appendix B).
4. Math Alert Tests at the Pre- & Post-test sessions (see Appendix C).
5. A parent log was created to track which students are being assisted in what areas (see Appendix D).
6. Student support notebook was made for parents to use when working with the students in math (see Appendix E).
7. All parents received training on how to tutor the student and log their work.
8. Parent volunteers tutored students during their school day in the areas they showed need for improvement, indicated by the Math Alert Screener.

Definition of Terms

For the purpose of this study, the following words are defined:

Math Alert: The math screener that Tenino Elementary used.

Math manipulatives. Hands on materials that assist students to understand math concepts in a kinesthetic way.

Parent Volunteer: Guardians of students who attend Tenino Elementary

School who donate their time to help the students in our school.

Acronyms

WASL. Washington Assessment of Student Learning

NCLB. No Child Left Behind

AYP. Annual Yearly Progress

GLE. Grade Level Expectations

RTI. Response to Intervention

CHAPTER 2

Review of Selected Literature

Introduction

This chapter has been organized around the following topics: (a) No Child Left Behind/High Stakes Tests/Adequate Yearly Progress, (b) Test Anxiety, (c) Parent Volunteers, (d) Math Curriculum Requirement Sequence, and (e) summary. The following categories were explored to look at the pressure on students to achieve learning requirements in math. In addition, the idea of using parent volunteers to improve student learning, which was a much underused resource.

No Child Left Behind/High Stakes Tests/Adequate Yearly Progress

The federal No Child Left Behind Act of 2001 (NCLB), a major reform of the Elementary and Secondary Education Act (ESEA), was passed by Congress and signed into law by the president on January 8, 2002. Under *No Child Left Behind*, states were working to close the achievement gap and make sure all students, including those who were disadvantaged, achieve academic proficiency. Schools that did not make progress must provide supplemental services, such as free tutoring or after-school assistance; take corrective actions; and, if still not making adequate yearly progress after five years, make dramatic changes to the way the school was run (Ed.gov, 2008). By using parent volunteers to work with students one on one in math, where students were struggling was an attempt to

provide a free tutoring program during the school day. An after-school program was already in place, but only provided services to those students who showed a significant deficit in reading or math. NCLB was focused on a stronger accountability for results in student achievement.

No Child Left Behind put emphasis on determining which educational programs and practices have been proven effective through rigorous scientific research. Federal funding was targeted to support those programs and teaching methods that work to improve student learning and achievement (Ed.gov, 2008). The idea behind this research project was that parent volunteers were an underused resource. This project intended to show that statement true which might have lead to Washington State recognizing parent volunteer tutoring as a valuable intervention, which would help to close the achievement gap. Thus, state recognition could provide funding for a volunteer coordinator for schools that did not meet AYP.

Under NCLB, each state has developed and implemented measurements for determining whether its schools and local educational agencies (LEAs) were making adequate yearly progress (AYP). AYP was an individual state's measure of progress toward the goal of 100 percent of students achieving to state academic standards in at least reading/language arts and math. It set the minimum level of proficiency that the state, its school districts, and schools were to achieve each year on annual tests and related academic indicators. Parents whose children

were attending Title I (low-income) schools that did not make AYP over a period of years were given options to transfer their child to another school or obtain free tutoring (supplemental educational services) (Ed.gov, 2008). The new definition of AYP was diagnostic in nature, and it was intended to highlight where schools needed improvement and where those schools should have focused their resources (Paige, 2002).

The state-level WASL assessments required students to both select and create answers to demonstrate their knowledge, skills, and understanding in each of the Essential Academic Learning Requirements (EALRs)--from multiple-choice and short-answer questions to more extended responses, essays, and problem solving tasks. Student, school, and district scores were reported for the operational assessments. The state-level operational test forms were standardized and "on demand" meaning all students responded to the same questions, under the same conditions, and at the same time during the school year.

All of the state-level assessments were untimed; that is, students were allowed as much time as they reasonably needed to complete their work. This means that if they were given a portion of the test, say writing in fourth grade for example, they had that entire school day to complete the task. Guidelines for providing accommodations to students with special needs have been developed to encourage the inclusion of as many students as possible. Special need students included those in special education programs, those with Section 504 plans,

English language learners (ESL/bilingual), migrant students, and highly capable students. A broad range of accommodations allowed nearly all students access to some or all parts of the assessment (see Guidelines for Inclusion and Accommodations for Special Populations on State-Level Assessments - OSPI).

The process for creating the WASL was quite extensive. Classroom teachers and curriculum specialists from across Washington were selected to assist with the development of the questions for the state-level assessments. Two content committees were created at each grade level--one for reading/writing/communication and one for mathematics. Working with content and assessment specialists from the Riverside Publishing Company (the primary assessment development contractor), these committees defined the test and item specifications consistent with the EALRs, reviewed all questions prior to pilot testing, and provided final review and approval of all questions after pilot testing. A separate "fairness" committee, composed of individuals reflective of Washington's diversity, also reviewed all questions for words or content that might be offensive to students or parents, or might disadvantage some students for reasons unrelated to the skill or concept being assessed (OSPI, 2008).

Test Anxiety

Since high stakes testing became so public, the number of students that experience test anxiety had appeared to jump. Students of all ages seemed to be experiencing test anxiety. It's pretty typical to feel a little nervous and stressed

before a test. Just about everyone does. A touch of nervous anticipation could actually help you get revved and keep you at peak performance while you're taking the test. However, for some people, this normal anxiety was much more intense. The nervousness/anxiety they felt before a test could be so strong that it interfered with their concentration or performance (Lyness, 2007). As some of our students would start to worry about passing the test in order to graduate, their nervousness was much more likely to interfere. Test anxiety was actually a type of performance anxiety - a feeling someone might have in a situation where performance really counts or when the pressure was on to do well such as when passing was linked with graduation. (Lyness, 2007)

It was an underlying assumption in schools that examinations would be given to assess student understanding. In fact, within the broad field of education, the use of standardized testing had become ubiquitous (Council of Chief State School Officers, 2000). As salient as examinations were in the life of students, test anxiety among elementary students seemed to have been ignored, but were very much felt among young students. Demands on students to do well on tests were a reality. As demands and pressures were placed on students to achieve higher test scores, the need for school counselors (at all grade levels) to implement interventions to help reduce anxiety increased. (Cheek, J.R. 2002)

Test anxiety could affect children in a variety of ways. Some children might have had physical symptoms, such as upset stomach, unusual sweating or a

dry mouth. A child might have complained of dizziness, feeling their heart pounding out of control, or difficulty sleeping before the test. An inability to concentrate, racing thoughts, obsessive thinking and worry, forgetfulness and negative thoughts were other common symptoms as well.

Emotions could run rampant also: Students suffering from test anxiety could have been moody or depressed. They might have appeared to be fearful or irritable, and have had a lower tolerance for frustration. Fidgeting or pacing, crying, acting out, refusal to eat or overeating - all might have pointed to a case of test anxiety. (Becker, H. 2007)

Nurses encountered school-age children experiencing multiple stressors and stress symptoms. Performance on proficiency tests were viewed as stressors. The purpose of this repeated measures study was to assess 53 fourth grade children's appraisal of proficiency tests, concurrent stressors, stress symptoms, and coping strategies. During October, February, March, and April, children completed a ranking of their stress associated with proficiency testing and also reported their stressors, stress symptoms, and coping strategies. Results indicated that children indicated proficiency tests as most stressful at the beginning of the school year but less stressful at the time of the test. Stressors and stress symptoms increased from baseline to one month before testing then declined. The number of coping strategies used by the children decreased throughout the year. Nurses could work with parents and teachers to identify children who exhibited test

anxiety and target those children for interventions to improve their coping strategies. (Skybo, T. 2007)

The "No Child Left Behind" Act has led to an increased emphasis on proficiency testing or high stakes tests as a means to quantify educational outcomes in children, to evaluate teachers' performance, and to rate schools' performance (U.S. Department of Education, 2003). Education departments at the state level have developed strict standards for what was taught in the schools. This could lead to a decrease in teacher's enthusiasm for teaching and decrease the quality of education. The standards have narrowed the opportunity for teachable moments (Kersting, 2003). Students' proficiency scores and reports of class performance were shared with the public in the paper and on the Web; they were directly related to school funding. Tremendous concern regarding the quality of education arose when proficiency scores were below standard. Therefore, students often felt an increased pressure for academic achievement, which could result in stress-related biopsychosocial symptoms when they had inadequate or no coping strategies at all (Gierl & Bisanz, 1995; Simplicio, 1995; Urdan & Davis, 1998). Children who were stressed had difficulty diverting their attention away from their stressors and focusing their attention on tasks such as completing a test. Some children exhibited stress through physical symptoms such as a headache or stomachache, which brought them to the school nurse or primary care provider for symptom relief (Sharrer & Ryan-Wenger, 2002). It was important that health care

providers understood and anticipated the effect that mandatory proficiency tests may have had on the physical and mental wellbeing of school-age children so that early interventions could be established (Skybo, T. 2007).

Parent Volunteers

Parents could be a valuable resource to the teacher, the student, the classroom, and the school. There was a way to involve every parent who wanted to participate. The key to having an excellent volunteer program was being organized and having high standards (Hiler, 2008). Schools that had a large amount of parent volunteers would have benefited greatly from a volunteer coordinator to run such volunteer programs in order to stay organized.

If schools didn't have parent volunteers in the classroom, the school system suffered. Parents had begun to realize the important role they played in the willingness to give their time to their child's education. Parents now understand that it helped relieve stress many of our educators are felt in that educational environment. The assistance parent volunteers provided was priceless. The shortage of teacher's and teacher's aids due to budget cuts allowed teachers to encourage more parent involvement in the classroom. Having parents help out in the classroom was important and was very appreciated by the educators in our schools (Tyrer, 2008). Parents brought a special kind of energy and enthusiasm to the classroom. The parents provided support and help many teachers needed daily in their classrooms. Traditionally, parents were called on for field trips and special

events that children participated in during the year. However, things had changed and with the financial cuts in education. Parents were being called on to help in more areas. The request was to help not only the teachers, but the children as well. When parents donated their time in the classroom the teacher was able to accomplish more and students who were struggling could receive extra attention. Parents now understood by giving their time it helped their children's enthusiasm for learning. Having a parent, volunteer their time, showed they were interested in their child's education, which in turn would give their child the excitement and curiosity to learn. A child who had a loved one volunteering time in the classroom was proud to know they had someone who cared enough to be involved in their education. (Tyrer, 2008) Many Educators were also beginning to realize that they needed parent volunteers more than ever before.

So many children were facing so many learning hurdles that as a group, they fell behind those at more affluent schools. Yet, the gap was narrowing. State officials said Spokane Public Schools were ahead of most districts at meeting the needs of kids who lived in poverty and often dealt with other traumatizing factors. Those kids may have been immigrants just learning to speak English, had a loved one in prison, came from families that moved often to find cheaper rent or lived in shelters (Hansen, D. 2008).

"They have a systematic approach to learning in their district" that others are still trying to achieve, said Larry Fazzari, the state supervisor for two

programs that dealt with schools that were serving poor populations - the state's Learning Assistance Program and the federal Title I program (Hansen, D. 2008).

Spokane schools "take the initiative to honor their buildings," Fazzari said. "For these schools that have such high poverty and work so hard, it boosts self-esteem."

Some years, there were only one dozen or two dozen nominations for the Academic Achievement awards, said Fazzari. "But even in the years when we've been lean, the schools we pick have always, always been excellent."

Schools in poor neighborhoods received a lot of help from volunteers. Once a week, Stevens' students could catch an after-school bus to nearby Gonzaga University, where university students helped them with homework. (Hansen, D. 2008).

Whitworth University sent volunteers and interns to Stevens to lend a helping hand, and the university hung artwork created by Stevens' students in its gallery - even buying some for permanent display (Hansen, D. 2008). Some volunteers were not parents per say, but they were there to accomplish the same thing.

Math Curriculum Requirement Sequence

Math educators throughout Washington State had been working closely with the esteemed Charles A. Dana Center for Mathematics and Science Education at The University of Texas at Austin to revise K-12 mathematic

standards (OSPI, 2008). The Dana Center was assisting the Washington State Superintendent of Public Instruction in the revision process of the mathematics standards in accordance with the objectives forth in the public Request for Proposal (RFP) and the final recommendations adopted by the Washington State Board of Education. The result of that effort is a set of state mathematics standards that embody the mathematics required for success in the 21st-century economy.

The revised standards were built on the acknowledged strengths of Washington's existing standards (as identified in the State Board of Education's contracted review, also referred to as the Plattner report) while they set higher expectations for Washington students by invigorating mathematics content and increased its rigor. In addition, identified areas of emphasis at each grade level, and increased the clarity and usability of the standards for both educators and the public (OSPI, 2008).

An example of the 2008 math learning expectations from **Washington State K–8 Mathematics Standards April 2008** Numbers Strand:

Grade 3

3.1. Core Content: Addition, Subtraction, and Place Value

Performance Expectations Explanatory Comments and Examples

Students are expected to:

3.1. A Read, write, compare, order, and represent

numbers to 10,000 using numbers, words, and symbols. (OSPI, 2008). (See Appendix F)

Members of the classes of 2008, 2009, and 2010 could successfully complete additional math classes instead of passing the Washington Assessment of Student Learning test. The classes for those three years were the first required to meet WASL standards in reading, writing, and math to graduate.

The failure of 49 percent of sophomores -- about 34,000 -- to pass the math portion of the WASL last spring and in summer re- takes led to pleas among parents and some educators to delay the math WASL graduation requirement. There was a similar postponement of the 10th-grade math WASL graduation requirement through 2010. (Thompson, L. 2006)

A plan for adopting national academic standards and assessments in reading and mathematics, as well as for helping states and districts implement them, should be included in the reauthorization of the No Child Left Behind Act, a major education group said. In a position statement released, the National Association of Secondary School Principals called on Congress to appoint an independent panel of researchers, educators, and others to come up with a set of common guidelines for what students should know and be able to do in the two subjects at each grade level. The standards, and accompanying assessments, should replace punitive provisions in the federal law, the NASSP says.

A number of experts and organizations have called for a renewed discussion on academic standards over the past several years. While they mostly suggested that the standards should be voluntary, the proposals included providing states with grants or other incentives for adopting them.

Some of those proposals have suggested that states align their standards with those of top-performing countries around the world as a means of ensuring that students in the United States could compete with their peers around the globe. ("Forum Seeks A New Vision for U.S. Role," April 23, 2008.) All aspects of those top-performing countries would be looked at to see where we could change.

Summary

The No Child Left Behind Act of 2001, caused educators to take a long hard look at what they were doing. That included how they used parent volunteers in their classrooms to help close the achievement gap.

The pressure of high stakes testing could get to everyone involved especially the students. Teachers, counselors, nurses, and parents wanted to help their students find coping mechanisms to alleviate the stress of those high stakes proficiency tests. With the graduation requirement that was attached to the WASL, teachers were required to look for other ways to give their students a push over the passing line.

Using parent volunteers was not a new idea, but the ways in which we were inviting them to help out was archaic. Volunteers of the past went on fieldtrips

and helped out on special projects. Parent volunteers should be apart of everyday life at school. They relieved some the pressures that financial cuts have placed on the education staff. From helping to prepare materials for lessons, to reading one on one with a struggling reader, parent volunteers helped fill the gap.

Washington State math standards have changed and the push to move with that change had come. This was the direction schools were going like it or not. Using parent volunteers to help teachers address the struggling math student was the goal of the researcher. The standards were there and the mission was to insure that every child received the assistance they needed to meet those standards and to close the achievement gap.

CHAPTER 3

Methodology and Treatment of Data

Introduction

This chapter was organized around the following topics: (a) Methodology, (b) Participants, (c) Instruments, (d) Design, (e) Procedure, (f) Treatment of The Data, and (g) Summary. Conducting this project required process and procedure. First, permission to conduct the research was obtained from Tenino Elementary School. Then, the researcher looked into the background of the problem. Next, the screener was given to provide a pre-assessment of the students' abilities, and a timeline was established.

Methodology

After looking at the problem of not making Adequate Yearly Progress (AYP) in math, the researcher explored what Response to Intervention (RTI) might enhance student achievement. An Experimental Research was decided on to see what the effects of using parent volunteers would be to improvement of math scores. More research was conducted on impacting factors on the topic such as test anxiety, high stakes testing, No Child Left Behind (NCLB), AYP, math curriculum requirements, and most prominently parent volunteers. The assessment tool used for this study was Math Alert, a screener that the school purchased to assess student needs in the area of math. The pre-test screener was given September 12th, 2008. Then, the post-test for non-treatment to the study

group was given. This post-test acted also as the pre-test that occurred prior to the treatment, which was given on January 16th, 2009. The study group was then given additional support in math by parent volunteers. Finally a post-test was given on April 14th, 2009. The data for each test was collected and growth was tabulated.

Participants

The sample group for this study was a convenient sample of 21 third grade students from Tenino Elementary School. There were 11 girls and 10 boys in the sample group. The study was split into two sections; the first section was one without treatment and the second section with treatment. This kept the socio-economic, background, and demographic the same.

Instruments

Only one instrument was used in this study. The Math Alert screener was developed by Steve Hirsch and is aligned with the Essential Academic Learning Requirements (EALR) and Grade Level Expectations (GLE) to be a direct correlation with success on the Washington Assessment of Student Learning (WASL). The Math Alert is composed of two different parts, applied problems and calculation problems. The researcher considered this tool to be very reliable.

Design

The method used for this study was experimental. The researcher used pre- and post-tests to determine the relationship between parent volunteer support in

math and academic gains in the area of math. A result of which would be improvement on the math WASL; Versus no support of parent volunteers in the area of math.

Procedure

On September 12th, 2008 the researcher administered the pre-test, Math Alert to the 21 third grade students that made up her class. That pre-test was for the first section of the study which was without treatment. On January 16th, 2009 the researcher gave the post- test, Math Alert Screener to the third grade class. During those four months which included a students being gone from school for winter break, the students received no help from parent volunteers in the area of math. Prior to the second section of the study the researcher solicited the help of parent volunteers who would work with the students who were struggling in math. The researcher created a log, for the parent volunteers to fill out as they worked with students and a notebook that had a variety of activities that supported the students' areas of need. The notebook also contained charts that showed what each student had for areas of need. The researcher trained the parent volunteers on how to use the notebook, how to log their activities, and how to support the students. The January 16th Math Alert Screener was also used as the pre-test for the second section of the study, which was with treatment. The parent volunteers then used their training to work with student who showed from the screener that they had an area of need for improvement. Then, on April 14th, 2009 the students

took the post-test, Math Alert screener which was after the treatment of using parent volunteers. The data was then tabulated and put into an Excel sheet to show the results of the study.

Treatment of the Data

The data was collected from the Math Alert Screener in a pre-test, post-test format. A pre-test was given during the first part of the study which was without treatment. Then, a post-test was given to determine how much growth was made without the support of parent volunteers. That post-test was also used as the pre-test of the second section of the study, which was with treatment. Finally, a post-test was given at the end of the second section where students had the support of parent volunteers. The researcher put the collected data in an Excel Spreadsheet and used the program Graphpad to show the growth during the two sections of the study.

Summary

The purpose of this chapter was to review the methodology and the treatment of the data as it related to the problem to see if using parent volunteers to tutor students in math would improve math scores on the WASL and achieve AYP.

CHAPTER 4

Analysis of the Data

Introduction

Chapter 4 has been organized around the following topics: (a) description of the environment, (b) hypothesis/research question, (c) null hypothesis, (d) results of the study, (e) findings, and (f) summary. The No Child Left Behind Act had increased pressure on teachers, students, schools, and districts to close the achievement gap and meet a higher standard. Schools had started to look at all of their resources to meet the needs of their students. The resource in this study was to use parent volunteers to increase math achievement.

Description of the Environment

The environment of this study was a third grade class at Tenino Elementary School in rural Thurston County. The class consisted of 21 students, 11 girls and 10 boys. Tenino Elementary is one of the four schools in the Tenino School District and serves the communities third, fourth, and fifth graders. This study took place during the 2008-2009 school year. The parent volunteers that participated in the study were a mother of a boy in the class and the grandmother of a girl in the class. The volunteers divided up the days of the week in an attempt to have someone in the class assisting student's everyday. Either one was there almost everyday during the study, only missing due to illnesses.

Hypothesis/Research Question

Third grade students who receive extra support in math during their school day from parent volunteers will score higher on their math assessment, than students who do not. Students will exhibit more confidence in their math skills, based on a student survey.

Null Hypothesis

There will be no significant difference on the math assessment scores of students who receive extra support in math during their school day from parent volunteers, than students who do not. Students will not exhibit more confidence in their math skills, based on a student survey.

Results of the Study

In this study the researcher used a convenient sample being her third grade class which consisted of 10 boys and 11 girls. (see figure 1)

Break down of males and females participating in the study

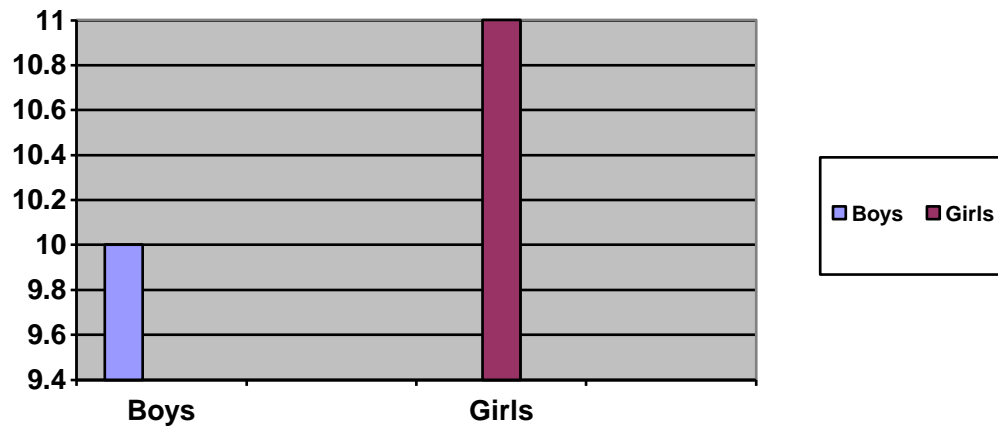


Figure 1

A pre-test and post-test without treatment was given. The post-test without treatment was also used as the pre-test with treatment. There were two types of these tests. The researcher used Graphpad to calculate significance.

The pre-treatment results for calculations raw scores are:

P value and statistical significance:

The two-tailed P value equals 0.0002

By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence interval:

The mean of Pretest minus Post Test equals -4.62

95% confidence interval of this difference: From -6.91 to -2.33

Intermediate values used in calculations:

$$t = 4.0700$$

$$df = 40$$

$$\text{standard error of difference} = 1.135$$

Group	Pretest	Post Test
Mean	7.71	12.33
SD	3.78	3.57
SEM	0.83	0.78
N	21	21

Graphs showed growth of students' calculation scores without parent volunteers (see figure 2). These calculations were made in the beginning of the study. The results show that without the help of parent volunteers the students made significant growth in their calculation scores. The majority of the students made growth in calculation scores, but only one student got all 18 questions correct.

Pre- and Post-test results for Calculations without treatment

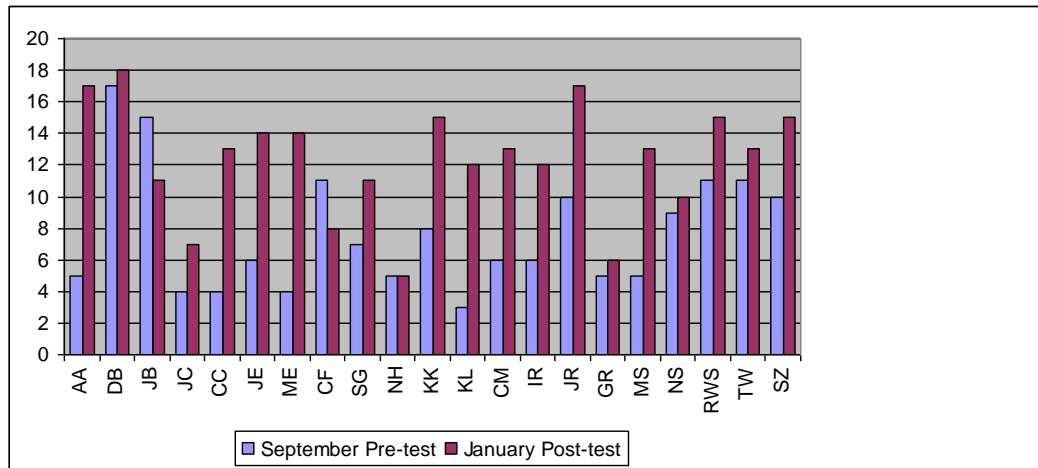


Figure 2

The pre-treatment results for applied raw scores are:

P value and statistical significance:

The two-tailed P value equals 0.0285

By conventional criteria, this difference is considered to be statistically significant.

Confidence interval:

The mean of Pre-test minus Post Test equals -1.48

95% confidence interval of this difference: From -2.79 to -0.16

Intermediate values used in calculations:

$$t = 2.2724$$

$$df = 40$$

$$\text{standard error of difference} = 0.650$$

Group	Pre-test	Post Test
Mean	4.52	6.00
SD	2.54	1.55
SEM	0.55	0.34
N	21	21

This data shows that the students showed growth in their applied scores without the help of parent volunteers. The growth was not as extraordinary as the calculation portion of the testing but was still significant (see figure 3).

Pre- and Post-test results for Applied without treatment

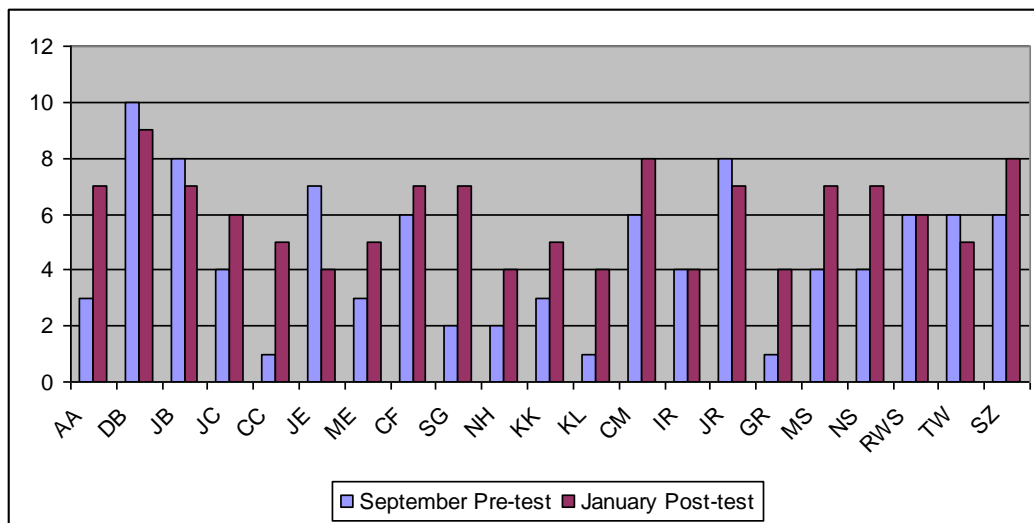


Figure 3

The post-treatment results for the calculation raw scores are:

P value and statistical significance:

The two-tailed P value equals 0.0003

By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence interval:

The mean of Pre-test minus Post Test equals -3.57

95% confidence interval of this difference: From -5.39 to -1.75

Intermediate values used in calculations:

$t = 3.9683$

$df = 40$

standard error of difference = 0.900

Group	Pre-test	Post Test
Mean	12.62	16.19
SD	3.77	1.66
SEM	0.82	0.36
N	21	21

These results show that there was growth in student scores in calculations when using parent volunteers to help. The growth was not as significant as the first test, but there was not as much room for growth as before. The data shows that four

students were able to get all 18 problems correct this time as apposed to the one from the first section of the study (see figure 4).

Pre- and Post-test results for Calculation with treatment

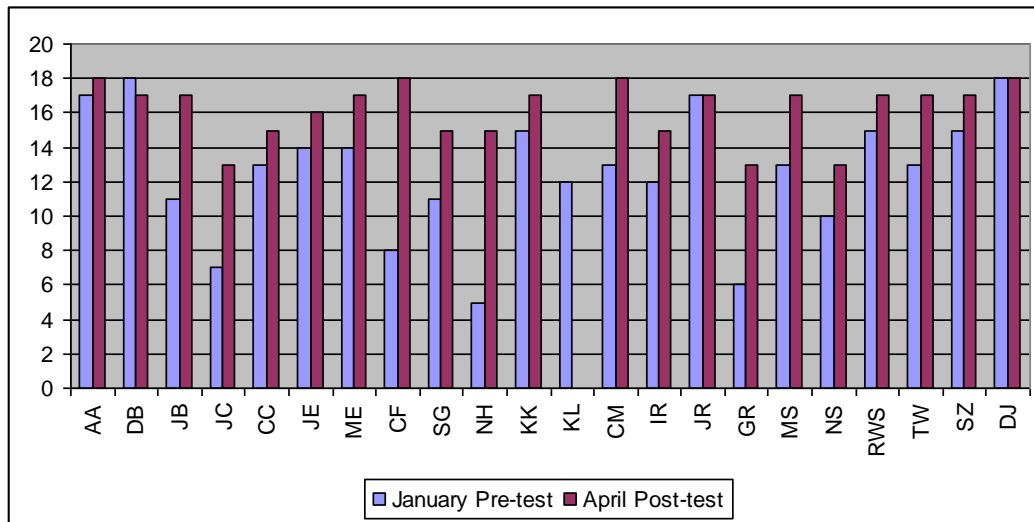


Figure 4

The post-treatment results for applied raw scores are:

P value and statistical significance:

The two-tailed P value equals 0.0969

By conventional criteria, this difference is considered to be not quite statistically significant.

Confidence interval:

The mean of Pre-test minus Post Test equals -0.86

95% confidence interval of this difference: From -1.88 to 0.16

Intermediate values used in calculations:

$$t = 1.7001$$

$$df = 40$$

$$\text{standard error of difference} = 0.504$$

Group	Pre-test	Post Test
Mean	6.10	6.95
SD	1.48	1.77
SEM	0.32	0.39
N	21	21

This chart shows that there was still growth in students' applied scores with the help of parent volunteers, even if it was not as significant as the growth that took place in calculations (see figure 5). That shows that parent volunteers who help students in math have a more significant positive impact on calculation scores, than on applied.

Pre- and Post-test results for Applied with treatment

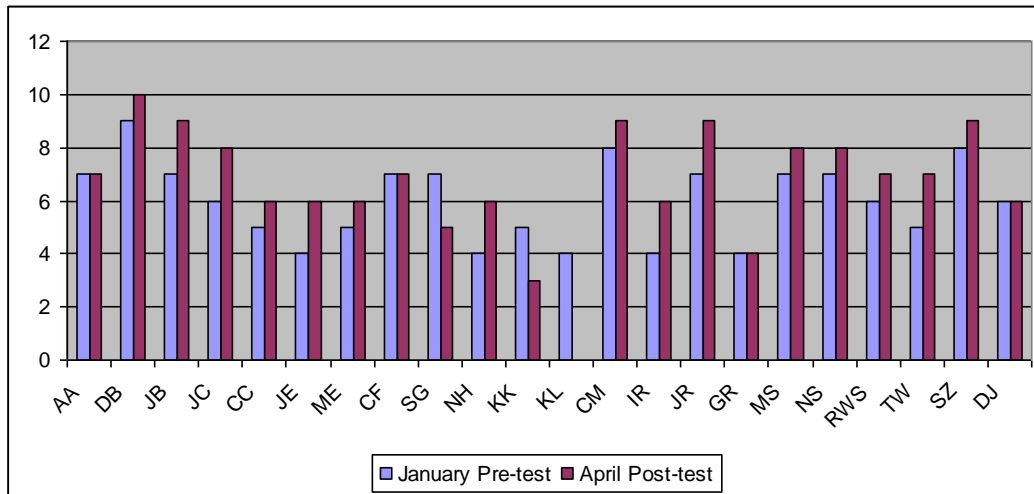


Figure 5

The graph shows that more students that WASL math questions were easy.

Students found that WASL math questions were sometimes if not always easy.

This shows that they were confident in their math abilities (see figure 6).

Student confidence level in math is high!

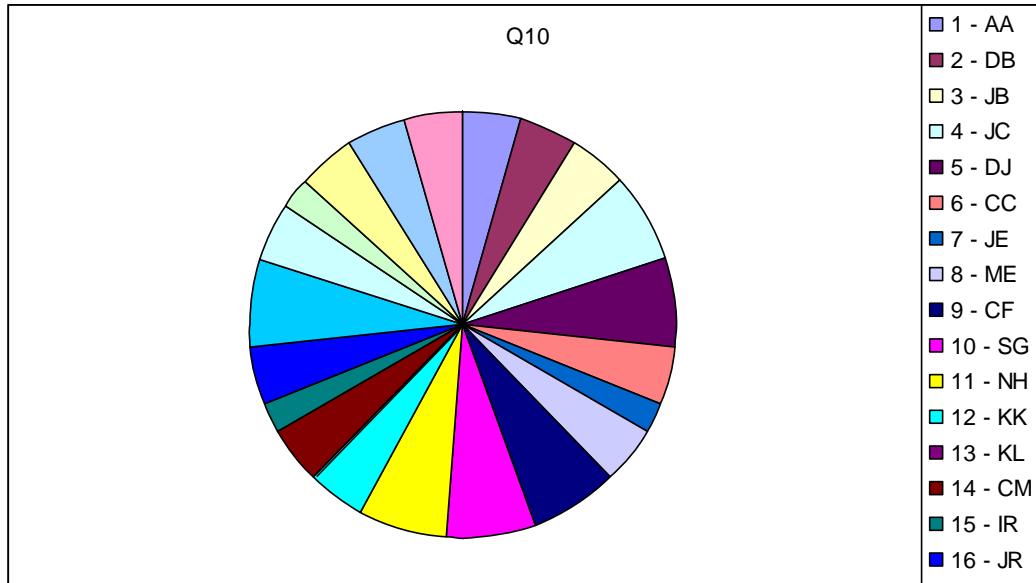


Figure 6

Findings

In looking at the data, it appears as though the hypothesis was supported and the null hypothesis was rejected. The data does show that there was more significant growth in calculation portion of the testing than the applied portion of the testing. What the data does not show is why the growth was more significant in one than the other. The researcher believes that other variables may have caused the difference such as confidence and ability of the parent volunteers in one area over the other. It can be stated that with the support of parent volunteers in the classroom math scores did increase.

Discussion

This researcher agrees with the statement in chapter 2, the key to having an excellent volunteer program was being organized and having high standards (Hiler, 2008). It was important for the study that everything had to be very organized.

The biggest challenge during this study was finding parent volunteers to participate. The researcher sent out an invitation to volunteer and put an article request for volunteers in the school newsletter. Finally, the researcher had to make individual phone calls. This resulted in having only two parent volunteers. The researcher believes that this is due to the poor economy at the time and that she didn't have as many students that had a stay at home parent who could spend some of their time in the classroom. This was very different than in years past.

Summary

This chapter provided information regarding the following topics: (a) description of the environment, (b) hypothesis/research question, (c) null hypothesis, (d) results of the study, (e) findings, and (f) summary. The data collected rejected the null hypothesis and the hypothesis was accepted. The researcher used an unpaired t test to analyze the significance of the statistical data. The study took the entire 2008-2009 school year to complete. The data also

shows that the support of parent volunteers in the classroom was more significant in calculation math scores than in applied math scores.

CHAPTER 5

Summary, Conclusions and Recommendations

Introduction

The purpose of this study was to look at the effectiveness of using parent volunteers who would provide additional one on one instruction to improve student achievement in math. This one on one instruction would help to make AYP with the math scores on the WASL. The researcher selected this idea because she thought that parent volunteers are an underused and valuable resource that should be looked at more carefully for consideration when trying to close the achievement gap.

Summary

In the beginning of this research project it was stated that Tenino Elementary School did not make AYP in math in 2007. Each year schools need to show adequate progress in order to reach the goal of 100% academic proficiency by 2014 under the No Child Left Behind Act (NCLBA). The school has looked at different ways to increase math scores. This is what started this project. The researcher wanted to identify another way to make AYP, closing the achievement gap and make our students successful in math.

The researcher looked at No Child Left Behind/High Stakes Tests/Adequate Yearly Progress, Test Anxiety, Parent Volunteers, and Math Curriculum Requirement Sequence in her research. The overwhelming result of

that research was that students, teachers, parents, and school districts have anxiety about these high stakes tests. Also, that parent volunteers are an important piece of the school system and that the NCLB 100% passing deadline was quickly approaching.

So, the researcher developed the project around using parent volunteers to support math achievement. She used the convenient sample of her third grade classroom to do this experimental research project. It took place in the small rural town of Tenino, Washington. There were 11 girls and 10 boys in the study, which took place during the 2008-2009 school year. Only two parent volunteers were able to participate in the study.

The data showed that using parent volunteers did improve math scores. It also showed that math scores went up more in the category of calculations than in applied problems.

Conclusions

In conclusion, the hypothesis was accepted and the null hypothesis rejected based on the data collected. The researcher also concluded that the struggle to find parent volunteers to participate in the study shows that they are not the best way to close the achievement gap because the amount of volunteers is so inconsistent. The gains that students made in the first section of the study that didn't use parent volunteers makes the researcher wonder how much of the

growth in the second half of the study was due to the volunteers or could have been due to the natural growth that happens throughout the school year.

Recommendations

The researcher recommends that if the study was done again, that a larger sample sized be used. That half of the larger sample is the control group and the other half is the experimental group. This would eliminate the question of how much is natural growth that happens throughout the school year and how much is really the extra help from volunteers.

The recommendation of the researcher is that schools should utilize their parent volunteers to help close the academic achievement gap. However, using parent volunteers should not be the only intervention in place due to the inconsistency that comes with parent volunteers' schedules, availability, skills, and abilities.

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Stress and Coping Responses to Proficiency Testing in School-Age

Children

APPENDIX

Appendix A

September 28, 2008

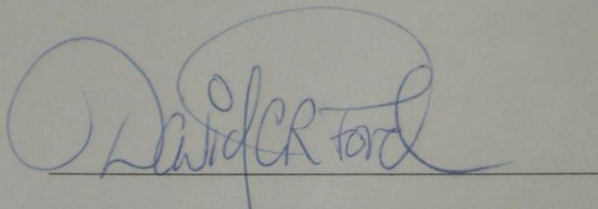
I, DAVID C. R. FORD, Principal of Tenino Elementary School do hereby allow Mandy Jessee, Tenino Elementary School teacher to conduct research on effective teaching strategies during the 2008-2009 school year in her third grade class.

Below is a copy of the hypothesis I will be using to complete my special project in pursuit of a Masters' Degree in Educational Administration through Heritage University.

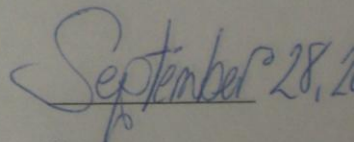
Hypothesis:

Third grade students who receive extra support in math during their school day from parent volunteers will score higher on their math assessment, than students who do not.

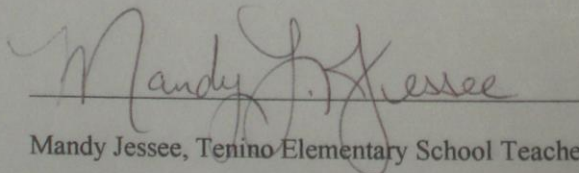
Students will exhibit more confidence in their math skills, based on a student survey.



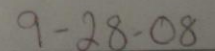
David Ford, Tenino Elementary School Principal



Date



Mandy Jessee, Tenino Elementary School Teacher



Date

Appendix B

Math Confidence

Name: _____

This survey is supposed to let me know how you feel about math. I would like to know what type of math problems you feel confident in and what type you feel like you need more practice and learning.

Please circle your answers.

Addition problems are hard for me. Yes Sometimes No

Subtraction problems are hard for me. Yes Sometimes No

Multiplication problems are hard for me. Yes Sometimes No

Division problems are hard for me. Yes Sometimes No

Story problems are hard for me. Yes Sometimes No

Telling time is hard for me. Yes Sometimes No

Fractions are hard for me. Yes Sometimes No

Counting money is hard for me. Yes Sometimes No

I like math. Yes Sometimes No

Third grade math WASL questions are easy. Yes Sometimes No

Appendix C

3rd Grade Math Alert Screener: Calculations

First Name: _____ Last Name: _____ Teacher: _____
 Date: _____ Score: _____

1. 2 +3 <hr style="width: 50px; margin: 0 auto;"/>	2. 3 6 +4 <hr style="width: 50px; margin: 0 auto;"/>	3. 601 39 +417 <hr style="width: 50px; margin: 0 auto;"/>	4. 62 -27 <hr style="width: 50px; margin: 0 auto;"/>	5. 46 - 3 <hr style="width: 50px; margin: 0 auto;"/>	6. 39 + 4 <hr style="width: 50px; margin: 0 auto;"/>
7. 2 x8 <hr style="width: 50px; margin: 0 auto;"/>	8. 6 x3 <hr style="width: 50px; margin: 0 auto;"/>	9. 9 x5 <hr style="width: 50px; margin: 0 auto;"/>	10. 18 +98 <hr style="width: 50px; margin: 0 auto;"/>	11. 48 +37 <hr style="width: 50px; margin: 0 auto;"/>	12. 8 x 9 <hr style="width: 50px; margin: 0 auto;"/>
13. 569 201 +877 <hr style="width: 50px; margin: 0 auto;"/>	14. 95 +27 <hr style="width: 50px; margin: 0 auto;"/>	15. 8 -6 <hr style="width: 50px; margin: 0 auto;"/>	16. 51 -28 <hr style="width: 50px; margin: 0 auto;"/>	17. 7 x4 <hr style="width: 50px; margin: 0 auto;"/>	18. 53 -29 <hr style="width: 50px; margin: 0 auto;"/>

TES3-1

3rd Grade Math Alert Screener: Applied Problems

First Name: _____ Last Name: _____ Teacher: _____
 Date: _____ Score: _____

Please circle the correct multiple choice answer.

<p>1. Eddie runs three miles each day. How many miles does he run in twelve days?</p> <p>a. $\begin{array}{r} 12 \\ \times 3 \\ \hline \end{array}$</p> <p>b. $12 \div 3$</p> <p>c. $\begin{array}{r} 12 \\ - 3 \\ \hline \end{array}$</p> <p>d. $\begin{array}{r} 1m = 5280 \quad 15840 \\ \times 3 \quad \times 12 \\ \hline \end{array}$</p>	<p>2. It was 27°C when Jennifer got up in the morning. By the time she walked to school, it was 41°C. How many degrees warmer had it gotten?</p> <p>a. $\begin{array}{r} 27 \\ + 41 \\ \hline \end{array}$</p> <p>b. $\begin{array}{r} 41 \\ - 27 \\ \hline \end{array}$</p> <p>c. $\begin{array}{r} 27 \\ \times 41 \\ \hline \end{array}$</p> <p>d. $41 \div 27$</p>
<p>3. There are ten rows of desks. There are six desks in each row. How many desks are there all together?</p> <p>a. $\begin{array}{r} 10 \\ - 6 \\ \hline \end{array}$</p> <p>b. $\begin{array}{r} 10 \\ + 6 \\ \hline \end{array}$</p> <p>c. $\begin{array}{r} 10 \\ \times 6 \\ \hline \end{array}$</p> <p>d. $10 \div 6 =$</p>	<p>4. 5 boxes contain 400 tacks. How many tacks are in each box?</p> <p>a. $400 \div 5 =$</p> <p>b. $400 \times 5 =$</p> <p>c. $400 - 5 =$</p> <p>d. $400 + 5 =$</p>
<p>5. Students put the rocks from six packages into a jar. There were four hundred twenty rocks. How many rocks were there in each package?</p> <p>a. 486</p> <p>b. 474</p> <p>c. 70</p> <p>d. 2880</p>	<p>6. There are 7 children on each team. There are 11 teams. How many children are there all together?</p> <p>a. 77</p> <p>b. 16</p> <p>c. 6</p> <p>d. 555</p>

<p>7. 45 children are standing up. 8 children sit down. How many children are left standing?</p> <p>a. $45 + 8 =$</p> <p>b. $45 - 8 =$</p> <p>c. $8 \times 45 =$</p> <p>d. $45 - 8 =$</p>	<p>8. Jane went to the grain store to buy food for her goat. She bought 2 sacks of grain for twenty dollars. What was the price of one sack of grain?</p> <p>a. $\\$20.00$ <u>$+ 2.00$</u></p> <p>b. $\\$20.00$ <u>$\times 2.00$</u></p> <p>c. $\\$20.00$ <u>$- 2.00$</u></p> <p>d. $\\$20.00 \div 2$</p>
<p>9. Mandy needs \$55.00 to fix her bicycle. She earned \$20.00. How much more money does she need?</p> <p>a. \$35.00</p> <p>b. \$15.00</p> <p>c. \$65.00</p> <p>d. \$2.25</p>	<p>10. Karen had 48 centimeters of ribbon. She wanted to cut it into 3 equal lengths. How long would each length be?</p> <p>a. 42 cm</p> <p>b. 135 cm</p> <p>c. 16 cm</p> <p>d. 10 cm</p>

3rd Grade Screener (Page 2 of 2)

TES 3-3

Appendix D

	Date:	Area of Support:
kins	2/18	multiply by 3
burke	2/18	add 3 digit w/regrouping
trillo	2/18	sub 2 digit w/regrouping
dwards	2/20	multiply by two
ium	2/19	Addition 3 digit w/regrouping
sberg	2/19	multiplication Flash cards
ilson	2/19	Multiplication Flash cards
Holmes	2/20	subtraction 2 digit w/regrouping
rst	2/20	multiply by three's
a	2/20	subtraction Regrouping/Borrow
lcom	2/25	multiply by three's
s	2/25	subtraction 2 digit w/regrouping
owell	2/25	multiply by three's
y	3/2	multiply by 4's
verse	2/26	Multiplication by 2's & 4's
iles	2/26	" " " & "
chter-Strange	3/2	Division Facts (Card)
yrauch	2/26	Multiplication by 3's &
	3/2	multiply by three's

Appendix E

Area for improvement:	Student Name:
	Krysta Lira
Story problems with addition	
Story problems with differences	
Story problems with multiplication	
Story problems with division	
Addition - single digit	
Addition - double & triple digit	X
Addition - with carrying	X
Subtraction - single digit	
Subtraction - double & triple digit	X
Subtraction - with regrouping	X
Multiplication Concept	
Multiplication facts	X
Division Concept	X
Division facts	X

Appendix F

Calculations

Student	September	January	Growth Pre-treatment	January	April	Growth Post-treatment
AA	5	17	12	17	18	1
DB	17	18	1	18	17	-1
JB	15	11	-4	11	17	6
JC	4	7	3	7	13	6
CC	4	13	9	13	15	2
JE	6	14	8	14	16	2
ME	4	14	10	14	17	3
CF	11	8	-3	8	18	10
SG	7	11	4	11	15	4
NH	5	5	0	5	15	10
KK	8	15	7	15	17	2
KL	3	12	9	12		
CM	6	13	7	13	18	5
IR	6	12	6	12	15	3
JR	10	17	7	17	17	0
GR	5	6	1	6	13	7
MS	5	13	8	13	17	4
NS	9	10	1	10	13	3
RWS	11	15	4	15	17	2
TW	11	13	2	13	17	4
SZ	10	15	5	15	17	2
DJ		18	18	18	18	0

Student	Applied					Growth Post-treatment
	September	January	Growth Pre-treatment	January	April	
AA	3	7	4	7	7	0
DB	10	9	-1	9	10	1
JB	8	7	-1	7	9	2
JC	4	6	2	6	8	2
CC	1	5	4	5	6	1
JE	7	4	-3	4	6	2
ME	3	5	2	5	6	1
CF	6	7	1	7	7	0
SG	2	7	5	7	5	-2
NH	2	4	2	4	6	2
KK	3	5	2	5	3	-2
KL	1	4	3	4		
CM	6	8	2	8	9	1
IR	4	4	0	4	6	2
JR	8	7	-1	7	9	2
GR	1	4	3	4	4	0
MS	4	7	3	7	8	1
NS	4	7	3	7	8	1
RWS	6	6	0	6	7	1
TW	6	5	-1	5	7	2
SZ	6	8	2	8	9	1
DJ		6	6	6	6	0