The Impact of Setting Goals and its Effects on Student Achievement on the MAP Math Test.

A Special Project

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FACULTY APPROVAL

The Impact of Setting Goals and its Effects on Student Achievement on the MAP Math Test.

Approved for the Faculty

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ABSTRACT

The purpose of this study was to find out if setting goals had an impact on student scores and how goals needed to be set. Students took a MAP math test in the fall. Based on their scores at that time, goals were set with the students and the teacher during an individual conference. The teacher met with the students periodically between the first and second test to discuss how they were progressing and again after taking the second test in the winter, so students knew if they were making growth. The researcher found that students' scores did improve on the second test and goal setting was a good motivational tool for students.

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CHAPTER 1

Introduction

Background for the Project

According to some researchers, setting goals had a positive effect on academic achievement. There were however, some things that needed to be controlled to make sure it was successful. For the goal setting to be effective it was important to have individual conferences, besides the motivation of setting goals, there should have been some kind of extrinsic motivation for students also, and the goal should have been a learning goal rather than a performance goal.

Statement of the Problem

The researcher's school district had been taking Measurement of Academic Progress (MAP) Tests for math and reading. Administration suggested teachers set goals with their students to determine if their scores improved. The administration hoped that the program gave the students something to work towards, and hopefully the students would try harder when they took the test.

Purpose of the Project

The purpose of this quantitative study was to find out if setting goals had an impact on student scores and how goals needed to be set. The researcher also wanted to find out what needed to be done along with the goal setting process. Such as, was it important to have individual conferences, did the teachers need to

increase students' motivation or attitudes, and was it better to set performance goals or learning goals?

Delimitations

This study took place during the 2010-2011 school year at Chief Kamiakin Elementary school in a first grade classroom. The study included 18 first grade students ranging from six to eight years of age in the 2010-2011 school year. The curriculum that was used was Investigations II. Investigations II did not cover all first grade standards, therefore supplemental work was used in order to ensure that students were taught all the necessary materials. The students had never taken the MAP Math test so the students did not know the process before this time. The students did not set goals for their MAP Math test at the beginning of the year. Before the students took the same test later in the year, the students set goals for their MAP Math test. The students met with the teacher individually and looked at the strands where they were low and the teacher scribed what the students wanted to practice in order to increase their score next time.

Assumptions

This study was conducted to determine if students' scores would improve if students set individual learning and performance goals for the MAP Math tests. Along with setting goals the students also needed to have an individual conference with the teacher to talk about what the students needed to work on and what they needed to do to reach their goal. The students also needed to have some sort a

motivation besides the motivation of setting goals, something to look forward to when they met their goal or showed growth towards their goals.

Research Question

The researcher and other staff members have recently been encouraged by the administration in the school to set goals with their students for assessments. So the researcher wanted to know the following: Would first grade students' MAP Math scores show significant growth if goals were set with individual students based on first grade benchmark, or what the student scored on a similar test previously?

Significance of the Project

The researcher's goal was to confirm, that setting goals with individual students increased student achievement on the MAP Math. If students' test scores improved, it confirmed that setting goals was an effective motivational tool. If students' test scores did not show growth, it confirmed that setting goals did not have a significant effect on the improvement of MAP Math scores for students.

Procedure

Students took a MAP Math test in the fall. Based on the students' scores at that time, goals were set with the students and the teacher during an individual conference. There were performance goals set, as well as learning goals set, based on the students' previous MAP score. The students and the teacher looked at the content that needed to improve in order to reach the projected goal. Students were

informed if they made growth towards their target score and the students received an extrinsic reward (for example, free time in the classroom, free recess, stickers, etc.). The teacher talked with the students periodically between the first and second test, as a whole group and individually, about the goals they had set together and what the students needed to do to get there. After the second MAP Math test was taken the teacher met with the students another time to let the students know their score and if the students made growth.

Definitions

self efficacy. Judgments of how well one performed actions in specific situations that may have contain ambiguous, unpredictable, and stressful features.

self-regulated learning. Students took charge of their own learning

Acronyms

ACT. The Achievement Competence Training

ELL. English Language Learner

MAP. Measurement of Academic Progress

NWEA. Northwest Evaluation Association

STAI. State-Trait Anxiety Inventory

TERC. Technical Education Research Centers

WWC. What Works Clearinghouse

CHAPTER 2

Review of Selected Literature

Introduction

This paper explored the idea of individuals setting their own goals, and the effect it had on academic achievement. The research question being considered was: 'Will first grade students' MAP Math test scores improve if goals were set with individual students based on first grade benchmark, or what the student scored on a similar test previously?' The articles that were reviewed vary in the subject that the students were studying, as well as the ethnicity and age of the participants. The studies that have been done suggested it did have an impact on student's academic achievement. If a person was able to take ownership for the work they did, the possibility of showing growth was much higher. When an individual was able to set an attainable goal it was more meaningful for them. People that put forth much more effort to achieve the goal they have set for themselves were able to reach it. The following articles explain the research that has been conducted about setting goals and the impact it has had on academics.

Measurement of Academic Progress

The Northwest Evaluation Association (NWEA) had a test called Measures of Academic Progress® (MAP®) which was a computer based test for reading, math, and science. "MAP yields rich data that can be used to individualize instruction and analyze programs. Based on over 30 years of research, MAP is a

key tool for measuring growth and predicting proficiency over time" (NWEA, 2010). The MAP was created by educators as a way to assess students. The

> assessments provide detailed, actionable data about where each child is on their unique learning path. Because student engagement is essential to any testing experience, NWEA works with educators to create test items that interest children and help to capture detail about what they know and what they're ready to learn. It is information teachers can use in the classroom to help every child, every day (NWEA, 2010).

Investigations II

"The Investigations curriculum represents the culmination of over 20 years of research and development aimed at improving the teaching and learning of elementary mathematics" (TERC, 2007).

> The curriculum encourages students to use prior knowledge to develop an understanding of fundamental mathematical ideas. Investigations in Number, Data, and Space® is problem-centered and de-emphasizes algorithms. Rather, the curriculum focuses on activities that encourage students to develop their own strategies for solving problems and engage in discussion about their reasoning and ideas (WWC, 2009).

There were six major goals that guided the development of Investigations in Number, Data, and Space (TERC, 2007). The curriculum was designed to:

support students to make sense of mathematics and learn that they can be mathematical thinkers, focus on computational fluency with whole numbers as a major goal of the elementary grades, provide substantive work in important areas of mathematics — rational numbers, geometry, measurement, data, and early algebra — and connections among them, emphasize reasoning about mathematical ideas, communicate mathematics content and pedagogy to teachers, and engage the range of learners in understanding mathematics (TERC, 2007).

There were also three guiding principles that were the criterion they looked at as they approached students and teachers to be accountable for their own learning:

1. Students have mathematical ideas. The curriculum must support all students in developing and expanding those ideas.
2. Teachers are engaged in ongoing learning about mathematics content and about how students learn mathematics. The curriculum must support teachers in this learning.
3. Teachers collaborate with the students and curriculum materials to create the curriculum as enacted in the classroom. The curriculum must support teachers in implementing the curriculum in a way that accommodates the needs of their particular students (TERC, 2007).

Investigations II was based on: these six goals and guiding principles about teaching and learning math, what they have learned over the last 18 years from developing and supporting the implementation of the curriculum, collaboration and input from classroom teachers from a variety of different areas that have tried the curriculum, and the research they have done about how children learned mathematics (TERC, 2007). Investigations II (TERC, 2007) took into consideration the time students needed to "develop a strong conceptual foundation and skills based on that foundation" (TERC, 2007). Each curriculum unit had an in depth look at each content area with two to five in a half weeks for students to practice and increase their skills in a variety of areas. The units gave examples of what to do for interventions for struggling students and extensions for high achieving students. It also gave examples of student work from all achievement levels. "The investigations are carefully designed to invite all students into mathematics - girls and boys; members of diverse cultural, ethnic, and language groups; and students with wide variety of strengths, needs and interests" (TERC, 2007).

Setting Performance Goals

Some researchers have found that setting goals was not successful if only a number was chosen for the student to meet. There were other aspects that needed to be taken into consideration, such as, what the student needed to work on to reach their goal. People who were able to set performance scores for the future and set

goals, achieved a higher level of performance than people who did not set performance goals (Gaa, 1970). "Goals that incorporate specific performance standards lead to higher performance than no explicit or general goals, such as, 'Do your best'" (Schunk, 1984).

Fuchs, Fuchs and Stanley (1985) conducted a study "to explore how student achievement relates to ambitiousness of goal setting and to goal mastery" (p. 63). They concluded that this would help special education teachers create a strategy to identify the appropriate ambitious and effective goals for the students. Fuchs, Fuchs, and Stanley navigated how mastering a goal related to student achievement. "The subjects of this study were 58 (46 male, 12 female) special education students in the New York City Public Schools . . . of these 58 pupils, 24 were classified as emotionally handicapped, 20 as learning disabled, and 14 as educable mentally retarded" (p. 64). Each teacher set goals and objectives for each subject and monitored the progress they were making. This was referred to as the goal-level material. They met with a trainer once a week to discuss procedures, graphs, and formed intervention groups. Goal ambitiousness was determined by comparing pupils' baseline performance to the level of anticipated performance stated in the goal. After 18 weeks the researchers determined if each student mastered their goal or not. There were 31 students that met their goal and 27 that did not. They

concluded the following:

> Findings indicated that the ambitiousness with which goals are established is associated positively with student achievement. On two achievement measures, with pretreatment achievement levels statistically controlled, students for whom teachers set highly and moderately ambitious goals achieved better than students whose objectives reflected relatively unambitious goals (p. 68).

Kitsantas, Steen and Huie (2009) conducted a similar experiment to verify if their findings would match what Fuchs' later studies concluded. They found that the "study complimented previous findings revealing the positive impact of self-regulation and goal orientation on elementary students' achievement. In particular, research shows mastery goal orientations are related to more adaptive patterns of learning than are performance goal orientations" (p. 77). Research that has been done in the past "indicates that when teachers focus on improvement, effort, and learning for intrinsic reasons, students focus on mastery oriented goals" (pp.77-78). However, when the teachers looked at the "grades, ability differences, and outperforming others, students are likely to focus on performance goals" (p. 78). However, Paris and Winograd (2003) found that "setting appropriate goals that are attainable yet challenging are most effective when chosen by the individual and when they embody a mastery orientation rather than a performance goal" (p. 10).

Adami-Bunyard, Gummow, and Milazzo-Licklider (1998) noted that kindergarten and third grade students showed an increase in academic achievement and increased their attitude towards mathematics as a result of setting goals based on mathematical concepts and skills. After they looked at the math program, district, and state objectives the teacher was able to set goals for students.

> Teachers outlined lessons that would teach and support the skills that were selected for goal setting . . . they also "specifically named the skill or skills that were to be taught; defined, described, and/or modeled the skill for students; provided practice activities for students; and allowed for reflection on the skill (pp. 32-33).

Teachers were to observe students at work. The teachers looked for students that were off-task and positive behavior. Tutoring was provided twice a week for the subjects by older students and each session was 20 minutes. There were minor adjustments during the study to help with some variables. All students had a baseline test and a post test to determine if there was any growth at the end of the study. Both grade levels showed growth in mathematics. Students also showed growth in their positive behaviors and a decline in the off task behaviors.

Schunk (1984) conducted a study with similar treatment groups, however with children that had a learning disability. Schunk refered to Bandura's self – efficacy theory and how it was thought to "influence choice of activities, effort expenditure, perseverance, and task accomplishments" (p. 3). The purpose of this

"study was to explore the effects of proximal goals on learning disabled children's self-efficacy and skillful performance during a subtraction training program" (p. 5). Schunk's study tested the notion that participation in goal setting improved achievement results. The hypothesis was that the children that would display the highest self-efficacy and skills would be the children that set their own goals.

The participants of this study consisted of 30 sixth grade students, primarily middle class, from two middle schools. The ages of the students ranged from 12 years two months to 14 years seven months. There were 15 males and 15 females. "All children previously had been identified by the school district as learning disabled in mathematics according to state guidelines and were receiving special education services" (p. 7).

Teachers were asked to choose students from the population that they felt would not be able to solve 25% of the subtraction problems correctly and these students were given the pretest individually. Students were then asked to circle subtraction problems they thought they would be able to complete just by looking at them. The students were judging if they could do a problem of that difficulty not if they could do a certain problem. The students were given the test with 25 subtraction problems. Twelve of the problems were like the ones they had already seen and the rest were more difficult. Students were then given 45-min trainings over five days, where they worked on a packet of subtraction problems starting with the least difficult and ending with the most difficult. The students that were in

the self-set goal condition were given suggestions about what type of goal to set (e.g. the number of pages they wanted to complete) but the students set the goal for what they thought was attainable for them. For the assigned-goals condition the goals were given, such as the page number they wanted the student to get to that day. The no-goals condition did not make goals at all through the process. After the test, what was completed was written down for all groups. However, the proctor of the test compared the results with the goals for the two groups that set goals. After the last training day the students took the post-test.

Schunk (1984) found that the:

> participation in goal-setting enhanced learning disabled children's achievement outcomes. The differences between the two proximal-goal conditions cannot be due to training performance variations because these groups made comparable progress, nor to variations in goal difficulty, which has confounded much research on participation (p. 15).

Although, Schunk found that there was not a significant difference between the scores of students that set their own goals and the students that had goals set for them in his study, Schunk still concluded that when student set their own goals it was much more beneficial.

Paris and Winograd (2003) said that "when goals are set by others, behavior is compliant or obedient rather than self-directed. However, setting goals is difficult for children and adults are often unaware of the problems" (p. 10).

Children would often set goals that were not specific such as, “I will work harder” or “I will read more books” but these performance goals do not “emphasize conceptual understanding and deep learning” (p. 10). “When goal setting activities promote performance goals instead of mastery orientations, self-regulated learning is actually undermined” (p. 10). Children also seemed to choose a goal that was unattainable or too far away from where they were and it may be unmanageable to achieve it. This was why it was important for elementary students to be guided in the goal setting process so the goal was realistic and attainable.

Motivation and Goal Setting

“The challenge we face is how to make the learning in schools more authentic, more useful, and more contextualized for students so that they are equipped to solve problems that they confront in and beyond school” (Paris and Winograd, 2003). When the researchers were able to do this, students would hopefully be more motivated to learn and do better in class and on assessments. The following researchers have found that it was not only important to set goals, but also to have some sort of motivation that was connected to it.

Andres and Wiemer (1995) conducted research to determine if students “will increase their academic motivation as measured by systematic class observations, anecdotal records, charts, and surveys” (p. 25). The following were used as solution components: “portfolio assessment for self-evaluation and ownership of academic responsibilities, us of an organizational tool to record

assignments, development of goal setting and evaluating techniques, and implementation of cooperative teaching strategies within the classroom" (p. 25). Students set a goal at the beginning of the study and every week they re-adjusted and changed their goals as necessary. This would be self-regulated learning that Paris and Winograd (2003) said "can help describe the ways that people approach problems, apply strategies, monitor their performance, and interpret the outcomes of their efforts" (pp.4-5). The researchers had students work in cooperative groups that were developed by the teacher. The researchers found that there was a positive effect on students turning in late assignments and the percentage of students generating late work. "Students perceived the greatest improvement in the areas of paying attention in class, behavior in class, and turning in work on time" (p. 40).

Kennedy (1968) conducted a research study "to compare the motivational effects of cognitive incentives in the form of different goal-setting techniques and to investigate the combined effects of cognitive incentives with social interaction in individual pupil-teacher conferences" (p. IX). The following were questions Kennedy (1968) wanted answered in the research:

1. What are the effects of individual conferences which combine social and cognitive motivation and acquisition and retention of arithmetic concepts?
2. What are the effects of specific as compared to general goals on the acquisition and retention of arithmetic concepts?

3. What are the effects of external teacher-set goals as compared to internal pupil-set goals on acquisition and retention of arithmetic concepts?
4. What are the effects of individual conferences which combine social and cognitive motivation, and the goal comparisons, on attitude change scores?
5. What is the relationship of level of achievement to acquisition, retention, and attitude change scores in arithmetic? (p. 2).

The participants consisted of forty-eight students (selected from 142 students) in the third and fourth grade at the Stephen Bull School in Racine, Wisconsin (the majority of which were African-American). The school was located in the middle of an industrial city and has many low socioeconomic families.

At the beginning of the year third and fourth grade students took a math achievement test. The students were then put into six levels based on their achievement. Three groups were used for this experiment, a group of low, a group of medium, and a group of high math achievers. Students received individual progress folders that had a checklist of all the "major concepts" from their grade level math curriculum (p. 7).

The concepts were broken down into sub concepts stated in logical sequence as pupil behaviors indicative of skill mastery in each area. Beside the statement of each sub concept was a square to be colored in by the student following the completion of instruction and testing of that skill (p. 7).

A student would color in the square next to the sub concept they tested on only if they received a perfect score, if the student did not they would have the chance to retake the test. "From each of the three classes, 16 students were randomly selected and divided among the four treatment conditions: Do Best, Self-Set, Teacher-Set, and Control (p. 8). Over six weeks the students met individually with a teacher (not the teacher that was teaching those students the lesson though, these teachers did not know what group each student was put into) and discuss the students' progress. The teacher and the students also set a goal for the following week. The students in the Do Best group were told to "do their best" every week. The students that were in the group for self-set goals were asked to "state how many squares they would try to fill in during the week. In the Teacher-Set goal group, each student was given a specific goal by the teacher and was told to try to reach it during the week" (p. 8).

The students in the control group did not have an individual conferences, the students just kept track of their progress in their folders each week. Everyone was given the same feedback such as 'you're doing fine'. The only difference during the student conferences was the goals that were set.

The researchers collected data on the number of squares that were colored in before the experiment as well as throughout the experiment. After the six weeks, students took a summative test based on the concepts that were in their folders.

The students were also given an Adaptive Activity Preference Test to see if their attitude towards math had changed at all.

Kennedy (1968) hypothesized that setting goals in arithmetic would have an effect on student achievement did prove to be true in the experiment. The following were the results of Kennedy's study:

> In every treatment condition, the Medium achievement group had the highest acquisition scores. Within the high group, the students who were allowed to set their own weekly goals scored highest on acquisition. In the low group, the best performance was from the students who had their weekly goals set for them by the teacher. The overall treatment means indicate superior performance by the specific (Self-Set and Teacher-Set) goal groups, followed by the Do Best and the Control groups respectively . . . In actual fact, at every achievement level, the goals set by the students themselves were higher than those set by the teacher (p. 10).

According to Schunk, Locke once said "performance level is high when the level at which the goals are set is high" (p. 10). Kennedy concluded that Locke's theory was correct.

Gaa (1970) also wanted to see if setting specific goals along with conferencing with the teacher about them would increase motivation (p. 1). "In developing the goal-setting procedure used in the study, three other important

questions were considered: student-versus teacher-set goals, goal specificity, and goal difficulty" (p. 2).

The participants of this study consisted of fifty-four third and fourth grade elementary students, with an equal number of boys and girls (p. 4). Students were "grouped by ability and competence for the various classes so that students may have different teachers and classmates throughout the day" (p. 4). Using an assignment to randomly assign students to the three treatment groups, students were placed with a teacher based on their reading-skill. Each teacher was randomly given students from each of the three treatment groups but was not told who was selected for each group.

Students were first given two attitude measurements. One was on their attitude towards reading in general and their attitude towards the particular reading skill being examined. The other test was used to measure their skill level in reading. The students that were in goal-setting treatment group met once a week for four weeks with the experimenter and during their conference time they would be given feedback on their goal and achievement from the previous week. They would then set performance goals for the following week. Students were given a list of possible goals to consider, based on what the teacher thought was suitable to the reading skill students should have been working on. The students that were in the conference group did not set their own goals. They talked to the experimenter about class goals but not individual goals to work towards. The control group had

the same instruction as the other two groups but they did not have conferences to discuss any goals.

Gaa (1970) found that setting goals did not have an effect on attitude towards reading or the skill that was taught. In Unit B the students "showed significantly higher achievement on the criterion-references achievement tests" (p. 7). Gaa's "study demonstrated that the use of an individual goal-setting conference can improve the classroom achievement of students and investigated the effects of the procedure on goal-setting behavior" (p. 9). Gaa found that the study did not give all the answers, and the researchers may have needed to consider a few other aspects and done another study to clarify the results.

Behaviors/Attitudes and Setting Goals

Bandura and Locke have done many different studies about setting goals. "Bandura's theory of self-efficacy states that different treatments change behavior in part by creating and strengthening a sense of self-efficacy" (Schunk, 1984). The self-efficacy theory was thought to be related to coping behaviors in fearful situations but with further research they have found that it also includes children's cognitive skill acquisition (p. 4). The following researchers also conducted research about the behavior or attitudes of students and how it would change for the better if they were involved in goal setting.

Hill (1973) hypothesized that:

> (a) a synthesis of these research data and clinical reports could provide a profile of the behaviors and attitudes that characterize successful achievers. He further hypothesized that (b) an effective instructional program teaching children to use these achievement behaviors and to model achievement dispositions could be constructed on the basis of such data (p. 6).

The Achievement Competence Training (ACT) was the instructional material that was being compared to Curriculum X to test if it affected students. The subjects were three fifth grade classes in each of the 33 schools in the Philadelphia metropolitan area. In each school, one class received the ACT, one class received Curriculum X and the third class, the control group, did not receive any special program. There were six steps to Hill's strategy: study self, get goal ideas, set a goal, plan, strive, and evaluate. Hill, along with other independent scholars that reviewed the findings thought the research was inconclusive (p. 28).

Seegers, van Putten, and de Brabander (2002) conducted research to "identify personality and situational variables that mediate students' attitude when confronted with a mathematics task" (p. 365). They also "investigated how differences in task demands influenced students' attitude" (p. 365). The subjects for the study were 345 sixth grade students ranging from 11 to 12 years of age. In the outcome orienting condition, "students were told that the results on the test would add to their mark on mathematic" (p. 365). In the task orienting condition,

"students were told that the results on the test would not be used to give individual grades" (p. 365). The "independent variables were goal orientation, task demands, and perceived task outcome, with task-specific variables as the dependent variable" (p. 365). The results showed that "in general, performance-oriented learning goals emphasized the negative impact of failure experiences, whereas task-oriented learning goals had a strengthening effect on how success experiences influence students' attitude" (p. 366).

Self-Brown, S. R. and Mathews II, Samuel (2003) "assessed how classroom structure influenced student achievement goal orientation for mathematics" (p. 106). The participants consisted of two fifth-grade classes and one fourth-grade class at a local elementary school. The classrooms were randomly chosen to each of the evaluators. "Twenty-five 5^{th} grade students were assigned to the token economy condition, 18 fourth-grade students to the contingency contract condition, and 28 fifth-grade students to the control condition" (p. 108). The students in the token economy condition were given a paper to set individual weekly goals and long term goals for mathematics. Students were given play money to exchange for prizes when they met with the researcher. The students in the contingency contract condition met with the researcher to set and discuss mathematics goals. They received a goals chart and were given a gold star when they met their goal. The control group was given goals chart to set their goals, but nothing else. The students from each of the groups met with a researcher to complete a mathematics

goals chart. The researcher's hypothesis was proven to be true, "the type of classroom structure would influence student goal orientation" (p. 109-110).

Summary

After reviewing these studies there appeared to be a theme between setting goals and academic achievement. However, it seemed to be a topic that needed to be researched more to get clarity on the effects. Kitsantas, Steen and Huie (2009) recommended teachers to "make a concerted effort to lessen the competition of individuals in the classroom and provide more opportunities for students to approach their learning based on their individual skills" (p. 78). According to Kennedy (1968) the goals needed to be set by the individual and revised periodically. Whereas, Schunk (1984) said the goals can be set by the individual, the parent, or teacher of the individual. However, all of the researchers were setting goals with the purpose of improving academics based on the students' level of performance at the time. There was some evidence in all the studies that suggested that setting goals can impact academic achievement. To what degree, was what all the researchers were not clear on yet, especially Gaa. They all talked about the attitude the students might have about the subject area they were studying, before and after the experiment, and how this might affect the students' motivation. The treatment groups they chose were all very similar, with a group that got to set a goal during a conference, a group that got a goal set for them during a conference, and a group that got told to do their best. All of the studies

agreed that the goal needed to be meaningful and attainable for the student. They also agreed that the goal setting process was a type of motivation for student learning that could improve achievement in academics.

CHAPTER 3

Methodology and Treatment of Data

Introductions

The purpose of this quantitative study was to find out if setting goals could have an impact on student scores and how goals needed to be set. The researcher also wanted to find out what needed to be done along with the goal setting process. Such as, was it important to have individual conferences, did you need to increase students' motivation or attitudes, and was it better to set performance goals or learning goals?

Methodology

The researcher conducted a quanitative research study at Chief Kamiakin Elementary School in Sunnyside, Washington. Students were taught from the Investigations II curriculum throughout the time of the study and met with the teacher periodically between the two tests and discussed the goals that were set. Data was collected from the students' MAP Math test scores in the 2010- 2011 school year. The baseline data that was collected in fall 2010 was analyzed and compared to the data that was collected in winter 2011 from the same test.

Participants

The participants for this study consisted of 18 first grade students from Chief Kamiakin Elementary school in Sunnyside, Washington. There were nine males and nine females ranging from six to eight years of age. There were 17 of

the students were Hispanic and one student was Caucasian. The majority of the students came from what was considered low-income families based on qualifications for free and reduced lunches.

Instruments

The first grade students were given the MAP Math assessment two times during the 2010-2011 school year (fall and winter) to measure mathematic performance. This test was administered to them by the computer lab teacher during the students' specialist time, which was 50 minutes long. This was an assessment that was used throughout the district to measure academic progress and help guide instruction. Between the two tests students were being taught from the Investigations II curriculum. The teacher did use supplemental material when necessary to meet state standards.

Design

The researcher studied all first grade students in one classroom that were in the class from the beginning of the year till the second assessment. All of the students got at least 70 minutes of math instruction a day. Goals were not set for the first test because there was no data to go by, being as the first graders had not taken the test before. After the initial test, all students set goals depending on where they were individually. The teacher met with the students periodically throughout the time between the two tests to talk about the students' goal and what they needed to be doing in order to achieve the goal they had set previously.

Procedure

This study was conducted at Chief Kamiakin Elementary in Sunnyside, Washington in the 2010-2011 school year. The study was used in a classroom of first grade students ranging from six to eight years old. The participants consisted of nine males and nine females, all of which were considered to come from low income families. Of the 18 students that participated five were considered to be English Language Learners (ELL). The teacher was the individual instructing the students with Investigations II math curriculum and the person who set the goals with the students.

Based on the students' scores on the September 2010 MAP Math test, goals were set with each individual student with guidance from the teacher during an individual conference. Since the students that were involved were in first grade, the teacher assisted in the goal setting process to help the students figure out which areas needed to improve and some ideas to help them improve their score. Each student had a sheet of paper with their name on it and each sub category that was addressed on the test (Appendix). When taking the MAP Math test every student started out on the middle sub category in each area and depending on how they did on those questions were either moved up or down. If a student did well on the first questions they were taken to the next questions that were more difficult, and did not have to answer the easier ones. Scores in each sub category were highlighted different colors so the students could see which areas they did well in and which

areas needed growth. If the score was between 20-40% the score was highlighted pink, if the score was 60% the score was highlighted yellow, and if the score was between 80-100% the score was highlighted green. All students were told that if there were any pink scores that was the area they needed to work on first, if there were not any pink scores then any scores that were yellow were what they needed to work on, and so forth.

There were performance goals set, as well as learning goals, based on the students' MAP Math scores in September 2010. These goals were placed next to the category they scored lowest in on their goal sheet. The students and the teacher looked at the content that needed to improve in order to reach the projected goal. Students were informed if they made growth towards their target score and the students received an extrinsic reward if they did (free recess, stickers, etc.). The teacher talked with the students about the goals they had set and what the student needed to do to get there. There were whole group conversations and individual conferences periodically between the first and second test. After the second MAP Math test was taken the teacher met with the students another time to let them know their score, if the student made growth and the students were given a reward when necessary.

Treatment of Data

The data were taken from the students' MAP Math assessments. The students that scored 80% or higher on the MAP Math test in fall 2010 were

considered to have met standard and they were put into one category. The students that scored 79%-60% on the MAP Math test in fall 2010 were considered to be below standard and they were put into another category. The student that scored below a 60% on the MAP Math test in fall 2010 was put into another category. After all the data were collected on each student the researcher was able to place each student in the appropriate group. The students' number with the students' data were placed on a table with the average scores for fall 2010 and winter 2011. The researcher was then able to analyze the students' scores and determine if there was an increase or a decrease.

Summary

Chapter 3 explained the methodology that was conducted in the study. It was a quantitative study that was done with 18 first grade students at Chief Kamiakin Elementary in Sunnyside, Washington. The researcher wanted to see if setting goals for MAP Math tests would help improve the students' scores. The researcher met with each student individually to talk about their goals and what the student needed to do in order to meet their goal. Students were put into categories based on their scores on the MAP Math test in fall 2010. The data were put into a table and graphed so it was easy to analyze and determine if the students made growth.

CHAPTER 4

Analysis of the Data

Introduction

The purpose of this quantitative study was to find out if setting goals had an impact on students' scores and how goals needed to be set in a first grade classroom at Chief Kamiakin Elementary school in Sunnyside, Washington. Chapter 4 explained the description of the environment, the research question being asked, the results of the study in tables, the findings, and a summary of the analysis of the data.

Description of the Environment

This study took place during the 2010-2011 school year at Chief Kamiakin Elementary school in Sunnyside, Washington in a first grade classroom. The study included18 first grade students ranging from six to eight years of age in the 2010-2011 school year. Of the 18 students 17 were Hispanic and one was Caucasian. All students came from families that were considered to be low income or poverty.

The curriculum that was used was Investigations II. Investigations II did not cover all first grade standards. Therefore, supplemental work was used in order to ensure that students were taught all the necessary materials. The students had never been required to go through the MAP Math testing process before this time. The students did not set goals for their MAP Math test at the beginning of the year. Before the students took the same test later in the year, they set goals for their MAP

Math test. The students met with the teacher individually and looked at the strands that they were low in and the teacher scribed what they wanted to practice in order to increase their score next time.

Research Question

The researcher and other staff members have recently been encouraged by the administration to set goals with their students for assessments. So the researcher wanted to know the following: Will first grade students' MAP Math scores show significant growth if goals were set with individual students based on first grade benchmark, or what the student scored on a similar test previously?

Results of the Study

Table 1 described the students that met the standard of 80% or higher on the Fall 2010 MAP Math test. There was one student that had a decrease in score and the other seven students were able to increase their score. In the fall the average score for this group was 90.1% where as the average score for grade level was 66.03%. In the winter the average score for this group was 95.5% and the average score for the grade level was 79.23%.

Table 1

Met Standard in Fall 2010

Students	Fall 2010 Scores	Winter 2011 Scores
Student 2	80%	76%
Student 4	90%	96%
Student 5	90%	96%
Student 7	86%	96%
Student 11	93%	100%
Student 14	96%	100%
Student 15	86%	100%
Student 18	100%	100%
Class Average	90.1%	95.5%
Grade Level Average	66.03%	79.23%

Note. These were the students that took the MAP Math in fall 2010 that were considered meeting the standard already. This graph showed the students' increase or decrease from the Fall 2010 MAP Math score to the Winter 2011 MAP Math score.

Table 2 illustrated the students that were below the standard of 80% or higher for the MAP Math test in fall 2010. All students in this category were able to increase their score on the winter assessment. The average score for fall 2010 was 66.3% and the average score for grade level was 66.03%. In winter 2011 the average score for this group was 87.9% and the average score for the grade level was 79.23%.

Table 2

Below Standard in Fall 2010

Students	Fall 2010 Scores	Winter 2011 Scores
Student 1	66%	86%
Student 3	70%	96%
Student 6	66%	80%
Student 8	60%	100%
Student 9	63%	100%
Student 12	70%	83%
Student 13	66%	90%
Student 16	66%	86%
Student 17	70%	100%
Class Average	66.3%	87.9%
Grade Level Average	66.03%	79.23%

Note. These were the students that took the MAP Math in fall 2010 that were considered to be below standard. This graph showed the students' increase or decrease from the Fall 2010 MAP Math score to the Winter 2011 MAP Math score.

Table 3 showed the student that was well below the standard of 80% or higher in fall 2010. This student was able to increase their score by 20% from the Fall 2010 MAP Math test to the Winter 2011 MAP Math test. In 2010 the average score for the grade level was 66.03% and the average score for the grade level for winter 2011 was 79.23%.

Table 3

Well Below Standard in Fall 2010

Students	Fall 2010 Scores	Winter 2011 Scores
Student 10	43%	63%
Average < 80%	66.3%	87.9%
Average > 80%	90.1%	95.5%
Class Average	66.3%	87.9%
Grade Level Average	66.03%	79.23%

Note. This was the student that took the MAP Math in fall 2010 that were considered well below the standard already. This graph showed the student's increase from the Fall 2010 MAP Math score to the Winter 2011 MAP Math score.

Table 4 described the teachers at Chief Kamiakin Elementary in Sunnyside, Washington and the average score for each classroom for the MAP Math test in fall 2010 and winter 2011. It showed the average gains for each classroom. At the bottom of the table it showed the average scores for all first grade students in Chief Kamiakin Elementary for the MAP Math test in fall 2010 and winter 2011. It also showed the average gains for the grade level. The highlighted row was the average scores from the researcher's first grade class on the MAP Math test for fall 2010, winter 2011 and the average gains for this class.

Table 4

Chief Kamiakin Elementary First Grade MAP Math Averages

Teachers	Class Average of Fall 2010 Scores	Class Average of Winter 2011 Scores	Class Gains
Teacher 1	69.3%	84.1%	14.8%
Teacher 2	66.7%	81.8%	15.1%
Teacher 3	68%	69.8%	1.8%
Teacher 4	64%	87.3%	23.3%
Teacher 5	68.5%	76.2%	7.7%
Teacher 6	62.5%	74.3%	11.8%
Teacher 7	66.7%	77.8%	11.1%
Teacher 8	62.5%	82.5%	20%
Average First Grade Scores	66.025%	79.225%	13.2%

Note. This was the data collected from the first grade teachers at Chief Kamiakin Elementary. The table showed the average score for each classroom on the MAP Math test for fall 2010 and for winter 2011. The table also showed the average gain from fall 2010 to winter 2011 for each classroom. The teacher and the scores that were highlighted was the researcher for this study, and the scores that correspond with the researcher's class.

Findings

Based on the data collected, the students that scored below standard on the MAP Math test in fall 2010 showed more improvement on the winter 2011 test than the students did that were already at standard in fall 2010. There was one student that had a decrease in score. Their score was at standard in the fall and dropped below standard in the winter. That meant that 17 of the students improved their scores. The students that were meeting standard in the fall had an average increase in scores of 5.9%. The students that were below standard in the fall had an average increase in scores of 24.9%. The students that were below standard in the fall were all able to make standard in the winter. The student that was well below standard in the fall was able to improve their score, so they were considered below standard in the winter. Students were able to show growth on their MAP Math tests by setting goals during an individual conference with the teacher.

Discussion

There have been many experiments conducted with similar ideas of goal setting. The articles that were reviewed have shown comparable results. Many have found that setting goals with students in an individual conference was more beneficial than students setting scores on their own or just telling the students to do their best. The studies showed that students' scores did improve with goal setting, so most researchers concluded that the goal setting process gave students motivation to do better. The researcher for this study was also able to conclude that

the goal setting process did help improve student scores. Making a more specific goal kept the students focused on what they needed to work on. Gaa (1970) also found that the students that set performance goals were able to improve more than the students that did not. Most studies showed that the students showed growth, but not a significant amount, which was what the researcher concluded in this study.

Summary

The researcher conducted a study to answer the following research question: Will first grade students' MAP Math scores show significant growth if goals were set with individual students based on first grade benchmark, or what the student scored on a similar test previously? There were 18 students that participated in the study, all of which were in first grade at Chief Kamiakin Elementary. Data were collected and analyzed from the students' Fall 2010 MAP Math scores and Winter 2011 MAP Math scores. Between the time that the tests were taken the students were being taught from Investigations II curriculum. The researcher also used supplemental materials that were state standards based to make sure the students were being taught all the appropriate materials. The students did show growth from their Fall 2010 MAP Math scores to their Winter 2011 MAP Math scores.

CHAPTER 5

Summary, Conclusions and Recommendations

Introduction

This quantitative study was conducted to verify if setting goals with students would have an impact of their achievement on the MAP Math test. The researcher was advised by administration to set goals with the students to determine if the students' MAP Math scores improved. The administration hoped that the program gave the students something to work towards, and hopefully the students would try harder when taking the test. The researcher wanted to know if this would actually have an effect on student achievement.

Summary

The researcher set out to determine if setting goals for the MAP Math test benefited and helped students improve their scores. There were research articles reviewed that had similar studies about setting goals with students and the affect it had on their academic achievement. The research that has been done in the past has concluded that setting goals in the classroom for academic results has had an effect on students' test scores and motivation. The researcher for this study wanted to know the answer to the following research question: Would first grade students' MAP Math scores show significant growth if goals were set with individual students based on first grade benchmark, or what the student scored on a similar test previously? The researcher conducted a quantitative study in a first grade

classroom at Chief Kamiakin Elementary in Sunnyside, Washington. The students' ages ranged from six to eight years old. All students were considered to come from low income families. Of the 18 participants, 17 were Hispanic and one was Caucasian. The students were all taught from Investigations II with some supplemental materials also to meet state standards.

The students took a MAP Math test in September 2010, at this time data were collected and students set goals with the teacher during an individual conference to improve their test score. The teacher scribed what the student wanted to work on and their goal for the next test on a goal sheet (Appendix). The teacher and the students met periodically throughout the time between the test in the fall and the test in the winter. In February 2011 students took the second MAP Math test. After this, the data were collected again and analyzed with the original scores. The students then had another conference with the teacher to talk about their growth.

The researcher found that only one student did not make growth from fall to winter. The students that were below the standard (80% or higher) in the fall all met standard in the winter. The researcher concluded that setting goals did have an effect on student achievement and motivated students to do better.

Conclusions

In conclusion, setting goals during an individual conference did have an impact on students' scores on the MAP Math test. The research done in the past

backed this up. Setting goals could have been a good motivational tool to get students interested and wanting to do better. Setting goals alone may not have helped improve scores. However, setting goals with individual students, meeting with them periodically to check their progress and making sure they have the materials and instruction they needed in order to reach their goals, could be beneficial.

Recommendations

After the researcher analyzed the data and was able to draw some conclusions the researcher was able to make some recommendations. One of these would be to continue the study and get more information about setting goals with students. The study should also be done again with more students. If it was done in other classrooms as well it would be a good way to see if the results have something to do with the instruction the teacher is giving (because each teacher has a different way of teaching) or if it is associated with the goal setting.

Although the goal setting process was time consuming and took away from instruction time or observation time, setting goals with students was beneficial. It is something that should be implemented in classrooms to really show what the students are capable of. It increases their motivation and if the students are able to meet their goal it can also increase their confidence.

If goal setting is brought into the classroom there are many things to take into consideration and be thought through before starting. There should be some

baseline data to compare with the data that is collected later. According to most research that has been reviewed on this topic the following are what can make the goal setting process a better experience: the teacher should meet with each student individually to make sure the students understand where they are and what they need to work on in order to achieve a higher score next time. There should be individual conferences with each student periodically between the two times of measuring success. Students should also be working towards something. When they reach their goal or when they show growth towards their goal the student should get an extrinsic reward so they know they are doing well and to keep them motivated to keep working hard and continue to increase their scores. Also, make sure students' scores are being documented as well as their learning and performance goals.

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Counts	Fall	Winter	Spring	Goal for next MAP test
Rote Counting - Counts to a Number				
Counts and One-to-One Correspondence 1-10				
One-to-One Correspondence 11-20				
Number/Numeral				
Matches Numerals 1-10				
Identifies Numerals 1-10				
Identifies Numerals 11-20				
Computation				
Identifies Numbers of Objects – More/Fewer				
Computes with Manipulatives – Moving Objects				
Computes with Manipulatives – Numerical Answer				
Test Summary				