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What is the Relationship Between Homework and Performance on Assessments?

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What is the relationship between homework,
and performance on assessments?

by

Cari DuBois

January 25, 2011

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Master of Science in Education

What is the relationship between homework,
and performance on assessments?

by
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Abstract

The aspect of whether homework is beneficial to student learning was investigated by comparing the efficiency of students completing homework verses class work. This study was conducted in a high school geometry class and it included 22 students, 4 male students and 18 female students. Using the grades on three separate tests as a performance indicator, the hypothesis of whether homework had a positive effect on student achievement was tested. Student perception of whether homework was beneficial was also examined. The results of this study indicated that homework did have a significant effect on student achievement.

Chapter one: Is homework beneficial to student learning?

Problem Statement

What is the relationship between homework and performance on assessments?

Significance of the problem

Often students have been assigned homework and then they have not come to class with it completed. Did this adversely affect their grade? Since a grade was the number placed on what a student knew, was giving a zero for homework not completed a true indicator of what the student knew? For decades teachers, administrators, students and parents have had various opinions on whether homework should have been assigned.

Does the completion of homework increase a student's score on an assessment? If homework was given and students did not perform better on assessments, should homework have been assigned? The assessments that were given during class and work done during class were a true indicator of what the student, that did not do their homework, understood. If students were provided the opportunity to complete the practice in a structured environment, with help from peers and an instructor, did this increase assessment scores?

Purpose

This research was conducted to find the value and importance of homework. This research was designed to examine the effects of the use of homework on the achievement of students during testing. Students' opinions were also recorded to examine what their views on homework were before and after having homework and not having homework.

Rationale

Should homework be assigned to increase student understanding? Did students gain as much understanding without completing homework assignments as they would have completing homework assignments? Homework and subsequent test scores for one week were compared to class work and subsequent test scores for another week. Both sets of data were compared to students' previous grading practices. Students' attitudes toward homework were also assessed before and after the study. This was done to assess if there was a difference between test scores with homework and without homework. Once the study was completed students' attitudes were assessed to determine if their attitude stayed the same or changed in conjunction with homework?

Definition of terms

1. Assessment or test – An assessment or test referred to questions given to students that checked their understanding of the material that had been taught in the week prior. Questions were answered without any aids and were only on material that was presented in the previous week.
2. Class work – Practice problems given to the students by the teacher that were to be done in the classroom with the aid of peers and/or the teacher. Notes, textbooks and any other material available to the students were able to be used.
3. Homework – Practice problems given to the students by the teacher that were to be done outside of the classroom. Students could use any resources to complete this work.

Summary

This research was done to assess if students benefited from the completion of homework. This study was completed out of the frustration felt when students did not complete homework on a regular basis. This research studied the affect of homework on students that did not complete it regularly and students that did complete it regularly. The intention was to study ways

that increased student comprehension and understanding while increasing student grades.

Chapter two: What research has revealed

Introduction

“Homework, defined as tasks assigned to students by school teachers that are meant to be performed during nonschool hours” (Cooper, Greathouse, Lindsay, Nye, 1998, p70). Homework policies and practices have been a hot topic among administrators, teachers, parents, students and researchers for numerous years. The research that has been conducted had taken various sides and had established an assortment of outcomes. With the drive for schools to have had improved performance, the homework debate continued to be a hot topic.

Many questions have arisen about homework. Some included; Did homework make a significant difference, have no effect or adversely affect student learning? If this question cannot be answered with justification then was there a call for the homework that was assigned? Do students really know the material well enough to complete it on their own? Are students doing their own work? How much homework is necessary? What percentage

of a student's grade should account for homework? The answers to these questions have often led to different views and research outcomes.

Reasons homework has been given

Types of homework

There have been many different types of homework given to students. An argument has been, that the type of homework given could have made a difference in student achievement. Time spent doing homework could have been done by completing worksheets, exercises from textbooks, completing a project or other teacher made homework. The level of engagement that each of these assignments produced may have been less than optimal or dissimilar from each other. There has been a vast amount of research done on the topic of homework that has had a focus on students' achievement after homework was given or omitted from instruction. The type of homework given has been less of a factor in these types of studies.

Reason

Homework has been given for many different reasons. At all grade levels a main reason for homework is that it is said to increase student

understanding and it allowed for more practice or preparation for a lesson discussion. There were also many other reasons that homework has been assigned. Some of these reasons have included; homework provided a link between school and home, elicited parent participation, showed a parent how their student thought, helped students to learn; accountability, study skills, self regulation, perseverance, self-determination and intuitiveness. These traits could have been learned through means other than homework. The need for homework to facilitate these traits has been questioned because of the adverse affects that it could have had on a student's home life.

How homework affects students

Struggling students had more difficulty completing tasks like homework at home. This puts some students at a disadvantage. Often students that struggled with homework did not complete their homework, completed it incorrectly or were frustrated with the task. This caused even more frustration and confusion when homework was evaluated and corrected.

Glasser (1992) stated the following regarding the completion of homework:

Homework is counterproductive and causes friction between teachers,

students, and parents. Students hate it and it results in students hating school. Teachers cannot plan exciting instruction because homework causes low quality school work. Students that do not do their homework or do it inadequately caused more students to be at different instructional levels and this made the teacher's job tougher. Parents received calls when their student did not complete homework which caused more tension at home. This caused anger and frustration between children, teachers and parents with each blaming the other for what they could not do. Students learned to dread school and this dread has been a leading cause of students dropping out.

(pgs, 250-251)

Glasser (1992) also stated the following:

If homework was eliminated then students, teachers and parents would be free from the problems caused from homework. This would allow everyone to concentrate on a higher quality of work. Students would want to bring home work because they would not have enough time in school to complete as much work as they wanted. Since the work was voluntary there would be peace and satisfaction in the work completed. This type of work would better prepare students for their adult life and is more indicative of

what they would be doing in a job later in life. Teachers that state that without homework they cannot cover the curriculum do not make the proper effort to plan interesting lessons. (pgs, 253-254)

An adult would have tended to put forth more effort if they enjoyed what they were doing. If students found learning exciting and worth while then the end result would be of higher quality. To prepare students for their adult life school should follow more of an adult like model. How many people have chosen a profession in which they bring work home with them every night? Some individuals are not cut out for this type of work. These individuals chose professions where they could still have a life outside of work. Students have felt they would also like to have time to do things outside of school that did not pertain to school work or homework. Homework was not beneficial to their learning if the work was not completed.

Wormeli (2003) found the following:

If one of my students never does any homework, yet gets straight A's on all tests and projects, then homework serves no purpose for that student. Homework's objective is to be instructional, not punitive. It would be wrong

to fail a student for not doing homework when he had mastered all I had to teach (p. 128).

If a student has learned the material then to have punished them for not completing extra work, that does not serve them a purpose, would be punitive. Most adults would not want to stay at a job when the majority of their work did not serve a purpose. If students felt a purpose in what they were completing then they would have enjoyed completing it and have produced exemplary work. "People are only good at their jobs-and good at life- if they believe in themselves, in their own competence, and in the value of others. This is what gives them the drive to achieve" (Littky, Grabelle, 2004, p.38).

Littky, Grabelle (2004) stated the following:

We learn best when we care about what we are doing, when we have choices. We learn best when the work has meaning to us, when it matters. We learn best when we are using our hands and minds. We learn best when the work we are doing is real and relevant. (p. 28)

When homework was given it would be more productive if students had a choice in the work they completed. Although this may have created

more planning for the teacher, students would have found the work to have had more meaning and more personalized. Work that had more meaning to students would have resulted in a higher quality output.

Did the research support homework?

A pro homework thought was that “the underlying assumption is that more time in school, more homework, more technology, and more high-stakes testing will produce smarter, better-prepared students” (Baines, 2008, p. 23). This postulation has not been supported when American schools were compared to other countries. As shown in the TIMSS report “America...leads the world in assigning homework-a whopping 140 minutes per week in mathematics for secondary students. Despite this extra workload, American students post mediocre scores on math tests” (Baines, 2008, p. 24). “The United States...is now among the most homework-intensive countries in the world for 7th and 8th grade math classes” (Kohn, 2006, p. 8).

Teachers in the United States have given more homework without better results. If something did not work why would you have tried it again and again without change? Do Americans just simply accept homework? Parents and students should have had trust in their teachers and

administrators to educate them in the best manner possible. If this was the case why did some teachers assign homework without looking at the research? Why is homework taken at face value and assumed that it has been a positive influence on student learning? Homework has been made a top priority in some classrooms when the method of instruction should have taken the stage.

The research has not supported pro or con homework exclusively. The results have been back-n-forth. Approximately every ten years the push for more homework or no homework has changed among United States schools. When this change had taken place the curriculum was also changed in many instances. The values of students and parents also change with each generation. The outcome has skewed results since more than one aspect of learning and teaching was changed.

Another study that used the TIMMS 2003 data was completed by Jaan Mikk (2006). While compiling the information it was found that age and duration had an effect on whether homework had a constructive effect. It was also found that “students’ achievement was significantly lower in countries, in which homework contributed marks, homework was frequently the basis

for class discussion, students corrected homework in class etc.” (Mikk, 2006, p. 1) Homework completion is more of a matter of work ethic and responsibility. A student’s grade should have showed what a student learned, not if they completed an assignment. The student’s grade should not have combined work ethic, responsibility and understanding into one mark.

When homework policies were examined around the world “The relationship between national patterns of homework and national achievement suggests that... more homework may actually undermine national achievement” (Baines, 2008, p. 25) Researchers seemed to agree that the amount of homework given and at what age it was given was a significant factor in the effectiveness of homework.

Keith, Diamond-Hallam, & Fine, (2004). found the following:

One critical aspect of homework’s effectiveness is *time spent* doing homework...the effects of time spent on homework may be curvilinear, with each additional hour showing a smaller pay-off in achievement...that is, frequent shorter assignments may be more effective for learning than infrequent, longer ones. (p189) If students were given shorter assignments they would have had more of a feeling of accomplishment. It was frustrating

to complete a long assignment. If it was being completed incorrectly or the directions were not explicit students often gave up or became frustrated.

Kohn (1999) stated the following regarding assigned homework:

If students were given more homework than others could relax since students would not have time to relax. Cooper concluded that studies looked at achievement rather than how students felt about homework. Homework was relevant in high school, a little relevant in junior high school and irrelevant in elementary school. Homework was only related to how well a student did in the class but not how well they did in college. Other less biased studies found that *"homework didn't help at any age."* The studies have not really addressed whether students have learned by completing more homework assignments. The question should be asked; what is the purpose of the homework assigned? (pgs104, 105) More importantly what should have been the purpose of homework?

Arithmetic homework had been given with the rationale that "repeated practice of the material will help students learn" (McCoy, & Wake Forest University, 2007, p. 79). Students needed time to process the material on their own and then they would understand it better in the future. If the

students completed the homework wrong then they process the material wrong. “Keith Diamond and Fine (2004) found that homework had a substantial effect on academic performance. Farrow, Tymms and Henderson (1999) suggest that lack of consensus among the research proves that homework should be eliminated” (McCoy, & Wake Forest University, 2007, p. 79).

Specific studies

In the previous research study conducted by Peters, Kethley and Bullington it was found that homework had a positive affect on students. “Rayburn and Rayburn (1999) found a positive correlation between homework completion and student performance in an introductory accounting course” (Peters, Kethley, & Bullington, 2002, p. 340). What they found while completing their study did not support this previous research.

The relationship between homework and performance was studied by Peters, Kethley & Bullington (2002) in an Introductory Operations Management Course. The results were not what were anticipated. Three different teachers taught the class in a uniform manner. One group of students, Treatment A, were given graded assignments that affected their

grade. The other group, Treatment B, were given work to complete, but it was not graded since their exam scores were the only factor in their grading. The result was that "Treatment A had a lower overall exam mean than did the Treatment B students" (Peters, Kethley, & Bullington, 2002, p. 340). Therefore this study showed that "assigning end-of-the chapter problems and covering problems as part of the class lectures prepared students as effectively as did adding the requirement that the problems be handed in for grading...there were no benefits from having graded homework" (Peters, Kethley, & Bullington, 2002, p. 340).

Juarez (2001) found the following:

Cooper (1989) conducted a meta-analysis research on the effects of homework. In the first study, students who were given homework were compared to students who did not receive homework. Studies revealed that students who were engaged in homework activities outperformed classmates who were not engaged in homework by seventy-five percent. In Cooper's second study (1998), the amount of time spent on homework was related to achievement level. Results indicated that eighty-six percent of students, who spent more time on homework, obtained higher achievement scores than

those who spent less time. (p. 7) Two questions that should have arose from these different studies were; was the homework assignments given equivalent and what was the academic level of the students?

Kitsantas, Zimmerman (2007) found the following:

Homework quantity also has an effect on student achievement.

Trautwein et al. (2002) investigated the link between mathematics achievement and homework frequency with 7th graders. After controlling for intelligence, SES, motivation, and type of secondary school, these researchers found that students' frequency of homework had a positive effect on their math achievement. Similar findings were reported by Keith et al (2004) based on longitudinal data from th National Education Longitudinal Study (NELS). In this study of 12th graders, Keith et al. compared the effect of the time spent on in-school homework (defined as "home" work completed while in school) and time spent on out-of-school homework on high school students' grades. Results indicated that students' out-of-school homework time had a strong influence on their GPA, whereas in-school homework had no effect on their GPA. This same advantage of out-of-school homework time on GPA held true for 10th graders as well. (p. 99)

In the study performed by Kitsantas, Zimmerman (2007), 223 college students were studied. Students filled out a questionnaire and their grades were also looked at. They found that students that had completed homework achieved more and they also had done better on their self-regulatory development. They found that study habits were related to homework completion. The findings of this study only looked at students that were in college. This study would have misrepresented the population of students that attended public school. Many of the students that attended public school do not continue on and attend college.

In the homework myth by Alfie Kohn (2006) one high school social studies teacher interviewed, decided that he would discontinue giving students' homework all together and the outcome was astounding. Immediately the teacher noticed that without "homework, students came...and handed me articles about something we talked about in class or tell me about a news report they saw. When intrigued by a good lesson and given freedom [from homework], they naturally seek out more knowledge." (Kohn, 2006, p. 18). If a high-quality lesson is all that it took for students to get involved and seek knowledge on their own then teachers should have spent more time developing this type of lesson.

Wrap up

The need for more research on the topic of homework had continued for decades. Many people had accepted that homework had been beneficial without questioning the research behind it. More people in the recent past had begun to question homework. This renewed questioning has, in part, stemmed from the emphasis on student performance and reduced funding. There had been many different studies performed and the culmination of these studies had left more questions to be answered. As the financial strain tightened on schools studies became more crucial.

As a student homework was, at times, very beneficial to learning. Some students had to complete homework for the material to “sink in”, if there was not time in class to practice what they had learned. If there was time in class to practice what was learned then the homework was unfulfilling and just busy work to get done. Parents have stated that homework was just busy work and that it caused so much tension in the house, while it was getting done, that it actually hurt their student’s ability to learn.

Chapter three: Applications and evaluation

Introduction

This study was completed in a rural school district in Western New York State. There were approximately 17,000 students enrolled in school from kindergarten to twelfth grade. The average educational level for the residents of this district was a high school diploma or equivalency.

This study was designed to observe what effect homework had on student achievement. The study involved high school mathematics students, which were in one of three particular regents Geometry classes. The instructor was not the researcher for the duration of this study.

The goal of this research was to determine the effect that homework had on student achievement. This was measured by using students' grades that were obtained from assessment scores. Students' views about homework were also recorded before and after the study.

The objective was to support or refute the effect homework had on student achievement. Since homework was given to many students across America the question of whether it should have been given would have been

made clearer with this study. The result of whether student attitudes toward homework changed, was also measured after not having homework and having homework.

Participants

A total of 22 students participated in this study. There were 18 female students and 4 male students. These students were enrolled in a high school regents geometry class. Socio economic status, ability or genders were not taken into account for this study. The students that participated in the study were all in tenth grade, however, other students grades in the class ranged from tenth to twelfth grade. The participation in this research project was voluntary and did not affect students' grades in any way.

Procedures of the study

The purpose of this research project was to examine the effectiveness of homework completion. Two areas were studied; homework completion and corresponding test scores and class work examples and corresponding test scores. The same amount of practice questions were covered but they were covered as either homework or class work. This research covered a two and a half week period.

During the first half week, observations were performed to note regular routines. Students finished their current chapter with an assessment. This assessment was used as the test baseline in the study. A short survey on student views of homework and its effectiveness were given at the conclusion of this first half week.

During the second week, students' did not receive any homework. During this second week, the questions that would normally be received as homework were done during class. Students were able to work together, ask the teacher questions and use whatever resources were necessary to complete their work. At the end of the second week, students took a short test on the material that was learned during the week. There was an optional homework assignment given during the second week for students that were uncomfortable with not having any homework. No students chose to complete these optional homework problems.

During the third week, the teacher assigned homework every night it was graded and comments were added to assist the students' with any mistakes they had made. These homework problems were not gone over in class. On the last day of week three, students took a test on the material

learned during the week. Upon receiving their test back students received another survey to see if their views on homework had changed during the research project.

The test scores and record of homework completion were analyzed and compared to scores that were generally received in mathematics class. Students received a number and at no time were student names used. In order for students' to participate in this study, the student and parent or guardian gave their informed consent. The student's participation was voluntary and they had the right to refuse to answer any questions.

Instruments for study

Students were given a survey before the study started. This survey asked questions that would elicit answers from students to find out how they complete their homework and how they felt about completing their homework. The survey questions were as follows:

1. How often do you complete the Geometry homework that was assigned?
2. How often do you seek help to complete your homework?
3. Did you copy other students work just so that your work is complete?

4. Where did you complete your homework?
5. Did you find that your homework was (beneficial to your learning) or (just busy work to get done)?
6. On average how long did you spend on your homework?
7. Other comments that you would like to add about homework.

At the end of the study students were given another survey that mimicked the first one. The only question that was added to the survey at the end was as follows; did your view change after having homework for one week and then none? The results of both surveys were compared so that the results could be analyzed.

Students took a test at the end of their unit in class before the survey started and this test score was recorded as the baseline test. Prior to this test students had received homework about 50% of the time. There was also a test given at the end of the week two, where there was no homework given. These scores were recorded. There was a final test that was given, on week three, at the end of the study on the material learned during week three. These results were also recorded. The three tests were then analyzed and compared to see

if there was a difference in how the students learned with no homework and class work in place of homework.

Chapter four: Results

Test Results

Baseline test

The baseline test was the test that was given before the study began. This test was the conclusion of the unit that the teacher had taught in the weeks preceding the study. This test was the result of the teacher's method of assigning homework before the research began. The teacher stated that the homework assigned was given a few times a week and did not generally exceed ten questions. This method of assigning homework was a culmination of both methods in the study. On average the students received homework approximately 50% of the time. This test was used to compare results that were obtained during the study. This test also helped to ensure that the study did not affect students' overall grade in the class.

This base line test included bonus questions that increased the students' grade in some instances above 100. This opportunity was not made

available in the two tests that were given for the study. The baseline test had a mean score of 89.4545. This score included 18% of students that received bonus credits over 100. The median score was 94 and the mode was also 94. There was a 55 point range between the high and low score. This gave the information a standard deviation of 15.9736.

Test without homework

The test without homework was, the test that was given to students after having no homework during the unit that they were studying. This unit was presented in a lab style environment. Students performed investigations and followed directions to examine different types of transformations. Practice problems were completed during the investigations that students made. Students worked together in groups and the teacher circulated around the room assisting students as needed. All work was completed in the classroom. There was a homework assignment that was prepared for students to complete if they were uncomfortable without any homework however, there were not any students that chose to complete these homework problems.

The test without homework had a mean score of 85.3636. The median score was 89. The mode was 100. There was a 54 point range between the high and low score. This gave the information a standard deviation of 15.0836.

Test with homework

The test with homework was, the test that was given to students after having homework every night during the unit that they were studying. This unit was presented in a lecture type arrangement. Students completed practice problems at the end of class but were not given their homework questions until the end of class. Homework was not completed in the classroom and homework was not gone over in the classroom. Homework was graded each night and comments were place on each student paper. These assignments were then turned back to the students the next day. There were five homework assignments that were assigned to students. A total of 32% of students did not complete one homework assignment. Of the one assignment that was missed, it was the same night's homework for each student. All other homework assignments were completed.

The test with homework had a mean score of 91.0909. The median score was 95. The mode was 98. There was a 32 point range between the high and low score. This gave the information a standard deviation of 9.5055.

Three tests compared

A t-test for paired samples was completed using the test scores from the baseline test, the test without homework and the test with homework. This t-test had two tails and a two sample equal variance.

The test showed that the baseline test and the test without homework resulted in a p-value of .0541. This meant that the null hypothesis was not rejected and there was not a statistically significant difference between the two tests.

The t-test also showed that the baseline test and the test with homework resulted in a p-value of .4634. This also meant that the null hypothesis was not rejected and there was not a statistically significant difference between the two tests.

The last comparison was between the homework test grades and the no homework test grades. This resulted in a p-value of .0268. This meant that

we reject the null hypothesis and there was found a statistically significant difference between the two tests. This means that the homework test grades were significantly higher than the no homework test grades.

When an ANOVA test was used to compare all three test groups there was .373 significance between the groups. This meant that the null hypothesis was not rejected and there was not a statistically significant difference between the three tests.

Survey results

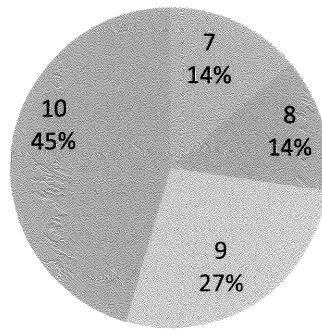
Students were given a survey before the study began and after the study ended. These surveys were analyzed to investigate if there were any changes in student attitudes towards homework. The only difference between the two surveys is that one more question was added to the survey taken after the studies completion.

Question 1: How often do you complete the Geometry homework that was assigned?

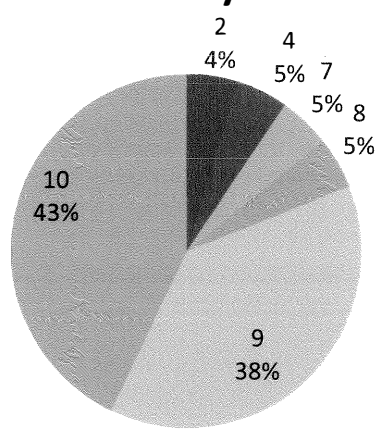
The following pie charts indicate the student responses before and after the survey on a scale from 0 to 10. Zero represented 0% of the time and 10 represented 100% of the time. Although the charts look slightly different

there is not a significant difference in homework completion rates from before the study and after the study.

1a. Homework completion before the study

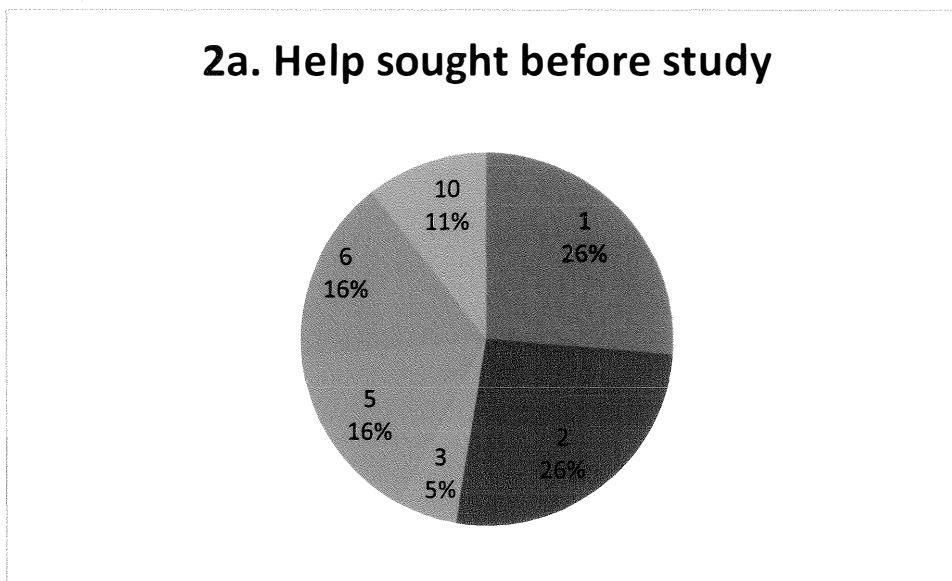


1b. Homework completion during the study

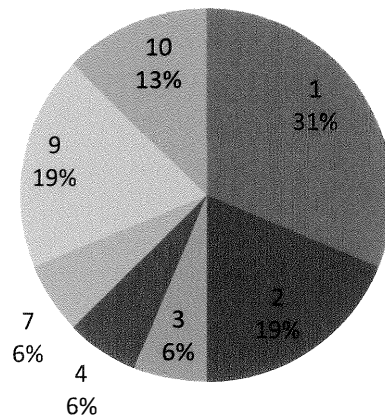


Question 2: How often do you seek help to complete your homework?

The next sets of pie charts depict how often students sought help to complete their homework. This was based on a scale of 0 to 10. Zero represented 0% of the time and 10 represented 10% of the time. The results of this question showed that students sought help more often when they had homework every night.



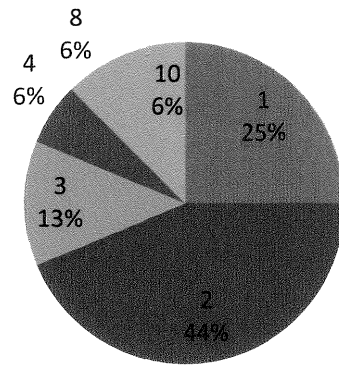
2b. Help sought during the study



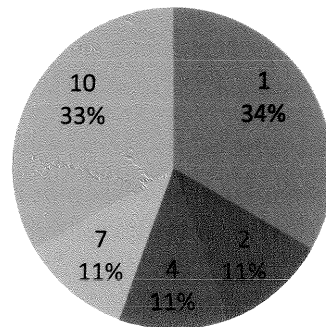
Question 3: Did you copy other students work just so that your work was complete?

Students answered the question of whether they completed their own work on a scale of 0 to 10 also. As stated in the previous, questions 0 represented 0% of the time and 10 represented 100% of the time. This translated to students completed their own work or they did not. During the study the homework was collected and graded every night. Previously students did their homework and it was gone over in class. The collecting of the homework gave students an incentive or penalty since the homework was graded. This collecting and grading of homework resulted in more students not completing their own work.

3a. Own work completed before study



3b. Own work completed during the study

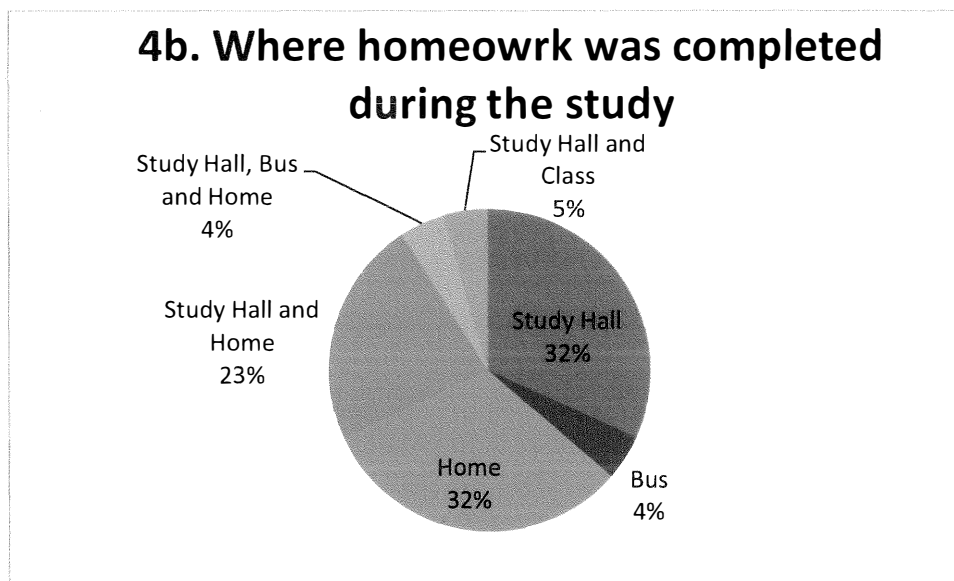
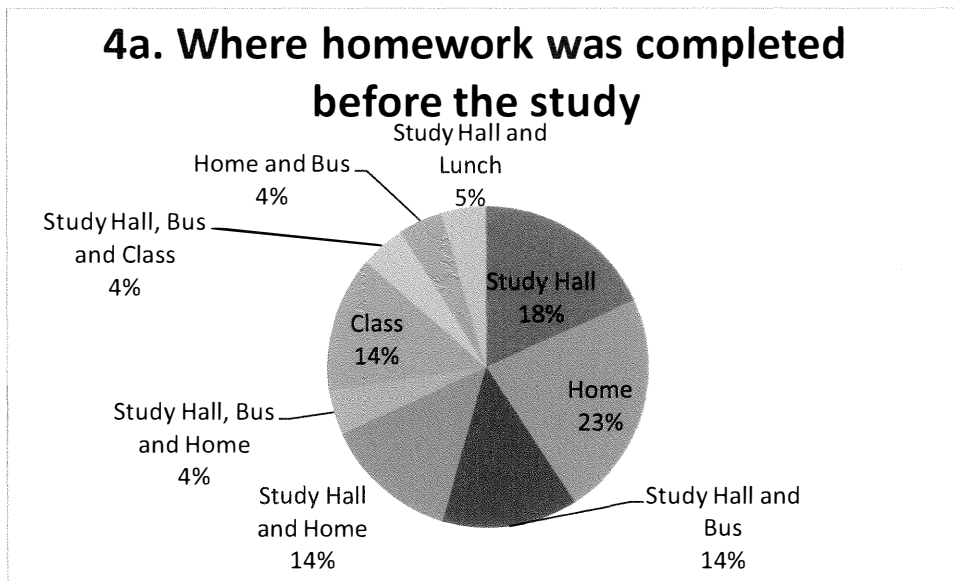


Question 4: Where did you complete your homework?

Students answered where they chose to complete their homework.

Their choices were in study hall, on the bus, at home or other. Students completed less homework in class when the opportunity was not there for

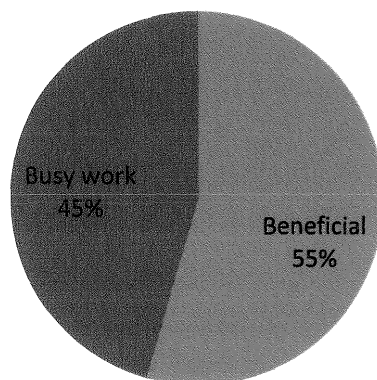
them to work on it. This meant that the teacher was not available for students while they were working on their homework. Since question number two resulted in students seeking more help during the study this meant that they had to seek help on their own time and not during class time.



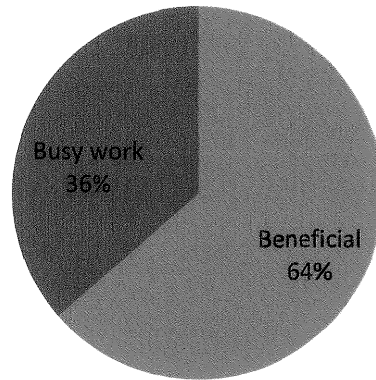
Question 5: Did you find that your homework was

Question number five asked students if they thought that the homework that they received was beneficial to their learning. When comparing student responses before and after the survey students found that their homework was more beneficial to their learning after they completed the study

5a. Homework value before study



5b. Homework value after study



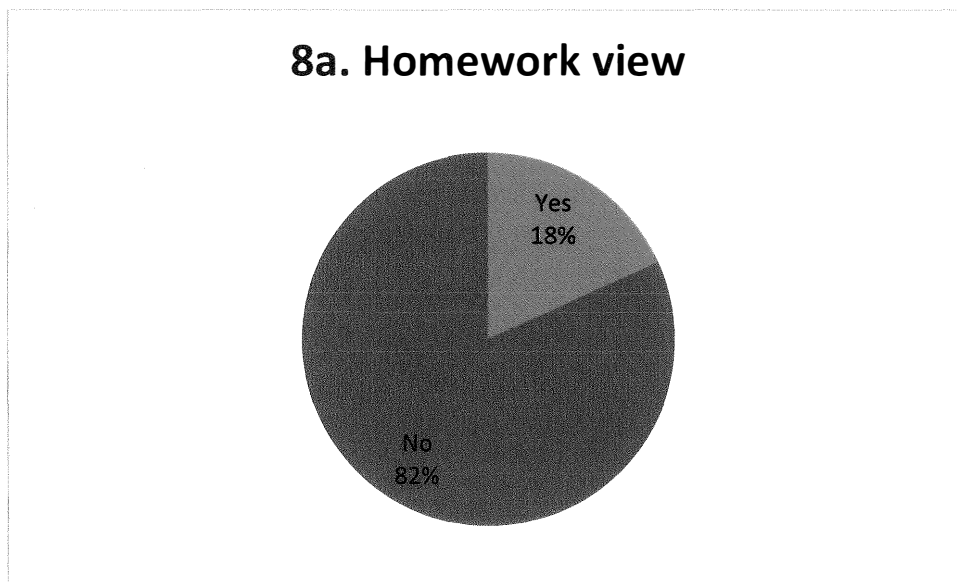
Question 6: How average how long did you spend on your homework?

Students answered question six, on average about the same. Students did not think that they spent more or less time on their homework before or after this study.

Question 8: Did your view change after having homework for one week and then none?

Students only answered this question on their survey that they took after the study was completed and they had their test grades back. There were 18% of students that changed their view on whether homework was beneficial to their learning. Upon further analysis of student answers to

question number 5, did you find that your homework was beneficial or just busy work, students views that changed were all from busy work to beneficial to your learning. Students found that the homework that was assigned helped them to better understand the material.



Question 7 (before), 8 (after): Other comments that you would like to add about homework.

Before and after the survey students thought that homework was difficult without someone there to assist them when they had trouble. Another big statement made by many students was that the amount of homework was important. There should not be too much homework assigned.

Summary

There are many factors that influence the efficacy of homework. In this study the data supported homework completion to increase student understanding and grades. Students felt that the homework increased their assessment scores and the actual test grade analysis supported this conclusion.

Chapter five: Conclusions and recommendations

Components of the study

This study was conducted in a rural school with a minimal number of students. All students had the same material during the course of each unit. This took student differences in gender, ability, socioeconomic status and attendance out of the equation. Students from three separate class periods took part in this study. If each period were taught the same material in a different manner and some given homework and some not, it would have been difficult to compare test scores. This would have been a way to test teaching methods, which, was not the purpose of this study.

The material in each unit taught was different. This may have caused a skewed result. The baseline unit consisted of circles and geometry. It is unknown to the researcher exactly what this entailed. The no homework unit was on transformations. These transformations included, but was not limited to; reflections, rotations, translations, dilations, and compositions. The homework unit was review of the entire year in preparation for the geometry regents exam. This means that the baseline unit and the no homework unit were new material and the homework unit was material that students were seeing for the second time. This may have accounted for the difference in the data analysis from the test scores. This study was short and the difficulty of each unit was not equivalent. For this reason the test results should be investigated further with another study.

During each unit the same teacher prepared the units but each unit was taught with a different approach. The unit that ended with the baseline test consisted of some homework that was gone over in class. Students were also able to work on their homework together in class. The method of instruction was lecture and lab mixed. The structure of the classroom; for the no homework test, was a lab structure where students investigated during their learning. Students were also able to work together when solving the

problems that they were presented with. The unit taught for the homework test was more of a lecture structure. Students did complete some practice problems at the end of class and they were able to work together. Since each unit was taught with different methods of teaching the results of the tests may have been skewed.

The base line unit results from the study appeared to be equivalent to the no homework unit. There are bonus points added onto the test which may have skewed the test scores. This dissimilarity may have resulted in the baseline test scores being higher than they would have been without bonus questions.

Existing literature link

The studies that were previously conducted had shown support for homework, minimal homework and no homework. Upon completion of this study it was concluded that this study supported homework. This support was weak however and the need for more research was evident. There were many factors that came into play during this and other research. While trying to minimize some of these factors other factors that affected the research became evident.

Suggestions for future research

Future research should eliminate more factors that would affect the results of a study on homework effectiveness. One way to eliminate this would be to teach longer units with and without homework. Multiple units taught with and without homework would increase the likelihood of more uniform results. If these units were taught over multiple years it would also increase the reliability of results. One teacher should teach these units and each unit should be taught in the same manner. This would eliminate teaching methods playing a factor in the results. The amount of homework that a student got would also be of great importance in the investigation of whether homework was affective.

One factor that should take great consideration is students' abilities. Students should be keenly grouped in specific groups. These groups may be above average, average, and below average, or mixed. Learning styles also play an important part in student achievement. A student may do poorly in a classroom that is primarily lecture if they were a tactile learner. Homework may also have been beneficial to some students and not others. Studies

should take this into consideration and observe students of all ages and abilities.

Summary

In this study three test scores were compared to determine the effectiveness of homework. One test contained homework about 50% of the time, one test had no homework and one test had homework every night. Upon the completion of this study it was determined that homework had a positive effect on student achievement. It was also determined that students views changed at the conclusion of the research in favor of homework's effectiveness. While this research supported the fact that students should receive homework it was very evident that there is a need for more research. There were many factors that determined the effectiveness of homework and future research should take more of these factors into account.

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