Increasing Scores on the Geometry Strand of the Measures of Academic Progress Assessment

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Increasing Scores on the Geometry Strand of the

Measures of Academic Progress Assessment

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ABSTRACT

The purpose of the study was to determine if a geometry intervention course helped students raise scores on the geometry strand of the Measures of Academic Progress Assessment. One-hundred students were placed in the intervention course throughout the school year and twenty-five were chosen at random for the study. The students were given the Measures of Academic Progress Assessment in the fall as a pre-test. The students were then given direct instruction and project-based instruction in geometry. In the spring, the students were given the Measures of Academic Progress Assessment again as a post-test. The scores were collected and analyzed to determine if the students made significant growth on the geometry portion of the Measures of Academic Progress Assessment.

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CHAPTER 1

Introduction

Background for the Project

Since the passage of the No Child Left Behind Act many states had to scramble to create state-wide standardized tests which were required for students to graduate. With the creation of new standardized tests came a new scramble for raising test scores to meet the Adequate Yearly Progress piece of the No Child Left Behind Act. Districts all over the United States were working on new ways to teach students the subject matter needed to help students pass the new tests. Different tests were developed by outside companies claiming students could pass the state standardized tests if the same students passed the companies' tests.

Washington State was one of the leaders in standardized test development creating the Washington Assessment of Student Learning ten years prior to the No Child Left Behind Act approved by Congress. The test approached all subjects from a writing perspective asking students to explain the thinking that went into each answer. This test was unlike most other tests students had ever seen. The complexity of this test was beyond the grasp of a large number of students to begin with due in part to the extreme amount of writing. Rarely had students been

asked to write down mathematical thinking in words to show understanding. Test scores showed the students' lack of experience at this type of test (Wilson, 2004).

With many test scores failing in Washington and many schools and districts not having enough students pass the test to meet the uniform bar requirements of Adequate Yearly Progress, many schools turned to outside companies to look for tests which claimed to help predict how students would do on the Washington Assessment of Student Learning. Some districts began to use a computerized self-leveling test created by the Northwest Evaluation Association which claimed the test could predict how students would do on the Washington Assessment of Student Learning. The test was called the Measures of Academic Progress Assessment. The mathematics portion of the test gave students problems in five different strands. Those strands were geometric sense, algebraic sense, probability and statistics, number sense, and measurement. When students took the test, questions were given from all of the five strands. If the questions were answered correctly, the students were given a new question more difficult than the first. If the questions were answered incorrectly, the students were given a new question easier than the first. Using the method, the test leveled each student and found the actual level of the students' ability in each strand based on the questions the students were able to answer (Wilson, 2004).

Statement of the Problem

In the chosen middle school, students were struggling in geometry and performed poorly on the geometry strand of the Measures of Academic Progress Assessment as well as the geometry questions on the Washington Assessment of Student Learning. The staff of the middle school determined remediation in the specific strand would help boost scores on the geometry questions on the Washington Assessment of Student Learning as well as the Measures of Academic Progress Assessment.

Purpose of the Project

The purpose of this project was to determine whether a geometry remediation class in the chosen middle school would significantly increase scores on the geometry strand of the mathematics portion of the Measures of Academic Progress Assessment. Remediation classes had been used across the state to help students increase test scores on both the Washington Assessment of Student Learning and the Measures of Academic Progress Assessment for several years. These classes were taking students out of important classes such as shop, family and consumer sciences, music, etc., and placing them in a second math, reading or writing course.

Delimitations

The study was performed in a district with nearly two-thousand nine-hundred middle school students spread out among three middle schools. The chosen middle school had two-fifths of the seventh graders in the district housing a little better than 400 seventh grade students.

This study was limited to 25 seventh grade students out of the one-hundred students that were placed in the geometry remediation course. The majority of the students used in the research were underachieving students in need of remediation in multiple mathematical strands. The cultural make-up of the class was mainly Hispanic students from a lower socio-economic status and a large number of students were from single-parent households. The rest of the students were from households where the two parents worked long hours and were rarely home.

The test was taken in a computer lab in complete silence both in the fall during the second month of the school year and in the spring, a month before the end of the year. The students were given as much time as necessary to take the exam so as to match the Washington Assessment of Student Learning as closely as possible.

The biggest delimitation to the test was the students were tired of testing by the time the Measures of Academic Progress was taken. The students had just

taken the Washington Assessment of Student Learning the prior two weeks and many of the students did not take the test seriously.

Assumptions

All students used in the research knew the reason for placement was due to an academic need in the mathematics area. The students generally disliked mathematics and showed a lack of knowledge of basic facts which were supposed to be mastered in elementary school.

Hypothesis

Students who received geometry intervention would show significant growth on the geometry strand as measured by the Measures of Academic Progress Assessment.

Null Hypothesis

Students who received geometry intervention would not show more significant growth on the geometry strand as measured by the Measures of Academic Progress Assessment.

Significance of the Project

With the No Child Left Behind Act mandating that all students pass the Washington Assessment of Student Learning in all areas to graduate, schools and districts had been struggling to find ways to help students pass the test. Remediation classes had been slowly taking the place of exploratory and elective classes such as shop, band, choir, family and consumer sciences, computer

classes, and other enjoyable educational classes, giving students two math, language or reading classes to help students pass the test.

If students were going to be placed into remediation classes in the place of exploratory and elective classes, faculty members wanted to be sure the remediation classes were doing the intended job. If not, then the remediation classes would need to be removed and replaced with educational programs that worked.

Procedure

The author first discussed placement of students with other mathematics teachers within the building. Students were then placed in the geometry remediation class based on Measures of Academic Progress and Washington Assessment of Student Learning scores in the geometry strands. Students with the lowest scores were given first priority of placement in the geometry remediation class for quarter one. The students who were not placed in the geometry remediation class were put on a prioritized list based on the lowest test scores among the remaining students. Each student who was placed in the class was only in the class for one quarter of direct and project-based instruction. Second quarter the twenty-five students at the top of the list were placed in the class. This process continued for all four quarters.

During the second month of school, all students took the Measures of Academic Progress Assessment. Direct and project-based instruction were given

in the geometry strand to the one-hundred students and then the Measures of Academic Progress Assessment was taken again in the last month of school. The scores were gathered and examined by the author and the results were compiled to see if students made significant growth in the geometry strand.

Definition of Terms

Adequate Yearly Progress: Adequate Yearly Progress was part of the No Child Left Behind Act which stated every school must improve by a specific percentage each year.

Direct Instruction: With Direct Instruction, students were usually sitting in desks or at tables receiving instructions from a person. The instructions and information were given to the entire class at the same time. Usually the expectations were the same for all students.

Elementary and Secondary Education Act: Legislation put into effect in 1965 which guaranteed money to schools to pay for professional development, curriculum, and other necessary educational needs.

No Child Left Behind: No Child Left Behind was part of the Elementary and Secondary Education Act passed by congress in the year 2000 mandating that all students pass a state standardized test to graduate.

Project-Based Instruction: In Project-Based Instruction, students used hands-on projects to learn curriculum instead of lecture.

Response to Intervention: Response to Intervention was a program used to identify students with learning disabilities.

Acronyms

AYP. Adequate Yearly Progress

CSL. Commission on Student Learning

EALR. Essential Academic Learning Requirements

ESEA. Elementary and Secondary Education Act

GLE. Grade Level Expectations

MAP. Measures of Academic Progress

NCLB. No Child Left Behind

NWEA. Northwest Evaluation Association

RTI. Response to Intervention

WASL. Washington Assessment of Student Learning

CHAPTER 2

Review of Selected Literature

Introduction

Literature selections reviewed for the study dealt primarily with the history of the ESEA, NCLB, and WASL, intervention strategies appropriate for middle school students struggling in mathematics, Response to Intervention, and the reliability and validity of the MAPs test. The review of literature in the given areas provided the content necessary for conducting the study in geometry interventions.

The major themes found in the areas of choice were: 1. History of the ESEA/NCLB, 2. History of the WASL, 3. Response to Intervention, 4. Intervention Strategies, and 5. Reliability and Validity of the MAPs Assessment.

History of the ESEA/NCLB

The literature on NCLB and ESEA focused primarily on the history of the ESEA and the current reauthorization of the ESEA in the form of NCLB. During the 1950s, a large number of public schools which had been racially segregated were being desegregated due to the Supreme Court decision of Brown vs. the Board of Education of Topeka Kansas, in 1953, and the continuing pressure of the civil rights movement. By the 1960s, the civil rights movement was in mid-swing

and African-Americans were finally obtaining equal rights regarding the right to free and public education. In 1964, President Johnson was elected in a landslide victory and felt the political conditions were finally right to push for social reform. The central program to President Johnson's agenda was the Elementary and Secondary Education Act (ESEA) of 1965. The purpose of the ESEA was to improve educational opportunities for children of poverty. The ESEA was not meant to improve the education system as a whole. The assistance was directed to local education agencies with the largest amounts of underprivileged students (AECT, 2001).

The most influential portion of the ESEA was Title I. Title I gave grants to schools that proposed to improve educational programs for the underprivileged students in very specific ways. In most cases, the money was used to improve the teaching of reading and other subjects where students needed remediation (AECT, 2001).

Another very important piece of ESEA was funding library resources. These funds were used on items such as text books, programmed instructional materials, periodicals, and audiovisual materials. The greatest gain for schools in the case of audiovisual materials was the large scale purchase of overhead projectors and 16mm films. These two purchases allowed teachers to teach students in a way underprivileged students had never before seen (AECT, 2001).

The ESEA has been reauthorized multiple times since inception. Two of the most recent reauthorizations were in 1994 with President Clinton's Goals 2000 reauthorization and in 2001 with President Bush's No Child Left Behind Act (NCLB). Goals 2000 required all states to develop comprehensive academic standards and link the standards with a curriculum-based assessment. Math and reading assessments were to be given at three different grade levels at the very least. The problem with Goals 2000 was the lack of accountability. No one was checking to see if states were complying with the law and by 2002, only twenty-one states were in full compliance with the 1994 accountability standards (AECT, 2001).

Upon inception, NCLB held states accountable. Assessments were required for all states and assessments had to meet the requirements of the federal government. The accountability of each school and district was kept in check with the Annual Yearly Progress (AYP) piece of the NCLB which stated all schools needed to make a specific percentage gain each year. If schools failed to meet AYP two years in a row, the school would have to create a school improvement plan and offer parents the option to transfer students to schools within the district that were meeting the AYP requirement. If schools continued not to meet AYP there was a chance funding to the school could be cut or the entire staff in the school could be removed and a new staff hired (AECT, 2001).

Washington Education Reform

The literature on Washington Education Reform focused primarily on the changes in Washington education since 1992. In 1992, the Washington legislature created the Commission on Student Learning (CSL). The responsibility of the commission was to develop a standards-based accountability system for the state of Washington. The legislature asked the CSL to develop content standards for all academic areas in public education, create appropriate assessments for those standards, and come up with an accountability system for the legislation to monitor each school's progress in meeting the standards. The CSL eventually came up with the Essential Academic Learning Requirements for the state of Washington and the Washington Assessment of Student Learning to measure those standards. The CSL, however, struggled with the development of a system of monitoring each school's progress in meeting the standards (Stecher, Barron, Chun, & Ross, 2000).

The WASL assessments were created as a performance-based examination using both multiple-choice and open-response questions in a semi-balanced proportion. One of the key features of Washington's reforms over the past fifteen years was the gradual implementation of the WASL. Over time, the EALRs, which were very general and broad, were expanded upon and the Grade Level Expectations (GLEs) were developed. The GLEs were a more precise document which gave examples of learning to help guide teachers along the way.

GLEs were narrowed thus helping teachers focus the instruction to a specific goal. A "W" was placed next to each GLE to help teachers focus on items considered most important (Stecher et al., 2000).

The first WASL was given on a voluntary basis in the 1996-97 school year in the fourth grade and the first WASL for the seventh grade was given on a voluntary basis in the 1997-98 school year. The overall plan was to have the tests in place and used by all schools in Washington State in grades 4, 7, and 10 by the year 2008 (Stecher et al., 2000).

Response to Intervention

The literature on RTI focused on students and how to identify students who had special needs as opposed to being academically low. All students were separated by an assessment or evaluation of some sort. Students below a set standard, as directed by the evaluators, were placed in the intervention classes, sometimes outside the regular classroom setting, and given focused instruction in the given subject area. Student's responsiveness was monitored throughout the class over a short period of time, generally eight weeks. If students were responsive and showed growth, the students were placed back in the regular classroom setting. The students who were non-responsive were kept in the intervention class and given more intense instruction. If students were still non-responsive after the second, more intense intervention course, there was the

chance for a third even more intense intervention or the students might be referred to counselors for special education evaluation (Kroeger & Kouche, 2006).

One of the major drawbacks to RTI was that students who were responsive to focused instruction were then placed back in the regular classroom setting. The students then continued to fail in the regular classroom setting suggesting the focused instruction was necessary to help the students be successful in the classroom (Fuchs & Fuchs, 2006).

Intervention Strategies

The literature on intervention strategies focused primarily on strategies which had been tested and proven to be effective strategies for helping students who were struggling in a given subject. There were four main strategies proven effective in helping struggling students. The strategies were using small groups or student pairs, using differentiated instruction, using multiple representations, and emphasizing real-life situations (Aburime, 2007).

Small groups or working in pairs had a tendency to be less intimidating for struggling students. Students were more likely to ask questions and admit confusion when working with another student or in a small group. It was also beneficial if a student could explain the problem to another student. Sometimes problems became easier to understand when coming from a peer instead of a teacher. Differentiated instruction was another excellent technique for helping the

struggling learner. Some students might not understand a symbolical explanation of a problem, but when a model was used the explanation made sense. The use of models, technology, symbolic representation, manipulatives and models, and real-life examples were just a few of the ways in which a teacher could differentiate instruction to accommodate struggling learners (Teaching Today, 2005).

Incorporating multiple representations went hand-in-hand with differentiated instruction. The more ways a problem could be demonstrated, the more students would understand the problem. The models, symbolic representations, and technology examples from the differentiated instruction were the same ideas used for multiple representations. Not all students learned the same and using multiple representations allowed all students to have a chance at understanding in the best way possible. Real life situations were another great way to help struggling learners. When a situation was related to a student's real, everyday life, the student was more likely to understand how the situation could be applied in daily life and the student paid closer attention to the solution (Woodward & Brown, 2006).

Reliability and Validity of the MAP Assessment

The literature found on reliability and validity of the MAP Assessment was solely found on the Northwest Evaluation Association website which was the company that created the MAP Assessment. The company defined reliability as

"a set of indices of a test's consistency. This consistency typically refers to performance of the test across time, across forms or across its items or parts" (Northwest Evaluation Association, 2004). Reliability tried to show how the test given to the same set of students twice yielded the same results from the first time the students took the test to the second time over a period of time as determined by the test administrator. The results were stated in terms of a Pearson Product Moment correlation coefficient (r). The administrators were looking for a minimum correlation of .80. A perfect correlation would be 1.00. The Northwest Evaluation Association found the test-retest correlation was greater than .80 for all grade levels except second grade where it dipped slightly below .80, twice showing the test to be reliable based on the Northwest Evaluation Association's research (Northwest Evaluation Association, 2004).

The company defined validity as "the better a test measures what it purports to measure, the greater its validity is said to be" (Northwest Evaluation Association, 2004). The company used the concurrent validity method to determine the validity of the MAP test. The concurrent validity method took an established test which used a scale other than the MAP RIT scale and compared the two tests using a Pearson Product Moment correlation to see how well the two tests compared. Again, the correlation the administrators were looking for was .80. The company stated at the end of the validity statement that correlations with

tests that included more performance test items would generally have lower correlations (Northwest Evaluation Association, 2004).

Summary

The literature surrounding education reform showed how education has progressed to present day. Many changes, whether national movements or state movements, have helped make high-stakes testing become a way of life in the education world. Tests have been used to affect graduation requirements for students and, because the tests are affecting graduation requirements, schools have been adding remediation classes to the school course load causing students to take double courses in certain subjects.

Due to the high-stakes testing, teachers have been in need of ways to reach struggling students and help struggling students pass the high-stakes tests. Teachers have had to dig deep to find new and unique ways to grab students' attention and help the students focus on learning strategies to pass the tests. Old strategies once thought dead have been revitalized and remarketed in new light to tempt teachers into buying and using the products in the classroom. The challenge has been to discover new ways to help teachers help students achieve so schools reach AYP, continue to receive funding from the federal government, and continue to make a difference in students' lives.

CHAPTER 3

Methodology and Treatment of Data

Introduction

In 2006, a geometry intervention course was instituted to help determine if a forty minute direct intervention would be more useful in improving achievement scores than an intervention within the general education classroom. Four classes were held, each containing twenty-five students, to test whether direct instruction in geometry would be effective. First, students who scored below standard on the geometry strand of the MAP Assessment were identified. The students took the MAP Assessment in October of 2006. The students were then placed in a quarter-long intervention course and given direct instruction and project-based instruction in the area of geometry. The students then were given the MAP Assessment again in April of 2007 and the scores were compared to see how effective the intervention had been.

Methodology

To measure the effectiveness of the intervention, students' MAP Assessment scores were analyzed using a quantitative approach. A quantitative approach allowed the researcher to see if there was a significant growth in scores.

The t-test was used to determine if there was significant growth in participants' MAP Assessment scores.

Participants

The twenty-five students who participated in the study came from a large Washington state school district in Eastern Washington. Of those students, five were from middle-class Caucasian families, two were from lower socio-economic Caucasian families, eight were from middle-class Hispanic families, eight were from lower socio-economic Hispanic families, one was from a middle-class African American family, and one was from a lower socio-economic Russian family. Five of the students came from single parent families. Twelve of the students came from two parent families where both parents worked and, in some cases, one worked days and the other worked nights and both worked long hours. The rest of the students came from two parent families where only one parent worked.

All of the students used in the study had a history of struggling with mathematics in past educational experiences. All of the students were in mainstream mathematics, showed an aversion to mathematics for one reason or another, and disliked mathematics class.

Instruments

The MAP Assessment was given to students in October 2006 prior to the intervention class. The NWEA recorded the data and placed the data in an organized report for easy viewing. Scores were viewable on the NWEA website and a copy of all scores was sent to the school's administration for quick access viewing.

The intervention course was administered each quarter throughout the school year for twenty-five students each quarter and then the MAP Assessment was taken again in April 2007. Once again the data was recorded and placed in an organized report for viewing. At this point the researcher gathered data for each student and organized it in a table.

Design

The pre-test/post-test strategy was used to collect the quantitative data for the study. The pre-test gave a great picture of where the students were performing before the intervention. The post-test gave the second data point allowing the researcher to determine if there was a significant increase in the test scores.

Procedure

The researcher and other mathematics teachers within the school of choice discussed placement of the students. Using MAP and WASL scores, students

were placed into the class beginning with the students that had the lowest geometry scores. A prioritized list was then created of students who were not placed in first quarter's intervention class and students who had the lowest scores were given priority for second quarter. This process was repeated for third and fourth quarter as well. The class was a quarter long and used direct and project-based instruction to help students better understand geometry.

In October 2006 all students in the school were given the MAP Assessment. One hundred students were placed in the intervention class over the four quarters and were given direct and project-based instruction in the area of geometry. In April 2007 all students were given the MAP Assessment again and the results were compiled to determine if the students made significant gains in the geometry strand of the MAP Assessment.

Treatment of the Data

Each student's MAP Assessment score was placed into the t-test portion of the STATPAK (2007) computer program which calculated the sample's t-score. The t-score was then checked against the Distribution Table in the book *Educational Research: Competencies for Analysis and Application* to determine if there was significance in MAP Assessment score growth (Gay & Airasian, 2003).

Summary

To answer the question of whether a geometry intervention would make a significant difference in students' MAP Assessment geometry strand scores, a quantitative study was put into action. All students were given the MAP Assessment in the fall and again in the spring. A group of one hundred students with the lowest MAP and WASL scores were placed in a geometry intervention class, twenty-five students per quarter, and were given direct and project-based instruction to help build geometry skills in between the two tests. The data was collected, organized, analyzed, and reported answering the project hypothesis.

CHAPTER 4

Analysis of the Data

Introduction

A pre-test/post-test technique was used to gather the data used in this study to determine if the intervention course helped students show significant growth. After the data was collected, it was organized and analyzed using the STATPAK (2007) computer program. Next, the researcher used the information to determine if the hypothesis was accepted or rejected.

Description of the Environment

The chosen middle school housed one-thousand three-hundred middle school students in a district which had nearly two-thousand nine-hundred middle school students. The chosen middle school housed over 400 seventh grade students which was two-fifths of the seventh graders in the district.

One-hundred 7^{th} grade students were placed in the geometry intervention course used in the study. Of those one-hundred students, 25 of them were used in the study to determine if the intervention course helped students improve scores in the geometry intervention course.

The MAP Assessments were given in complete silence in a computer lab in both the fall and the spring. The students had as much time as necessary to

take the assessment in order to follow the guidelines of the WASL as closely as possible. When the students took the test in the spring, the WASL Assessment had just finished and the students seemed exhausted from all the testing. A large number of students finished the test quickly with little effort.

Hypothesis

The hypothesis for the study was that students who received geometry intervention would show significant growth on the geometry strand as measured by the Measures of Academic Progress Assessment.

Null Hypothesis

The null hypothesis for the study was that students who received geometry intervention would not show more significant growth on the geometry strand as measured by the Measures of Academic Progress Assessment.

Results of the Study

After the post test, the data was collected and organized in a table to help the researcher determine if the geometry intervention course was effective and if students made significant growth on the geometry strand of the MAP Assessment. Of the twenty-five students used in the study, thirteen of the students scored higher in the post-test than in the pre-test. Seven of the twenty-five students

scored the same on both tests. Five of the twenty-five students scored lower on the post-test than on the pre-test.

Table 1: Student MAP Scores

Student	Fall 2006	Spring 2007
1	185	215
2	195	205
3	195	205
4	205	205
5	215	225
6	225	235
7	225	225
8	215	215
9	225	225
10	225	215
11	225	225
12	215	205
13	235	235
14	225	205
15	235	245
16	225	235
17	195	215
18	215	245
19	225	235
20	195	195
21	235	215
22	195	215
23	195	215
24	215	205
25	215	235

When the data was placed in the STATPAK (2007) computer program, the program calculated the mean, standard deviation, degrees of freedom, and the t-score. Upon entering the scores in the STATPAK (2007), the researcher found the t-score to be 2.06. The number of items was twenty-five. The degrees of freedom were twenty-four. With this information, the researcher used Table A.4: Distribution of t and concluded 2.06 < 2.064 at the .05 level (Gay & Airasian, 2003). Table 2 shows the t-score and the probability that the test scores show the students made significant growth on MAP Assessment scores.

Table 2: Probability

Test	N	Mean	Standard Deviation
Pre	25	214.20	14.98
Post	25	219.80	13.88
df = 24	t = 2.06		p < .05

Findings

After the data was analyzed, the researcher found the geometry intervention course made significant difference in the students' test scores. With a t-score of 2.06, the probability of significance was less than the five-hundredths level showing significant growth on the geometry strand of the MAP Assessment. According to the given probability, the students' scores grew significantly showing the intervention course was helpful to the students. Therefore, the hypothesis was accepted and the null hypothesis was rejected.

Discussion

The researcher was confident that the intervention course helped students' scores improve on the MAP Assessment because the course followed practices recommended through research studies. Using the STATPAK (2007) computer software to calculate the t-score based on the students' MAP Assessment score, the researcher was able to find the probability of the effectiveness of the intervention course on the students' assessment scores.

Summary

After the students took the pre-test and post-test of the MAP Assessment, the results were organized in a table and analyzed using the STATPAK (2007) computer program. The probability of the effectiveness of the intervention course was below the five-hundredths level. With a probability so low, the probability showed the intervention course, which used direct instruction and project-based instruction, was effective and the course made a positive impact on students' scores.

CHAPTER 5

Summary, Conclusions and Recommendations

Introduction

Math has become a key area of concern for all schools across the state of Washington in the last ten years. The WASL math test scores, particularly in the area of geometry, have been dropping and school districts have continued to look for ways to improve test scores. With the incorporation of targeted intervention courses, schools have been attempting to improve test scores.

Summary

The purpose of the study was to determine if an intervention course would be effective in raising students' geometry strand MAP Assessment scores. The study was performed on 25 seventh grade students. The researcher predicted the intervention course would help students show significant growth on the geometry strand of the MAP Assessment.

All students received twenty days of direct geometry instruction and twenty-five days of project-based geometry instruction. The hands-on activities allowed students to apply concepts learned from the direct instruction portion of the class to real life situations.

The researcher used a t-test for the design method. The researcher chose twenty-five students from the intervention class at random and used the students' pre-test and post-test scores to determine significance of growth on the geometry strand of the MAP Assessment. The probability of significance was calculated to be below the five-hundredths level showing significance in growth of assessment scores.

Conclusions

Upon analyzing the data, the researcher calculated the probability of significance using the t-test. The scores were calculated to be below the five-hundredth level showing significance in growth. Using a combination of direct instruction and project-based instruction, students' scores on the geometry strand of the MAP Assessment increased a significant amount.

Recommendations

Based on the conclusions from the study, the researcher recommends a correlation test be used to determine if the WASL Assessment and the MAP Assessment measured similar items. If a correlation were found, the researcher suggests the continued use of the MAP assessment. If a correlation cannot be confirmed, then the researcher suggests the MAP Assessment be replaced with another measure that would better predict how students would do on the WASL.

The researcher further recommends the geometry intervention course be reinstated in the chosen middle school. The intervention course has proven to be effective and needs to be continued to help students better understand the concepts of geometry so students' assessment scores will continue to rise. The ultimate goal behind the entire study was to find ways to improve students' assessment scores, and the intervention class has proven to do so.

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