What is the Effect of a Zeros Are Not Permitted Policy on Student Learning?

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Abstract

Homework is an inescapable part of every student's education. With over a century of debate on its effectiveness, homework has remained a fixture in the American education system. Studies have shown a positive correlation between homework completion and student achievement. However, even as homework has been shown to be effective in the education of students, many educators are fighting a losing battle to get students to complete their homework. This researcher investigated the impact of a "zeros are not permitted" policy on student learning in a high school math classroom. When students did not complete their homework they were "zapped" and assigned a mandatory time at lunch to complete their homework. This mandatory time was intended to provide students with the time, resources, or knowledge they might have lacked that kept them from completing their homework. Through the implementation of a "zeros are not permitted" policy, the researcher found that students who completed their homework scored higher on chapter tests, had higher overall course grades, and had a better understanding of the connection between homework completion and success than their peers who did not complete their homework.

Table of Contents

Introduction

Through generations of school change and reform, homework has remained a rite of passage for nearly every American student. Homework is still an integral part of the current school system, and the completion of homework greatly impacts a student's success in school. Numerous studies examining factors that affect homework completion and its impact on overall school performance have been completed through the years. However, few of these studies have focused on strategies to help students complete their homework within the school day.

Purpose of the Study

As a high school math teacher, I know adequate practice is necessary for students to understand and be able to apply each concept. Just like countless other educators, I have fought a losing battle to get students to complete their homework. Many students choose to take a zero on assignments rather than completing them, seeing it as the easy way out. I am endeavoring to explore ways to encourage my students to complete their homework and give them the necessary assistance when needed to help them achieve at the highest level possible.

Homework is an inescapable part of the American educational system. Student grades and success are largely based off the completion of homework. Many studies have been done to explore ways to help students complete their homework. These studies have found that students generally do not complete their homework for one of three reasons: (a) they did not have the time to complete the homework, (b) they did not have the necessary resources to complete the homework, or (c) they did not have the knowledge or skills to complete the homework. In response to these findings, researchers have examined various programs and strategies that can be used after school or at home to help students complete their homework. However, none of these studies have focused on solutions that can take place within the students' school day.

As American culture and families change, more and more responsibility for the raising of children is falling to the educational system and to teachers. We are now expected to not only teach students how to read, write, and do arithmetic, but also how to be respectful, productive, and contributing members of society. Teachers are now taking on the role of parents for many of their students, and tasks that once could be expected to be completed at home or taught by parents are now the responsibility of teachers. This change causes me to want to find a way to help my students complete their assignments within the school day, as many of my students do not have the structure and support systems they so desperately need at home.

I strongly believe that adequate practice is necessary for students to become proficient in new skills. When students do not complete their homework, they are missing valuable opportunities to learn concepts and become confident math students. In an attempt to give my students support that they might not be receiving at home, I plan to give my students the time, resources, and support they need to complete their homework within the school day. My research question is "What is the effect of a 'zeros are not permitted' policy on student learning?". I want to find out how student learning is impacted by giving students the time, resources, and support necessary to complete their assignments rather than allowing them to choose to take a zero when they do not or cannot complete them on their own. While there are many arguments over the validity of homework in general, this study is not designed to engage in those arguments; this study is strictly focused on what impact, if any, a "zeros are not permitted" policy will have on student homework completion and student learning.

Setting

This study will take place in my math classroom at a small high school in rural, southwestern Minnesota. I will focus on three classes of Intermediate Algebra, which is the

math class for freshman students. My two morning Intermediate Algebra classes will have a "zeros are not permitted" policy in place while my afternoon Intermediate Algebra class will not.

Definitions

There are a few terms that I plan to use throughout this paper that may be unfamiliar to my readers. These terms are defined as follows:

- IEP stands for Individualized Education Program. This is a plan to meet the unique educational needs of a student who has an identified disability. An IEP often includes specific accommodations for the student such as preferential seating (front of room or away from distractions), shortened or modified homework assignments, copies of class notes, or special testing arrangements.
- Setting III is a self-contained special education program. Students in this program generally exhibit excessively disruptive behaviors due to emotional or behavioral issues. Students in the setting III program have most of their educational needs met within that self-contained program, but occasionally do come to mainstream classrooms for instruction.
- ZAP or "zeros are not permitted" is a policy where a student is not allowed to take a zero on the assignment. If the homework is not completed when it is due, the student is assigned time at lunch to complete the homework, thus giving the student the necessary time, materials, and/or support he/she may have initially lacked.

Limitations and Assumptions

While the research question I plan to examine is "What is the effect of a zeros are not permitted policy on student learning?" it must be noted that there are limitations to this study and its results. First, this study is done strictly in a high school math classroom. The homework I

assign my Intermediate Algebra students is generally designed to take 15 to 25 minutes to complete. This study should not be used to generalize the effects a similar policy would have on students of other ages, in different subject areas, or with homework assignments of different lengths. Second, this study is likely to be impacted by the composition of my classes. Due to course availability and scheduling in my small school, students who are involved in band or choir must take their math and language arts classes in the morning. I have observed that students, in general, who are involved in band or choir tend to be slightly more motivated, higher achieving students. While this is not scientifically proven, it is anecdotal evidence I have observed in four years of teaching at this high school. As a result, my morning Intermediate Algebra classes tend to have higher grades and fewer students receiving special education services, while my afternoon Intermediate Algebra classes often exhibit more struggles and have a higher concentration of students receiving special education services. This observation is particularly important as I am only implementing the "zeros are not permitted" policy in my morning classes. While I would love to see the impact of a "zeros are not permitted" policy on the student learning of my afternoon class that has a higher concentration of special education students and students that struggle in school, it was not feasible given my school's schedule and busing situation.

Significance of the Study

This study has the potential to benefit teachers and students alike. If a "zeros are not permitted" policy truly impacts and improves student learning, teachers will be more likely to find value in homework and to implement "zeros are not permitted" policies of their own. Additionally, if student learning does increase, students will be able to see how homework

impacts their understanding and knowledge, giving them the confidence and motivation to attempt and complete their homework to the best of their abilities.

Organization of the Study

This paper will be organized in five chapters: introduction, literature review, methodology, results, and discussion. In Chapter Two, I will highlight the history of homework and related studies that have been done on homework. In Chapter Three, the research methodology (including subjects, research design, and data collection) will be outlined. In Chapter Four, I will present the data that I collect and analyze the effect (if any) a "zeros are not permitted" policy had on my students' learning. Finally, in Chapter Five I will summarize the conclusions I draw from the data that I collect.

Summary

As a high school math teacher, I believe in the importance of adequate practice for my students. However, I have spent the past four years struggling to help my students complete and see the value in the homework I assign. While research has been done on ways to help students complete their homework outside of school, little research has been done on how to help students within the school day. As home life becomes more diverse, and often unstable, the role of the educational system is increasing. I want to find out if I can help students learn more by not allowing them to take a zero on their homework assignments. My goal is to see if a "zeros are not permitted" policy will improve student learning.

In Chapter Two, I will review pertinent literature regarding homework. I will give a history of homework, examine beliefs and purposes regarding homework, analyze previous research studies that have been done on homework, and make a case for a "zeros are not permitted" policy.

Literature Review

Homework has been a fundamental part of nearly every child's school experience for generations. Like many other aspects of education, attitudes and practices related to homework have been cyclical from the 19th century through today. An understanding of the changing views on homework from both the public's perspective and the educator's perspective is necessary to frame the research that has been done on homework and academic achievement. As attitudes regarding homework have changed, so too has the research and implications surrounding homework and its place in American schools.

A History of Homework in America

In their work *Villain or Savior? The American Discourse on Homework, 1850-2003*, Gill and Schlossman (2004) examined the changing view of homework assigned to American students from the late 19th century through the beginning of the 21st century. Schools in the 19th century consisted of multi-age classrooms. These classrooms were often overcrowded with students who exhibited inconsistent attendance patterns. As a result, homework was exceedingly rare for students in the first through fourth grades (Vatterott, 2009). When students moved into the middle grades, homework became necessary, given the most common method of teaching—drill, memorize, recite. Nightly rehearsal of lessons was required if students wanted to demonstrate their understanding to their teacher. As students finished the eighth grade, families had to weigh the importance of continued education for their children versus the potential labor that the child could provide to the family. Compulsory education laws only extended to the age of 14, at which point many students quit attending school in order to provide more physical and monetary support to their families. Those students who did continue their studies in high school were met with a significant amount of homework. This homework had to take precedence over

their family chores and responsibilities. A student in high school was expected to spend two to three hours per night, including weekends, preparing for the following day's lessons (Gill & Schlossman, 2004). Prior to the turn of the 20th century, homework was accepted by parents as a part of the educational system and was seen as an important way to discipline children's minds (Cooper, Robinson, & Patall, 2006).

As the 20th century began, progressive education reform and the growth of pediatrics as a medical specialty led to the first organized attack on the amount of homework students were given. Pediatric physicians spoke out on the health benefits of the outdoors for children and the detriments homework posed to pre-adolescent students. They noted that homework not only robbed children of essential exercise in the form of play, but also of valuable social interactions (Vatterott, 2009). Additionally, women's organizations such as the Parent Teacher Association (PTA) pressured school boards and administrators to limit the amount of homework that could be assigned to students. Numerous districts either limited or abolished homework in the wake of these organized protests (Gill & Schlossmann, 2004).

During the period of time between 1920 and 1940, schools took on a changing role in the lives of American children. The progressive education movement during this time focused on the "whole child" and "schools were responsible not only for children's intellectual growth but for their physical and emotional growth as well" (Gill & Schlossmann, 2004, p. 176). Critics of homework during this time launched studies that showed homework did not improve student learning or achievement. These critics argued that "learning involved more than just school work, and that homework deprived children of important non-school activities" (Gillman & Schlossman, 2004, p. 176). Further, education reform was moving away from the learning by drill that had been so popular through the 19th century and was instead focusing on developing

problem solving abilities and critical thinking in students. As a result of this shift in teaching method, homework was no longer seen to have the same benefits or results as in previous years (Cooper et al., 2006).

By the 1950s, the progressive education movement was replaced by a movement for academic excellence. Homework was seen as a way to achieve higher standards and deepen understanding in American students. The Cold War was raging and America was struggling to keep pace with the superiority that the Soviet Union was achieving in technological and military pursuits (Gill & Schlossmann, 2004).

The launch of the Russian satellite *Sputnik* in 1957 quickly and radically reversed views on homework in America. In their work, *Does Homework Improve Academic Achievement? A Synthesis of Research 1987-2003*, Copper, Robinson, and Patall (2006) state that "Americans became concerned that a lack of rigor in the educational system was leaving children unprepared to face a complex technological future and to compete against our ideological adversaries" (p. 3). America was in competition with Russia and for the first time in the nation's history America was not seen as the clear front-runner. Gill and Schlossman note that while the first half of the 20th century was characterized by the negative effect of too much homework on children and families, the second half of the century was characterized by the dismal state of the American education system. In fact, "the homework problem was reconceived as part of a national crisis" and became a major topic of political debate (Gill & Schlossmann, 2004, p. 177). The United States was losing the Cold War and many believed this was because Russian children were smarter—they were working harder and achieving more in school. Now homework was no longer in the middle of an ideological debate, it was an "instrument of national defense policy" (Gill & Schlossmann, 2004, p. 177).

As the 1950s and 1960s progressed, the public returned to more positive views on homework. Americans wanted to increase rigor in the school system, hold students to higher standards, and win the space race. Homework was again seen as a way to help American regain superiority and achieve the goals set before the nation. During this time, Avram Goldstein, a professor at Stanford University's medical school, reanalyzed the research on homework that had been done during the 1920s and 1930s. His reanalysis revealed that homework did in fact positively influence student achievement and he recommended that homework be required in all schools. Homework underwent many changes during the mid-20th century as reformers sought to show that homework was equally compatible with both academic excellence and progressive education. No longer did homework simply have to be drill and memorize, but it could be tailored to individual students to help them increase their problem solving and critical thinking skills (Gill & Schlossmann, 2004).

In the midst of the Civil Rights Movement and the Vietnam War during the 1960s and 1970s, Americans once again reversed their views on homework. The counterculture that emerged during this time questioned nearly everything in personal and political life, including the role of homework for American children. As debates raged over many topics, the "educational establishment" was attacked and questioned (Vatterott, 2009). During this time, homework came to be seen as a symptom of excessive pressure on students that posed potential threats for students' physical and mental health (Cooper et al., 2006). In fact, the argument over homework actually faded to the background as the focus turned to such issues as whether students could even be persuaded to attend school or pay attention to their teachers at all (Gill & Schlossmann, 2004).

The release of *A Nation at Risk* in 1983 created yet another flip-flop in the American public's view of homework. In what has become one of the most popular government publications of all time, homework was explicitly brought back into the national discussion (Gill & Schlossmann, 2004). The report claimed there was a "rising tide of mediocrity" in schools and that a "movement for academic excellence was needed" (Vatterott, 2009, p. 7). *A Nation at Risk* initiated the idea that school success would impact economic success, which in turn fueled the intensification movement. This movement's leaders believed in the basic tenant that education will improve only if there is more of it—longer days, longer years, more testing, and more homework (Vatterott, 2009). Three years later, the United States Department of Education's release of *What Works* supported the findings of *A Nation at Risk* when it "unequivocally endorsed homework and provided specific recommendations for educators" (Gill & Schlossmann, 2004, p. 179).

By the mid 1990s, however, the pendulum had swung back in the other direction as homework once again came under attack. Cathy Vatterott (2009) noted in *Rethinking Homework: Best Practices that Support Diverse Needs*, that "as homework increased and parents began feeling overwhelmed…the mood was one of concern for overworked students and parents" (p. 9). A barrage of stories detailing struggles with homework appeared in the popular press, including "Does Your Child Need a Tutor" and "Homework Doesn't Help" which were both published in *Newsweek* in 1998. Additionally, *Time* published "The Homework That Ate My Family" in January of 1999. The 2006 publication of *The Homework Myth: Why Kids Get Too Much of a Bad Thing* by Alfie Kohn further fueled the anti-homework backlash (Vatterott, 2009).

Over the course of the past two centuries, views on homework have been cyclical. As soon as homework is shown to help students learn and increase rigor, the opposing side comes back with research that shows homework is detrimental to students' overall development. The argument over the virtues of homework is sure to continue for centuries to come. Ultimately, however, throughout progressive reforms and reorganizations over more than a century, the amount of homework has not significantly changed for American students, with most secondary students averaging less than one hour of homework per night (Gillman & Schlossman, 2004).

Beliefs about Homework

Homework has been such a contentious issue because many people—both in education and in the general public—hold strong beliefs about the value of homework. These beliefs have often been grounded in faith, tradition, or moral judgments, rather than in scientific research. Nevertheless, they have been so strongly held for generations that they have rarely been questioned or challenged.

In her book *Rethinking Homework: Best Practices that Support Diverse Needs,* Cathy Vatterott (2009) detailed five commonly held beliefs about homework. First, it is the role of the school to extend learning beyond the classroom. Proponents of homework have argued that teachers have the right and the obligation to assign homework. Teachers must help students learn how to find what they are passionate about. Next, intellectual activity is intrinsically more valuable than nonintellectual activity. Many staunch believers in homework have insisted that intellectual development is more important than social, emotional, or physical development. Third, homework teaches responsibility. Despite the fact that there is no research that directly supports this claim, many people have argued that homework promotes responsibility and discipline, as well as time management. The fourth belief about homework pointed out by

Vatterott was that a lot of homework is a sign of a rigorous curriculum. Since the mind is a muscle, more work must equal more learning on the part of students. Finally, the last belief about homework was that good teachers give homework and good students do their homework.

Opponents of homework have noted that these beliefs are generally grounded in three flawed philosophies related to morals, work ethic, and behaviorism. Schools have had a long-standing mission to instill moral values in students. However, schools have functioned on the belief that students are generally lazy, irresponsible, and cannot be trusted. Homework has been used to keep children busy so they stay out of trouble. Unfortunately, this has often taught students that learning is a punishment and thus is inherently distasteful. Schools also have been charged with instilling a work ethic in children. Over the course of generations, schools have taught students that hard work is good for you even if the task is pointless, hard work builds character, and hard work hurts but suffering is a virtue. Again, homework is used to teach, but it is used in such a way as to discourage students from finding a true love of learning. Finally, schools have functioned for generations using the tenants of behaviorism—the idea that students can be controlled by a system of rewards and punishments. Teachers have generally used a system of punishments (low grades, no recess, or loss of other privileges) in an attempt to coerce students to complete their homework. Again, opponents of homework have argued that while this does teach students, it is not teaching them to explore and find things in life they are passionate about (Hughes, Ruhl, Schumaker, & Deshler, 2002; Vatterott, 2009).

As with most debated issues, much of the contention behind the homework debate has been grounded in people's beliefs. While beliefs are powerful, they cannot often be supported by scientific fact or research. Instead of focusing just on what people believe about homework,

researchers have instead focused on the purposes of homework where they have been able to test theories rather than simply argue beliefs.

Purposes of Homework

Homework has been used to serve a variety of academic and nonacademic purposes. The most common, and perhaps obvious, use for homework has been to extend students' learning opportunities beyond the school day. This has been necessary because, "schooling occupies only about 13 percent of the waking hours of the first 18 years of life which is less than the amount of time students spend watching television" (Fraser, Walberg, Welch, & Hattie, 1987, p.234). Since American students spend so little time in school, it is essential to create additional times when they are able to learn. In their study, *More Than Minutes: Teachers' Role in Designing Homework,* Epstein and Van Voorhis (2001) note that "the call for more homework is based on a belief that the more time students spend on schoolwork, the more they will learn" (p. 181). However, extending students' opportunities to learn is not the only purpose for homework; the purposes of homework can be academic in nature, serve a more general socialization goal, provide opportunities for home/school/community communication, or fulfill school and system requirements (Coutts, 2004).

As an academic tool, homework has been used to provide students with opportunities for pre-learning, practice, and additional processing (Vatterott, 2009). While elementary teachers primarily have used homework to review topics covered in class, secondary teachers have often used homework to preview skills and issues that would be addressed in upcoming lessons (Oliver & Williams, 2005). Teachers have reported that one of the main reasons they assigned homework was to give students more time to practice skills from class lessons. Homework has often been used to provide practice, because practice leads to a higher level of skill acquisition

which in turn leads to an increase in performance (Radhakrishnan, Lam, & Ho, 2009). In *Classroom Instruction that Works,* Marzano, Pickering, and Pollock (2001) found that it is "not until students have practiced upwards of 24 times that they reach 80 percent competency" (p. 67). Homework can also be used to give students the opportunity to increase speed and accuracy, demonstrate mastery, review skills to increase retention, or study for tests. Additionally, homework may be used to ensure students are ready for the next lesson. This can be done by having students complete work started in class or synthesize various topics that have been covered in recent lessons (Epstein and Van Voorhis, 2001; Theodore et al., 2009).

Regardless of the academic intent of homework, it is the teacher's job to design homework that will aid in student achievement. Teachers must consider the purposes, format and other elements of assignments that will affect student engagement and success (Epstein and Van Voorhis, 2001). Cathy Vatterott examined the role a teacher plays in designing effective homework in her article "5 Hallmarks of Good Homework" that appeared in the September 2010 edition of *Educational Leadership.* According to Vatterott, the best homework has five characteristics:

- exhibits a clear academic purpose,
- efficiently demonstrates student learning,
- promotes ownership by offering choices and being personally relevant,
- instills a sense of competence, and
- is aesthetically pleasing.

In designing homework, teachers must make sure students are aware of the purpose. Teachers must also abandon a one-size-fits-all approach to homework. Vatterott pointed out "homework students can't do without help is *not* good homework; students are discouraged when they are

unable to complete homework on their own" (2010, p. 13). Further, when homework is assigned, it should be commented on. Homework is far more effective when it is not only graded, but actually returned with written comments for students (Marzano et al., 2001). Providing clear and timely feedback on homework is absolutely essential. Effective feedback helps to correct misunderstandings, validate processes, and highlight errors in student thinking (Northwest Regional Education Laboratory, 2005). Above all, homework should be "purposeful, efficient, personalized, doable, and inviting" (Vatterott, 2010, p. 15).

Beyond academic purposes, homework has been used to serve a variety of nonacademic needs. Homework has often been assigned to serve general socialization purposes. These purposes have included encouraging responsibility, study skills, or time management in students (Coutts, 2004). Teachers have also used homework to help students learn to plan and be proactive, as well as to teach self-control and discipline (Sheridan, 2009). Further, homework can be used to aid in the development of perseverance, self-confidence, and feelings of accomplishment (Epstein & Van Voorhis, 2001).

Assigning homework can also provide opportunities for home/school/community communication (Coutts, 2004). Teachers have used homework assignments to guide and promote positive communications between parents/guardians and their children. Conversations between parents/guardians and their children might help reinforce the importance of school and learning, which in turn helps students understand the importance of life-long learning. Additionally, homework might spark conversations that help parents/guardians and their children exchange ideas and thought while opening lines of communication that will grow as children progress through school and life. Homework has also been used to provide opportunities for communication between the teacher and students' families. Finally, homework can be used to

demonstrate to the community that a school has a rigorous academic program. Since researchers have suggested that good schools give homework, when expectations for high standards and homework are met, the community may be more likely to support schools and students (Epstein & Van Voorhis, 2001; Theodore et al., 2009).

The final general purpose for assigning homework is to fulfill school and system requirements. As school standards have become more intense, teachers have struggled to teach their entire curriculum in the course of the school year. Consequently, homework has been used to help students gain access to the broad standards they are expected to master when class time is at a premium (Coutts, 2004). Some schools or districts have also enacted policies regarding minimum (and maximum) homework requirements that teachers must follow (Epstein & Van Voorhis, 2001).

Homework has been used for a variety of purposes ranging from academics to general student development, and from school/home/community communication to fulfilling system requirements. Teachers have had to take on the burden of designing assignments that help students achieve under ever increasing academic standards, while also helping to develop positive relationships with families and the community as a whole. When done well, completing homework can help students grow academically and personally, while also building bridges between the school and the community as a whole. However, researchers have shown that not all homework is created equal and not all purposes of homework are easily attained.

Research on Homework

Since homework has been such a divisive issue in education, researchers have sought to defend their beliefs with empirical data. Due to the vast number of research studies that have been conducted to examine the effects of homework on student achievement, nearly any position

on homework can be supported if one examines the literature and studies deeply enough. In addition to the sheer volume of studies that exist, there are many studies that are inherently flawed. The majority of studies that have examined the effect of homework on student achievement rely on self-reporting by parents or students, which introduces a large amount of subjectivity. Also, many of the studies have relied on small sample sizes that were not randomly assigned and which lacked control groups (Vatterott, 2009). Despite these potential drawbacks, there have been many studies done on homework that have changed opinions, beliefs, and policies.

In *More Than Minutes: Teachers' Roles in Designing Homework,* Epstein and Van Voorhis (2001) note that most research studies that have focused on homework and student achievement have shown that students who complete their homework have better grades and higher test scores than students who do not complete their homework. Many researchers have found several common themes that flow through their studies: (a) the amount of time spent doing homework is positively correlated with achievement, (b) homework appears to be more effective for older students than younger students, (c) the correlation between homework and achievement diminishes as more variables are controlled, and (d) at each grade level there appears to be an optimal amount of homework (Vatterott, 2009). Ultimately, homework (when done well) has been found to be an equalizer for low-ability students in the classroom. Even when other factors such as students' race, family background, and prior ability have been controlled, low-ability students who did ten hours of homework or more per week had the same report card grades as high-ability students who did no homework (Keith, 1982).

While researchers have found ways to both support and oppose the effectiveness of homework on student achievement, there is one issue they have all agreed on: if students do not

complete the assigned homework, it cannot help them. In their work *Improving Homework Completion and Academic Performance: Lessons from Special Education*, Bryan and Burnstein pointed out that "fifty-six percent of students with learning disabilities and 28% of students who have not been identified as having learning disabilities have problems completing homework assignments" (2004, p. 213). Bryan and Burnstein examined the effects of six strategies on improving student homework completion: (a) reinforcements, (b) graphing complete and incomplete assignments, (c) cooperative study teams, (d) homework planners, (e) real-life assignments, and (f) family involvement. They found that all six strategies improved student homework completion rates when compared to students who did not have the strategy implemented. However, while homework completion rates increased when using these strategies, student achievement did not always increase. The use of cooperative study teams was the only method that not only increased homework completion rate but also increased student achievement on tests (Bryan & Burnstein, 2004). Their research has been used to show that homework completion does not always increase student learning, and it has left openings for further research examining how student motivation affects homework completion and achievement.

One of the main reasons students have failed in the classroom is because of problems with homework completion. This struggle has only been exacerbated for students with learning disabilities and emotional and behavioral disorders. In their 2004 study, Cancio, West, and Young commented that students with emotional and behavioral disorders frequently struggled with organizing their work and effectively managing their time. Since these are both skills necessary to complete homework assignments, these students were at a significant disadvantage compared to their non-disabled peers. They noted that particularly for students with emotional

and behavioral disorders the home environment was as critical to a student's education as the quality of teachers the student had. With this in mind, Cancio, West, and Young focused on the effects self-management and parent participation would have on homework completion, homework accuracy, and overall academic achievement. After an intensive training program for both the students and families involved in the study, Cancio, West, and Young arrived at some amazing results. The overall homework completion rate rose from two percent to 92 percent during the study and the homework accuracy rose from two percent to 89 percent. The students were also measured before and after the study using the Kaufman Test of Educational Achievement (KTEA). In the course of the four month study, the students gained an average of one year on the KTEA. Overall, their study demonstrated the immense impact student self-regulation and parent involvement can have on homework completion, homework accuracy, and student achievement. However, this study was limited to just seven students with specific, similar emotional and behavioral disorders. Further study should be done to see how (or even if) these strategies could be translated to all students on a large scale.

A recurring theme in homework research has been that students must complete the tasks assigned in order for the homework to have an impact on their academic achievement. Hughes, Ruhl, Schumaker, and Deshler focused on this in their study *Effects of Instruction in an Assignment Completion Strategy on the Homework Performance of Students with Learning Disabilities in General Education Classes* (2002). They focused on nine middle school students who had extreme difficulty in completing and turning in homework assignments. These nine students were taught the PROJECT Strategy:

Prepare your forms

Record and ask

Organize

Break the assignment into parts

Estimate the number of study sessions

Schedule the sessions

Take your materials home

Jump to it

Engage in the work

Check your work

Turn in your work

Over the course of the study, the average amount of homework turned in on time increased from 43 percent to 64 percent. Further, the average grade point average increased from 1.7 at the beginning of the study to 2.6 at the end of the study. Hughes et al. (2002) demonstrated that students with learning disabilities can learn, apply, and maintain the use of a homework completion strategy that increased homework completion, homework accuracy, and overall student achievement. Again, however, this study was small and further research would have to be done to see what effect, if any, this strategy would have on a larger number of students.

Researchers have found in nearly all circumstances that students who reported doing homework had higher achievement scores than students who did not do homework (Cooper et al., 2006). The overarching theme of studies that have focused on homework completion is that many students, with and without learning disabilities, continue to have problems doing homework (Bryan and Burstein; Cancio et al.; Hughes et al.). Since homework completion has such a direct impact on student achievement, it is vital to continue to examine the reasons students do not complete homework. Additionally, if educators continue to believe in the value

of homework and continue to assign students work to complete outside of class, more research needs to be done on ways to help increase student homework completion.

The Case for "Zeros Are Not Permitted"

Homework has comprised a large part of student grades in the United States for centuries. Unfortunately, for generations students have been failing to complete their homework, which in turn has led to failing grades. Numerous reasons have been documented for why students fail to complete their homework. Nearly all of the reasons can be grouped into five main categories: (a) academic, (b) organizational, (c) motivational, (d) situational, or (e) personal. Academic reasons include work that is too difficult or too lengthy for the student's current ability. Organizational reasons include remembering assignments, getting assignments home, and getting homework back to the teacher. Competing in extracurricular activities, part-time jobs, friends, and having too much past failure are motivational reasons. Situational reasons why students don't complete their homework include being unable to work at home or having no materials with which to complete their work. Family issues, depression, anxiety, and other health issues are personal problems that can interfere with completing homework (Vatterott, 2009). Ultimately, all of the reasons students do not complete their homework can be boiled down to three main issues: time, skills, and motivation. Students will not complete their homework if they do not have the time and materials, necessary skills and background knowledge, or motivation to complete the assignments given to them.

When students have not completed their homework, the standard teacher response has been to give students a zero for that work. Most students would rather take a zero than have to complete the assigned work (Bafile, 2008). Educators have defended this practice in the name of teaching students about the real world. However, Erickson notes that, "in the real world, failure

to complete a task rarely results in not needing to complete the task" (2011, p. 44). Christa Warner, principal of Wohlwend Elementary School in St. Louis, pointed out that "in real life, teachers aren't able to choose whether to do certain tasks…we simply cannot call the superintendent and inform him or her that we will take a zero" (2007, para. 14). By giving students a zero for homework assignments they did not complete, teachers were not preparing students for the real world, but were actually aiding students in learning a lack of responsibility.

Instead of giving a student a zero for homework that was not completed, an appropriate consequence is to require students to complete the assignment (Reeves, 2004). In response to this idea, many schools have instituted a "zeros are not permitted" (ZAP) policy. When students do not complete their homework, they are assigned structured time within the school day (often during a previous free period or during lunch) to complete that work. Regardless of the reason they did not complete the homework in the first place, students are given the time, materials, and teacher support to be successful. Dana Garland, the principal of Glenpool Middle School stated that "while it doesn't ensure passing grades, ZAP provides students with the opportunity to earn credit for every assignment by requiring them to complete the work to the best of their ability" (as quoted in Bafile, 2008, para. 5).

Anecdotal evidence has shown "zeros are not permitted" programs to be highly effective. Since Glenpool Middle School implemented a ZAP program, the number of students ineligible for extracurricular activities based on their grades has decreased by 90 percent. When Wohlwend Elementary School began its ZAP program, nearly 30 students per grade were involved. After one semester, that number dropped to approximately eight students per grade, a decrease of 74 percent. While no large scale research studies have been done regarding the

effect of a ZAP program on homework completion or student achievement, current ZAP programs suggest that they have an immense effect on homework completion and student grades.

Summary

Homework has been an inescapable part of the American educational system. Student grades and success are largely based off of the completion of homework. Proponents of homework suggest that "it is a vital part of the academic experience because it increases the number of opportunities students have to practice new skills and learn new content" (Hughes, Ruhl, Shumaker, Deshler, 2002, p. 1). Homework has also been used to help develop time management and a desire for life-long learning in students, as well as open lines of communication between the school, home, and the community. However, despite the prevalence of homework, many students continue having trouble completing homework because they lack the time, skills, or motivation needed. Since homework completion has been shown to have a positive correlation with student achievement, it is vital that students complete their work. Research on homework has focused on ways to help increase homework completion outside of school, but little research has been done on ways to support student homework completion within the school day. "Zeros are not permitted" policies have shown promise when implemented in a variety of schools and this study was focused on examining the impact a "zeros are not permitted" policy had on homework completion and student achievement in a high school math classroom. This study aimed to fill a gap in current research regarding the effectiveness of an in-school program to help students improve homework completion and overall achievement.

In Chapter Three, the researcher will review the methodology for implementing a "zeros are not permitted" policy in a high school math classroom. The researcher will examine if

student homework completion impacted achievement in the math classroom when a ZAP policy provided additional time and support for homework within the hours of the normal school day.

Methods

Introduction

In this chapter the researcher presents the problem that was examined in this action research study. The research methodology, subjects, research design, data collection, and data analysis procedures used to see if a "zeros are not permitted" policy increased student learning in a high school math classroom will be described in this chapter.

Restatement of the Problem

When students do not complete their homework, they are missing valuable opportunities to learn concepts and become confident math students. In an attempt to give students support that they might not be receiving at home, the researcher gave students the time, resources, and support they need to complete their homework within the school day. The question being examined was "What is the effect of a zeros are not permitted policy on student learning?" The researcher wanted to find out how student learning was impacted by giving students the time, resources, and support necessary to complete their assignments rather than allowing them to choose to take a zero when they did not or could not complete them on their own. While there are many arguments over the validity of homework in general, this study was not designed to engage in those arguments; this study was strictly focused on what impact, if any, a "zeros are not permitted" policy had on student homework completion and student learning.

Research Methodology

Homework completion significantly impacts student grades in high school classes. Many students struggle to complete their homework. Students either complete their homework at a low level or fail to complete their homework altogether. As a result, students do not get the

necessary repetition to master concepts and thus do not achieve at the level they are capable of reaching.

The three main reasons students do not complete their homework are lack of time, lack of materials, or lack of knowledge. When students do not feel like they have the time, materials, or ability to complete their homework, they often do not even try. The researcher implemented a "zeros are not permitted" policy in a high school math classroom to help meet the needs of the students.

When students did not have their daily homework completed, they were "zapped". Students who did not have their daily homework done were given a piece of paper to remind them they had been "zapped" and they had homework to complete. The students were then required to come in during lunch to complete their missing homework.

The idea of a "zeros are not permitted" policy was to support students with the three major components necessary for homework completion: time, materials, and knowledge. By requiring students who did not complete their homework to come in at lunch, the researcher gave them time to complete their homework, any materials (paper, pencil, book, calculator, etc.) they needed to complete their homework, and additional academic support if they were struggling with the concepts.

The researcher used a mixed methodology study to examine the impact of a "zeros are not permitted" policy on student learning in a high school math classroom. In order to gauge the effectiveness of the "zeros are not permitted" policy, the researcher examined chapter test scores, student course grades, and a fall and winter student survey. The researcher compared the chapter test, student course grades, and student survey results from two Intermediate Algebra classes that had a "zeros are not permitted" policy with the chapter test scores, student course grades, and

student survey results from one Intermediate Algebra class that did not have a "zeros are not permitted" policy. By using both qualitative and quantitative data, the researcher was able to examine both student attitudes and student performance.

Subjects

This study was conducted in rural southwestern Minnesota. The researcher included three classes of Intermediate Algebra, a freshman level high school math course.

Population. This study was conducted in a rural, southwestern Minnesota school district. The district consists of an elementary school that serves kindergarten through fourth grade and a middle school/high school that serves fifth grade through 12th grade. Serving a number of neighboring communities, the district has an enrollment of approximately 90 students per grade.

The population of the area is generally Caucasian of low- to middle-class socioeconomic standing. There is also a substantial Native American population as the district encompasses a reservation whose students enroll in the public school. Farming and agricultural research are the main means of employment for community members. Overall, the community is a tight knit group with many families having generations of history in this area—there is little turnover of families moving in or out of the district.

Sample. The researcher focused on three Intermediate Algebra classes during this study. Intermediate Algebra is the freshman math course that includes a review of eighth grade Linear Algebra, expands into quadratic and logarithmic Algebra, and explores probability and statistics. All students enrolled in Intermediate Algebra were involved in this study. The three classes will be designated Block 2A, Block 2B, and Block 3B. Blocks 2A and 2B were morning classes,

while Block 3B was an afternoon class. The "zeros are not permitted" policy was implemented in Block 2A and Block 2B, but not in Block 3B.

Block 2A consisted of 24 students between the ages of 14 and 17. There were 12 females and 12 males, with four students having Individualized Education Programs (IEPs). Block 2B consisted of 20 students between the ages of 14 and 16. There were 13 females and seven males, with one student having an IEP. Block 3B consisted of 30 students between the ages of 14 and 16. There were 14 females and 16 males, with seven students having IEPs. Of the seven students with IEPs, three students were in the self-contained Setting III Program and came down to the mainstream school setting only for math. This class also included one special education teacher and two paraprofessionals.

Design

This study was designed using mixed methodology. Both qualitative and quantitative data was collected in all three Intermediate Algebra classes. This data was then used to compare the achievement of students in the classes with a "zeros are not permitted" policy with the students in the class that did not have a "zeros are not permitted" policy.

Instrumentation. Three sources of data were collected in this study. Quantitative results were achieved using chapter test scores and student course grades, while qualitative results were achieved using a student survey.

Chapter test scores. All three classes of Intermediate Algebra were given the same cumulative chapter tests during this study. The tests were given at the completion of chapters one, two, three, four, and five in the course textbook.

Content. The chapter tests for Intermediate Algebra were cumulative, free response tests. Each test consisted of open-ended questions from the current chapter's material, as well as

questions that required the use of knowledge learned in previous chapters. While each test consisted of a different number of questions, all of the tests were worth 100 points.

Format. The tests for chapters one, two, three, four, and five were all similar in format. Each test consisted of problems of increasing levels of difficulty and application. The tests were entirely free response (there were no multiple choice or true/false questions) that required students to show their work to receive full credit. The tests all contained some problems that required students to simply demonstrate a skill, as well as some problems where students had to apply skills from the current chapter along with skills learned in previous chapters. As a whole, the tests were each worth 100 points, with each question scaled for difficulty and the amount of work necessary to achieve the correct answer. Students received credit for both attempt (showing work that was relevant to the problem) and correct answers. All students, regardless of their score, were given the opportunity to improve their test grades through test corrections. Following a chapter test, students had three days to redo any missed problems, showing all their work and explaining their mistakes, to regain up to half of the points they missed. The overall intent of test corrections was to help students continue the learning process and gain additional knowledge even after the test was given.

Pilot-test procedures. These chapter tests were piloted over the previous three school years. The researcher first developed the tests in the fall of 2008. Each year since then, the researcher has reflected on the students' responses, successes, and challenges to continually improve the tests' ability to accurately measure student knowledge. As an assessment tool, these tests continue to evolve as students are expected to display mastery and application of skills in different ways.

Course grades. The course grades for Intermediate Algebra were calculated using homework scores, quiz scores, and test scores. These grades were then used to give students credit towards graduation.

Content. Course grades for Intermediate Algebra were based on homework completion and accuracy scores, quiz scores, and test scores. Students were given the opportunity to improve their test scores by completing test corrections, which would then improve their overall course grade.

Format. Intermediate Algebra course grades were calculated using a strict point for point scale (there were no weighted grades). The students' grades were comprised of approximately 40 percent homework points, 40 percent test points, and 20 percent quiz points. Each grading period (quarter) was nine weeks long, with course credit being given for the semester grade. The semester grade was determined by averaging the grades for first and second quarter.

Pilot-test procedures. This course grade calculation was developed and refined over the previous three school years. The researcher tried various combinations of weighted grades and point systems before settling on this particular approach. Student and parent feedback led the researcher to believe this was the best combination to show a balance of student effort (through homework points) and knowledge (through test scores).

Student survey. The students in the three Intermediate Algebra classes involved in this study all took a survey (Appendix) at the beginning and at the end of the semester that this study encompassed. The survey inquired about their homework habits and their beliefs about the role homework had on their success in class.

Content. The survey contained five questions pertaining to homework and one question pertaining to the student's grade in school. The five questions on homework focused on whether

or not students thought homework completion was tied to their success in class, how often they completed their homework, what (if anything) kept them from completing their homework, and what would help them complete their homework more often.

Format. The survey consisted of questions that involved students circling the answer that most often described them, as well as questions where students checked all options that applied to them. When questions required students to circle an answer, a Liker-type scale was used. Students were asked to choose from options ranging from always to never (always, most of the time, half of the time, rarely, never) or from options ranging from strongly agree to strongly disagree (strongly agree, agree, neutral, disagree, strongly disagree).

Pilot-test procedures. While this survey was not officially pilot-tested, the researcher did have fellow teachers review the survey and offer suggestions for improvement or clarification. These suggestions were incorporated into the final survey that was given to students at the beginning and end of the semester this study encompassed.

Procedures

This semester long study was conducted in the researcher's high school math classroom. All data was collected by the researcher, with support from the high school administration, with the ultimate goal of determining whether or not homework completion truly improved student learning.

Data collection procedures. This study was conducted over an 18 week period from August 22, 2011 through December 21, 2011. Data collection was done for one semester of the school year to allow for ample and accurate information to be recorded. The entire study, including all data collection, was done in the researcher's classroom. Student surveys, instruction, tests, and "zeros are not permitted" homework intervention time were all done within

the student school day (8:30am-3:15pm). While all aspects of the study were administered by the researcher, the high school principal was aware of and supportive of this study.

The student survey was administered on the first day of school as well as the last day of the semester. The initial surveys were kept in a confidential file until the end of the semester to provide comparison to the survey given on the last day of the semester. Chapter tests were given in class at the end of each chapter. These tests were returned to students, but test scores and some copies of student work were kept in confidential files until the completion of the study. Student test score and course grade data was collected and stored on the researcher's electronic grade book. This data was available to students and parents/guardians at any time through their password-protected access to the electronic grade book. Student attendance at "zeros are not permitted" homework intervention times was documented on a spreadsheet for analysis at the completion of the study. This spreadsheet was available only to the researcher.

Data analysis procedures. The data collected through student surveys, chapter test grades, and course grades was used to determine if a "zeros are not permitted" policy improved student learning. The surveys were used to analyze any change in student perception of the importance of homework on overall achievement, as well as to assist the researcher in understanding any roadblocks students faced when attempting to complete homework. The chapter test scores were used to determine if students who completed more homework truly gained a deeper understanding of the concepts than their peers who did not complete their homework. Similarly, the overall course grades were used to analyze if homework completion improved student achievement and learning.

Summary

Data from student surveys, student test scores, and overall student course grades was collected from three Intermediate Algebra classes over an 18-week period. These classes were comprised of students from a rural, southwestern Minnesota town that is sustained largely through agriculture and agricultural development. The data collected in this study focused on student homework completion and its effect on overall student learning in the high school math classroom.

In Chapter Four, the researcher will analyze the results of this study. Through the use of quantitative analysis, charts, and student work examples, the researcher will show how a "zeros are not permitted" policy affected student learning in the high school math classroom.

Results

Introduction

In this chapter the researcher presents the findings of this study. The researcher will describe the impact on student test scores, overall course grades, and opinions towards homework following the implementation of a "zeros are not permitted" policy in a high school math class. Graphs and narrative descriptions will be used to help fully convey the findings of the study in this chapter.

Findings and Results

Three different instruments of data collection were used during this 18-week study: student grades on chapter tests, overall student course grades, and a student survey designed to investigate students' opinions towards homework. A "zeros are not permitted" policy was implemented for the full 18 weeks of the first semester in Block 2A and Block 2B, while no policy on homework was implemented in Block 3B. The three data collection instruments were then used to compare the impact that a "zeros are not permitted" policy had on student learning in the classes where it was implemented, versus the class in which it was not implemented.

Chapter test scores. During the course of this study, five chapter tests were given. The chapter tests consisted of fill in the blank, short answer, and extended response questions regarding the vocabulary, algebraic topics, and applications covered in the chapter. Each chapter test consisted of a different number of questions, but all tests were worth 100 points. Students in Block 2A and Block 2B had the "zeros are not permitted" policy in place to assist them with homework completion, while students in Block 3B did not have the additional homework support.

The average class score on each of the five chapter tests is given in Figure 1. On the Chapter One test, Block 2A had an average score of 89.77 percent, Block 2B had an average score of 90.63 percent, and block 3B had an average score of 80.33 percent. On the Chapter Two test, Block 2A had an average score of 81.08 percent, Block 2B had an average score of 79.25 percent, and block 3B had an average score of 75.22 percent. On the Chapter Three test, Block 2A had an average score of 83.96 percent, Block 2B had an average score of 80.24 percent, and block 3B had an average score of 76.52 percent. On the Chapter Four test, Block 2A had an average score of 79.31 percent, Block 2B had an average score of 84.62 percent, and block 3B had an average score of 76.62 percent. On the Chapter Five test, Block 2A had an average score of 72.96 percent, Block 2B had an average score of 78.00 percent, and block 3B had an average score of 66.37 percent. While Block 2A had the highest class average on the Chapter One, Chapter Two, and Chapter Three tests, Block 2B had the highest class average on the Chapter Four and Chapter Five tests. Overall, the classes which had a "zeros are not permitted" policy scored higher on the chapter tests than the class that did not have a homework policy in place.

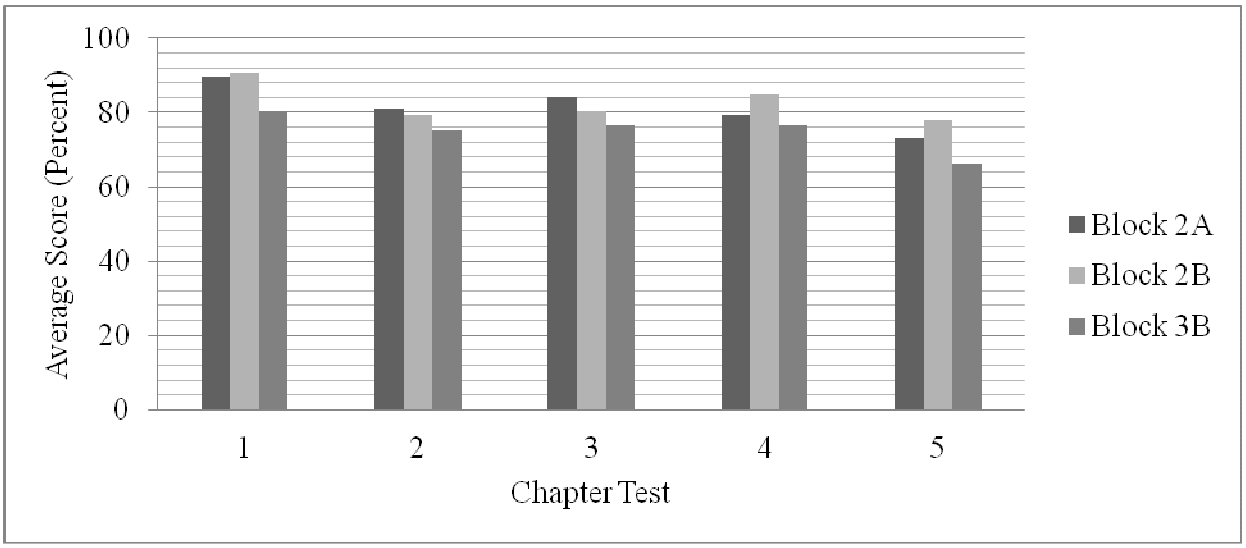

Figure 1. Class average scores on chapter tests.

Course grades. This study encompassed the entire 18-week first semester. At the completion of the semester, students were given grades based on their homework scores, quiz scores, and test scores. The grades were determined by the following formula: 45 percent homework, 45 percent tests, and ten percent quizzes.

In Block 2A, 46.15 percent of the students earned an A, 23.08 percent of the students earned a B, 11.54 percent of the students earned a C, 15.38 percent of the students earned a D, and three and eighty-five hundredths percent of the students earned an F. In Block 2B, 63.64 percent of the students earned an A, nine and one-tenth percent of the students earned a B, 13.63 percent of the students earned a C, zero percent of the students earned a D, and 13.63 percent of the students earned an F. In Block 3B, 21.43 percent of the students earned an A, 21.43 percent of the students earned a B, 25 percent of the students earned a C, 14.29 percent of the students earned a D, and 17.85 percent of the students earned an F. Figure 2 shows the percentage of students earning each course grade by class period. Blocks 2A and 2B, where the "zeros are not permitted" policy was implemented, had both a higher percentage of students earning an A or a B, and a lower percentage of students earning an F than Block 3B where no homework policy was in place.

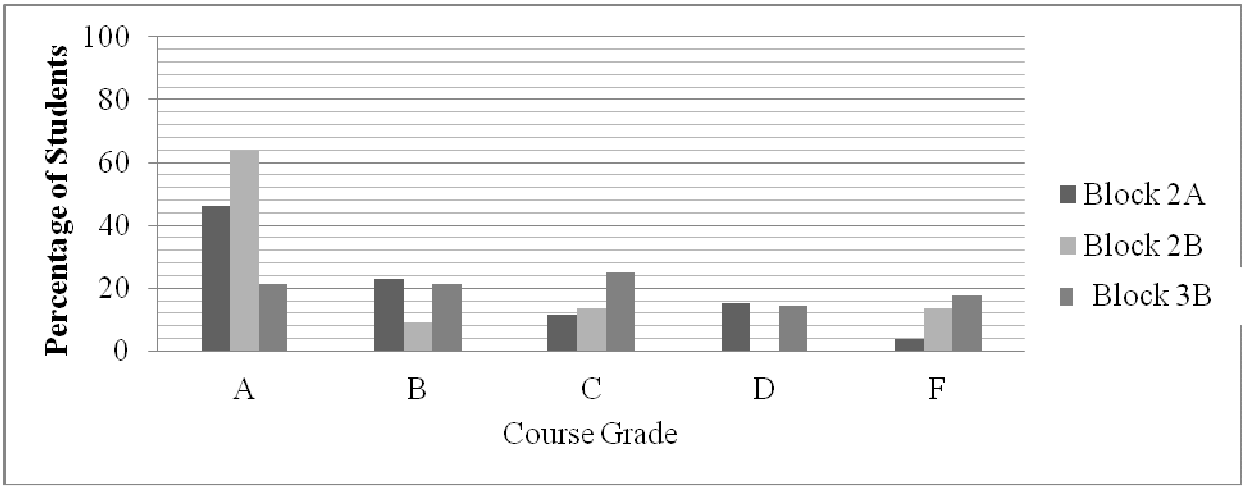

Figure 2. First semester course grades by class period.

Student survey. A student survey (Appendix) was given on the first day of the semester and again on the last day of the semester. The two questions that the researcher chose to analyze were questions number one and number two. On the first question, students were asked to use a Likert scale to gauge the impact homework completion had on their success in class, while on the second question, students were asked to rate how often they completed their homework.

Question one stated "Completing homework is very important to being successful in this class" with responses on a scale of one to five (one being strongly disagree and five being strongly agree). Figure 3 shows the results of question number one on the first and last days of the semester. On the first day of school, Block 2A had an average rating of four and seventy-nine hundredths, Block 2B had an average rating of four and fifty-six hundredths, and Block 3B had an average rating of four and twenty-one hundredths. On the last day of the first semester, Block 2A had an average rating of four and forty-four hundredths, Block 2B had an average rating of four and sixty-eight hundredths, and block 3B had an average rating of four and thirty-eight hundredths. Block 2A students showed a decrease in how important they felt homework was to their success in class, while both Block 2B and Block 3B showed an increase in how important they felt homework completion was to their success, with Block 2B showing the larger increase.

Question two stated "I complete my homework" with responses on a scale of one to five (one being never and five being always). Figure 4 shows the results of question number two on the first and last days of the semester. On the first day of school, Block 2A had an average rating of four and sixty-eight hundredths, Block 2B had an average rating of four and eleven hundredths, and Block 3B had an average rating of three and seventy-five hundredths. On the last day of the first semester, Block 2A had an average rating of four and thirty-six hundredths,

Block 2B had an average rating of four and fifty-eight hundredths, and Block 3B had an average rating of four and seventeen hundredths. Again, Block 2A showed a decrease in their homework completion by the end of the semester, while Block 2B and Block 3B showed an increase, with Block 2B again showing the larger increase.

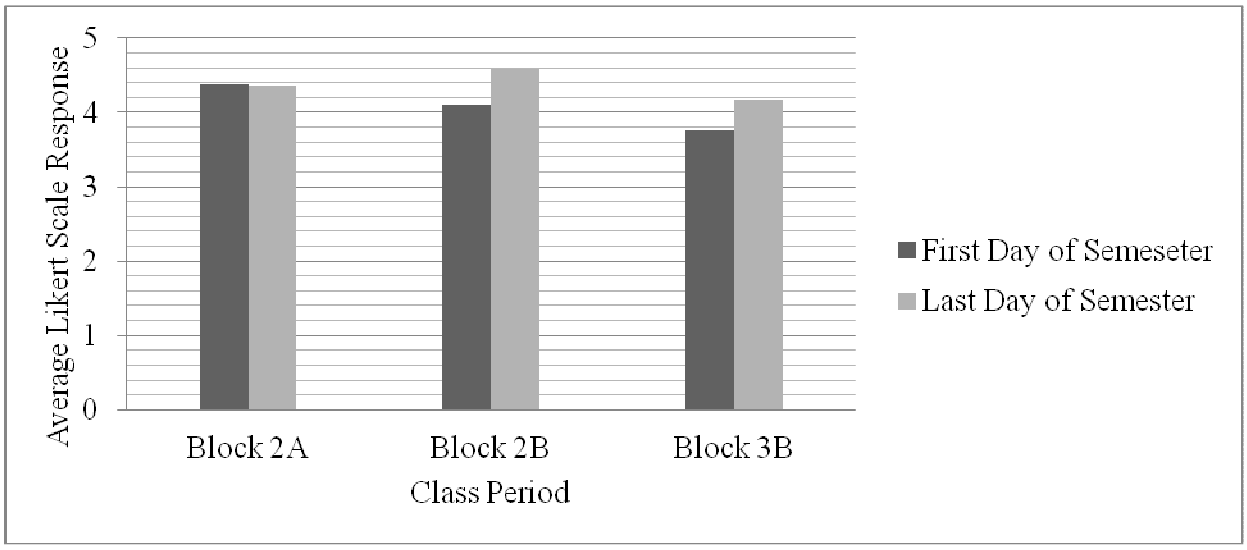

Figure 3. Student responses to survey question number one "Completing homework is very important to being successful in class".

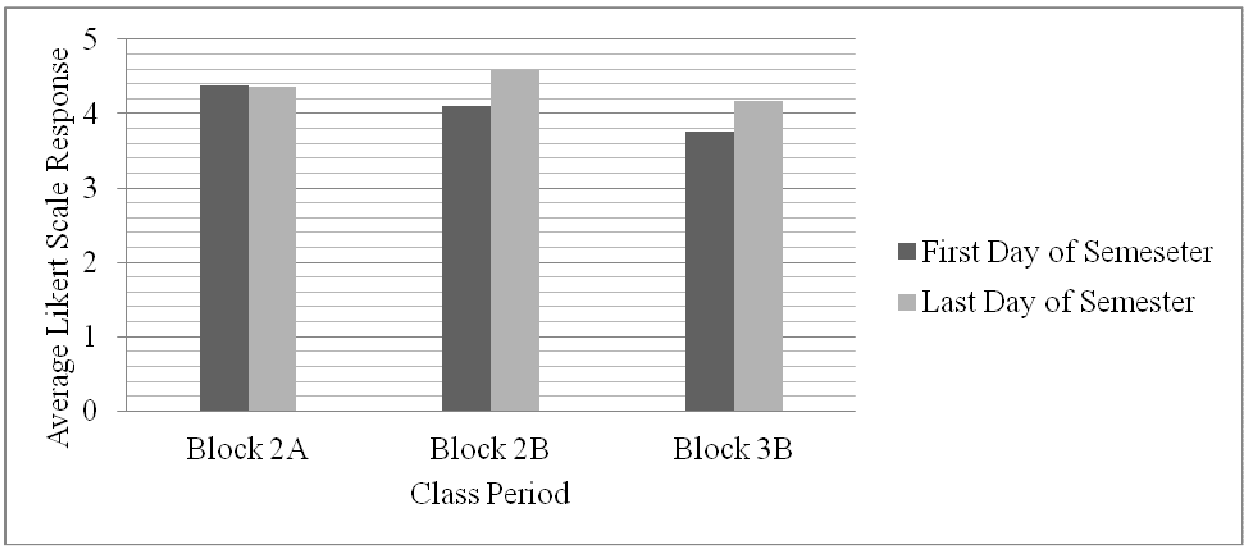

Figure 4. Student responses to survey question number two "How often do you complete your homework".

Summary

Over the course of the 18-week first semester, three different data collection tools were used to examine the effect of a "zeros are not permitted" policy on student learning in a high school math classroom. Chapter test scores, student course grades, and a student pre- and post-survey were used to investigate the impact of a "zeros are not permitted" homework policy. Scores on each chapter test were higher for the classes that had a "zeros are not permitted" policy than for the class that did not have a homework policy in place. Additionally, more students passed the course with an A or a B in the classes that had a "zeros are not permitted" policy than the class that did not have the same homework policy. Further, fewer students failed the course in the classes that had the "zeros are not permitted" policy than those in the class that did not have the policy implemented. The survey results were less consistent regarding student feelings towards homework completion.

In Chapter Five, the researcher will present the summary, conclusions, recommendations, and implications. The researcher will focus on areas of concern within this study and possible reasons as to why certain outcomes were found.

Discussion

Introduction

In this chapter, I will summarize the findings of this study. I will examine the results of a "zeros are not permitted" policy in my high school math classroom and its impact on student learning in conjunction with prior research done on homework. Additionally, I will give my recommendations for practice in education, as well as for future research, based on my study. I will expound on the implications of my study on a "zeros are not permitted" policy and its effect on my students' learning.

Summary of Study

Homework is an inescapable part of the American educational system. As a high school math teacher, I know adequate practice is necessary for students to understand and be able to apply each concept. Just like countless other educators, I have fought a losing battle to get students to complete their homework. I strongly believe that adequate practice is necessary for students to become proficient in new skills. When students do not complete their homework, they are missing valuable opportunities to learn concepts and become confident math students.

After conducting a comprehensive literature review, I found a variety of studies that demonstrated a positive correlation between homework completion and student achievement. However, I was unable to find any research based studies that investigated ways to improve student homework completion. Through my research on the topic of homework, I found I was very interested in the factors that affect student homework completion, as well as the effect homework completion had on overall student learning.

Following my review of numerous research studies, I found the factors that most often affected student homework completion were time to complete their homework, resources needed

to complete their homework (such as paper, pencils, calculators, etc.), and the support of someone with knowledge of the topic. In an attempt to offer my students support that they might not be receiving at home, I gave my students the time, resources, and support they need to complete their homework within the school day by implementing a "zeros are not permitted" policy. Students who did not come to class with their homework completed were required to come in at lunch to complete their assignment. This ensured they had the time, resources, and help they needed. This study was not designed to investigate the validity of homework, but rather to see what impact a "zeros are not permitted" policy had on student homework completion and student learning.

Summary of the Findings and Conclusions

The implementation of a "zeros are not permitted" policy in two of my Intermediate Algebra classes had a definite quantitative impact on student test scores and overall grades, as well as a noticeable qualitative impact on student opinion towards homework. The average test scores in the classes which had a "zeros are not permitted" policy in place were five to 10 percentage points higher than the average test score in the class without the homework policy. This equates to a half to full letter grade advantage for the students in the classes with additional homework help. Further, the classes with a "zeros are not permitted" policy had a higher percentage of students earning an A or B for the semester than the class without the homework policy. At the same time, the combined percentage of students earning a D or an F for the semester was lower in the classes with the additional homework support than in the class that did not have the "zeros are not permitted" policy. While all classes showed an increase in the Likert scale responses to the question "completing homework is very important to being successful in

this class", Block 2A and Block 2B maintained a higher score over Block 3B, where the homework policy was not implemented.

My original intent in developing and implementing this study was to fill a gap in the current research on homework. During my research I found many studies that examined various methods and programs to help students complete their homework outside of the school day, as well as numerous studies that investigated the impact of homework completion on student achievement. However, I was unable to find any studies that focused on possible solutions to help students complete their homework and improve their learning within the hours of the school day. As teachers are called on more and more to fill in for missing parents and family structures in the overall education of our students, I wanted to conduct a study that would impact my students within my realm of influence, the student contact day.

Even though my research did not replicate any previous studies, it did build on ideas that had been investigated. My study supports the research of Marzano, Pickering, and Pollock (2011) in which they found students must practice upwards of 24 times before reaching competency. The student test scores in Block 2A and Block 2B suggest that students who have more practice are more likely to master a skill and be able to demonstrate their mastery on an assessment. Additionally, the increased test scores and course grades in Block 2A and Block 2B where the "zeros are not permitted" policy was implemented are in line with Vatterott's (2009) research showing the amount of time spent doing homework is positively correlated with student achievement. These results also agree with Epstein and Van Voorhis' (2001) research that students who complete homework have better grades and higher test scores than students who do not complete their homework. Research repeatedly showed that students struggle with homework completion (Bryan and Burnstein; Cancio et al.; Hughes et. Al), but that when

students did complete their homework, they achieved at a higher level than the students who did not complete their homework (Cooper et al., 2006). My research supported these findings as well. While I had many students who repeatedly were "zapped" and had to stay in at lunch to do their homework, they did eventually complete their homework and achieve at a higher level than the students in which homework completion was not required. Although my project did not replicate any previous study, it did have similar end results showing that students who complete their homework have higher test scores and overall grades than students who do not complete their homework.

Ultimately, I found exactly what I was hoping to find in this study: students who completed their homework had an increase in learning, test scores, and course grades compared to their peers who did not complete their homework. While this study was paperwork and labor intensive, as I had to keep track of students who were "zapped" and needed to come in for help at lunch, it did result in an increase in student achievement. I believe this result could be replicated in other classes, other subjects, other grades, and other schools. The main issue impacting the effectiveness of a "zeros are not permitted" policy is the follow through on the part of the teacher. Anyone hoping to achieve similar results of increased student achievement must be ready to make sure students come in and complete their missing homework, which often takes time to record students who should be attending and track them down when they forget to show up.

A "zeros are not permitted" policy had a positive impact on student learning in my high school math class. Additionally, the results of my study were in line with previous studies that were similar in nature to the one I implemented. I believe this policy could be implemented effectively in other classrooms and schools, and in a variety of grades and subject areas.

Recommendations

The time I spent researching homework, homework completion, and student achievement, as well as the time I spent implementing a "zeros are not permitted" policy in my high school math classroom have lead me to recommendations for practice and future research. I found many things through my research and project that I believe all teachers should be aware of in their practice. Additionally, I found a number of areas in which future research could expand upon the project I began.

Recommendations for practice. Homework is essential to student mastery of new ideas and concepts. With the vast number of state and national standards I am expected to cover, there is no feasible way to help all my students master all concepts with the time I have them in class. As educators, then, we have to use homework as effectively as possible to help our students learn. As a result of my research on homework and my implementation of a "zeros are not permitted policy" in my high school math classroom, I have a number of recommendations for teachers regarding homework.

- Homework, and the debates surrounding it, has been around for more than a century. Despite all the debates, the amount of homework assigned by teachers has remained relatively constant. There is, however, an optimum amount of homework for students—too much of a good thing can become a bad thing.
- Practice is essential to the mastery of new skills. Homework, then, is one of the most accessible ways to help students get more practice. The homework assigned by teachers needs to be at a level where students can be successful, rather than discouraged.
- The most common reasons students do not complete their homework is a lack of time, a lack of resources, or a lack of knowledge/support. Educators must provide students with

time, resources, and support within the student day. While after school programs are helpful, many students are unable to attend due to athletics, extracurriculars, or transportation issues, among other things. Consequently, homework help is most effective when it is held within the actual school day.

In the end, the most important implication for practice I found while researching homework and implementing my study was the need for support from educators. So many students today do not have the resources and support at home to be successful, and as such, educators are being called upon to fill that role. I believe wholeheartedly that homework does improve student learning, but only when students are given the time, resources, and support they need to complete their homework.

Recommendations for future research. At the beginning of my study, I realized I had many limitations that would ultimately affect the results of my research. First, the demographics of my classes are impacted greatly by my school's scheduling. Students who participate in music classes must take math in the morning, while students who do not participate in band or choir must take math in the afternoon. Studies have shown that music has a positive impact on academic achievement, so my students that tend to be higher achieving and more motivated were all grouped in my morning classes. Additionally, my afternoon class had a much higher concentration of students receiving special education services. As a result, my students that probably could have most benefitted from additional homework support were in my class that did not have a "zeros are not permitted" policy, while my higher achieving students were in the classes receiving additional homework help.

If I could pursue this research further, there are a number of other areas I would like to investigate. Variables of which I wish I had more control include:

- size of class,
- students receiving special education services,
- students enrolled in band or choir,
- students participating in sports or other extracurriculars, and
- students with parents actively involved in their education.

In a future study, it would be particularly interesting to be able to control for some of these variables that were out of my control. I believe some of the success of my study was a result of the students randomly assigned to the classes that had a "zeros are not permitted" policy, rather than the policy itself.

When I first planned this study, I had planned to use student scores on a standardized test given at the beginning of the semester and at the end of the semester. I believe this would have controlled some of the impact that scheduling had on my classes, as I would have been able to see a before and after picture of my students' abilities in math. However, my school chose not to use that particular standardized test this year. In a future study, I would like to see the impact that a "zeros are not permitted" policy would have on student achievement on a pre and post standardized test. While my study showed promise for my students, I am incredibly interested in the possible results a similar study would have that can control the areas of which I could not, and that could include a pre and post test that would show student improvement.

Implications

Homework is, without a doubt, a part of every child's education. While there are still many debates raging about how much, if any, homework should be assigned, numerous studies have shown a positive correlation between homework completion and student achievement. In a society where so much is being expected of educators and where the standards students are

expected to master at each grade level seem to be growing exponentially, homework seems to be the only way to help students get the practice they need to truly understand the material they are expected to master. As long as homework continues to be a part of the American education system, educators are going to have to find ways to make homework beneficial for their students. When students lack the time, resources, and support to complete their homework outside of school, educators need to step up and fill that role. Providing students with whatever it is they lack—time, resources, or knowledge—is a vital part of the job of every educator. In a profession where our job is to help shape, mold, and define the next generation, we must use every method available to us to help our students achieve. A "zeros are not permitted" policy is just one small, but incredibly powerful, tool to help educators give students the help they need to achieve at the highest level possible, therefore ensuring a future as bright and full of hope as possible for this generation and the generations to come.

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Appendix

Homework Survey

1) Completing homework is very important to being successful in this class.

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

2) I complete my homework:

never rarely half of the time most of the time always

3) Reasons I don't complete my homework are (check all that apply):

___ I didn't have time to do it.

___ I didn't have the materials I needed (book, calculator, paper, etc.) to do it.

___ I didn't know how to do it.

___ I forgot about it.

___ I just didn't care about it.

4) Things that would help me complete my homework are (check all that apply):

___ supervised time at school (before school, during lunch, or after school)

___ extra book at home

___ online assignments

___ other (please explain):

5) Grade: 9 10 11 12