

Perception of Students about Homework in Mathematics

Balaram Bhatta

MPhil Scholar, Graduate School of Education

Tribhuvan University, Kathmandu Nepal

balaram.bhatta@gmail.com

Received: August 30, 2020; Revised & Accepted: October 6, 2020; Published: October 18, 2020

© Copyright: Bhatta (2020).



This work is licensed under a [Creative Commons Attribution-Non Commercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

Abstract

Homework has been a source of debate in schools for the past several decades and will continue to be an important topic in the future. It is a traditional part of education but some debate its importance in the classroom. This study explored student perception of homework and their reported performance in basic and secondary level school mathematics. The research questions focused on student attitudes about homework, the relationship of students' self-efficacy and support resources to their homework completion, and the relationship of students' general level of achievement in mathematics with respect to gender, level and achievement level. The study involved a survey of 402 students of Tokha Municipality. The survey did not demonstrate reliable measurement of the hypothesized factors of purpose, self-efficacy, and support resources related to students' overall perceptions about homework. However, overall, students reported positive attitudes and grades in math class. On the basis of gender and level in which students study, there is no significant difference on the perception while there is statistically significant difference on the basis of students' achievement in examination. It is recommended that a good and healthy home environment and sound teacher student relationship yields in good achievement score and boosts up overall perception on mathematics homework.

Keywords: Attitude, Homework, Perception, Student performance

Introduction

When one thinks about school, homework is typically among the first thoughts. To some, these are pleasant thoughts, while to others, these thoughts evoke memories of torturous nights completing homework. Despite its familiarity, homework has been a source of debate in schools for the past several decades and will continue to be an important topic in the future. One side of the debate feels that homework is a necessary and crucial element of education. The other side questions if homework is actually beneficial to students. Homework is “tasks assigned to students by school teachers that are meant to be carried out during non-school hours” (Cooper, 1989, cited in Cooper, Lindsay, Nye, & Greathouse, 1998, p. 70). One source of discussion is that there is no regulation of homework. State educational systems and local school districts generally do not have regulations set in place discussing homework. Instead, it is left up to the teacher to decide what is assigned for homework and why. Some school districts require a certain amount of homework, with amount measured by estimated length of time required to complete it, but allow the teacher to decide what to use the allotted time for. Teachers typically assign homework for one of three reasons: to introduce a new topic, to reflect on past material, or to teach a lesson they otherwise would not have time for in class (Sallee & Rigler, 2008). With the increasing pressure placed on teachers for students to succeed on standardized tests, teachers are increasingly relying on homework to teach material. Most teachers value the use of homework and regularly assign it as a part of their daily classroom routine (Sallee & Rigler, 2008). Another source of discussion is that students are spending too much time on homework. Parents worry that homework is taking away a crucial part of students’ childhood and they have less time for other activities (Corno & Xu, 2004). However, the Brown Center on Educational Policy (2003) reported that the hours spent studying per week, which includes homework (2.25), ranks behind hours spent per week watching television (13.5), playing (12.25), and participating in sports (8). Another study found that only a small percentage of elementary and middle school aged students complete on average more than two hours of homework each night. Most elementary and middle school aged students have less than one hour of homework each night (Van Voorhis, 2011).

The ultimate goal of homework, as a part of the educational system, is to improve student achievement by providing a chance to review learned material (Cooper, Robinson, & Patall, 2006). Overall, homework has a positive influence on student achievement, though this influence is much lower for students in elementary school (Cooper & Valentine, 2001). Numerous researchers have sought to examine the empirical relationship between homework and academic achievement (e.g., Keith, Diamond-Hallam, & Fine, 2004; Kitsantas, Cheema, & Ware, 2011; Cooper, Lindsay, Nye, & Greathouse, 1998). Few, however, have analyzed the relationship between student perceptions of homework and achievement. As student complete homework, they may be influenced by their attitudes towards homework just as much as their ability. My survey looked to fill the gap in research, focusing on student perceptions of homework. By surveying students about common beliefs of homework, I assessed their perceptions regarding each influence.

Research Objectives

The study was conducted to achieve the following objectives:

1. To identify the attitudes students display about mathematics homework.
2. To find out the difference in the students' views about the attitude of mathematics homework with respect to the demographic variables (gender, level, and achievement grades).

Research Questions

The study was conducted to answer the following research questions:

1. What is the attitude of students on mathematics homework?
2. Is there any difference between male and female students' perceptions about mathematics homework?
3. Is there any difference between basic level and secondary level students' perceptions about the mathematics homework?
4. Is there any difference in the students' perceptions about mathematics homework due to achievement grades?

Theoretical Framework

The history of homework is long and varied, especially throughout the twentieth century.

In the early twentieth century, people viewed homework positively as a way to work and strengthen the muscles of the brain while at home (Cooper et al., 1998). However, repetition and drills fell out of favor in the 1940s and were replaced with the concept of problem solving. Problem solving involved using one's intuition more than memorizing facts, thus making homework based on drills less common. With the launch of Sputnik by Russia in the late 1950s, Americans feared that students were unprepared for the rigors of the technological future ahead (Cooper, 2001). The revival of homework was based on the belief that homework could allow students to learn at a quicker pace by practicing outside of the school day. Yet again, as attitudes in the world changed, attitudes toward homework reversed in the 1960s. Scholars alleged homework placed too much pressure on students, and they questioned its benefits (Cooper et al., 1998). The 1980s led to another change in attitudes towards homework. The report *A Nation at Risk* warned of the rise of mediocrity in the United States and identified homework as a defense against it (Cooper, 2001). Since then, homework has been a staple in the classroom and the amount of homework has generally risen. In the 1990s, some professionals were again concerned that students had too much homework, but homework has remained popular in school (Cooper, 2001).

One study found that 90% of teachers, parents, and students believe that homework will help students (Van Voorhis, 2011). Despite this, some also view homework as busy work assigned to students. Sallee and Rigler (2008), in a survey of 180 high school students, found that an equal number of students viewed homework as busy work compared to a way to prepare for class. While the article does not specifically define busywork, the context suggests that busy work does not prepare students for future classes and merely fills time in class. An equal number of students also viewed homework as an easy way to earn points in class compared to

deepening one's understanding of the material. Most students view homework as a job: something they may not want to do but must (Corno & Xu, 2004). Children recognize the difference between homework and fun activities and realize they must complete homework before moving on to fun. They also recognize that homework helps develop important work and study habits for the future. Attitudes towards homework grow and change as a student matures. Warton (2001), through an interview study of second, fourth, and sixth graders, found that older students were more autonomous than younger students. Second graders were compelled to complete their homework to avoid getting in trouble with a parent or teacher or to save an adult the effort of reminding them to do their homework (Warton, 2001). In comparison, sixth graders recognized that it was their own responsibility to complete their homework and that no one else could learn the material for them. They also acknowledged that they must learn to complete their homework on their own because no one will remind them to complete it in high school (Warton, 2001).

Several studies have researched the relationship between the amounts of homework given to students and their academic achievement, but there is no consensus on the results. Keith, Diamond-Hallam, and Fine (2004) found that students who spent more time doing homework achieved at a higher level than those who spent less time. Furthermore, the study found the relationship between time spent on out-of-school homework (homework completed entirely outside of school) and grades to be statistically significant. This indicates that completing homework outside of school may positively relate to students' grades (Keith et al., 2004). The study also indicated that more frequent, shorter assignments are more effective than less frequent, longer assignments, which is related to the concept that students' motivation decreases the longer they spend on an assignment, as seen in a study by Kitsantas et al., (2011).

Self-efficacy is a student's "belief in his or her ability to perform at a designated level" (Bandura, 1997, cited in Kitsantas et al., 2011, p. 310). Students' self-efficacy can affect their attitudes toward school and their academic achievement. Kitsantas et al. (2011) examined the relationship between students' self-efficacy in math and their academic achievement. Their research found that girls generally reported lower self-efficacy levels than boys, even if they performed at the same level (Kitsantas et al., 2011). In another study, researchers examined the relationship between students' homework practices and self-efficacy, perceived responsibility, and academic achievement (Zimmerman & Kitsantas, 2005). In the study, 179 female high school students were surveyed. The survey measured self-efficacy by asking students to rate their belief that they could handle academic situations and learning conditions (Zimmerman & Kitsantas, 2005). Zimmerman and Kitsantas (2005) found that homework practices and self-efficacy have a statistically significant positive relationship.

There has been a wide range of research related to parental involvement and homework. Corno and Xu (2004) found that some parents offer little to no assistance for students at home. Other parents provide far too much parental assistance, going as far as completing their students' homework for them. Both of these scenarios can negatively influence a student's academic

performance (Corno & Xu, 2004). While researchers such as Corno and Xu have looked into the role parents play in homework, others have looked into the influence parents have on the homework process. VanVoorhis (2011) found that elementary and middle school students had more positive feelings during homework completion when there was parental interaction compared to when there was none. This study indicated that students preferred their parents to help with homework.

The relationship between homework and student achievement is typically smaller for students in elementary school compared to students in secondary school. Cooper and Valentine (2001) suggested that one reason behind this result is that younger students have a harder time focusing on homework, leading to more distractions and less time working on the assignment. They also believed that younger students have less effective study strategies, thus reducing the effectiveness homework has an opportunity to practice what students learn during the school day (Cooper & Valentine, 2001). It is also important to note that high school students are generally assigned more homework than elementary school students.

Methods

Participants

This study involved a survey about perceptions of homework with students in secondary schools. The sample consisted of students studying in grades seven to grade ten in community and private schools of Tokha Municipality, Kathmandu. A total of 402 students completed the study, including 204 male and 198 female.

Instrument

The instrument for this study was a researcher-developed survey. After a review of the literature about homework, six central concepts related to homework, especially with regard to completion and student attitude toward it, became apparent: the view of homework, the amount of homework, student self-efficacy, parental involvement, support resources, and grade level. To explore these topics, the survey prompted students to respond to a series of statements using a five point Likert scale ranging from Strongly Agree to Strongly Disagree. There were altogether twenty statements. The survey also asked students general demographics characteristics.

Data Collection and Analysis

An online form was developed using Google Form for the survey procedure. The link was sent to the respective principals of different schools. The school principals took responsibility to reach up to the students with the forms. The online forms were made accessible for a week to fill up and submit. Responses to the questions regarding frequency of homework activities and level of enjoyment of math and math performance were also summarized. Descriptive statistics were examined by item, and then *t* tests and Spearman's Rho were used to compare groups by gender and by reported level of performance in mathematics class on particular items.

Results

Demographic Analysis of Respondents

Table 1: Demographic characteristics of the respondents

Characteristics		%	N
Sex	Male	50.7	204
	Female	49.3	198
Achievement	Satisfactory	15.7	63
	Good	84.3	339
Academic Level	Basic	23.1	93
	Secondary	76.9	309
	Total	100	402

Table 1 shows the gender wise difference between the frequency and percentage of respondents. There were 50.7% male and 49.3% female respondents. Out of 402 students, there were 204 male and 198 female. The table demonstrates academic level of the students. Out of 402 students, 93 were from basic level and 309 were from secondary level. In percentage, 23.1% were basic level students and 76.9% were from secondary level. The table also shows the achievement in mathematics in annual exam. 63 of them had satisfactory achievement and 339 had good achievement. In percentage, 15.7% had satisfactory achievement and 84.3% had good achievement.

Table 2: Perception about maths hw

Characteristics	Median	Range
Math homework is easier if I understood the lesson in class.	4	2
My math teacher assigns homework for me to practice what we learned in class.	4	2
I do better on math homework when I feel more confident.	4	3
Math homework is harder when I am not confident in my ability.	4	4
I understand why teachers assign math homework.	4	4
I am willing to continue to work on a problem I get stuck on.	4	4
I feel confident in my math ability.	4	3
Math homework helps me understand the lessons from the day's class.	4	3
I feel confident when I work on math homework.	4	3
I have a quiet place spot to do math homework after school.	4	4
I do better on tests and quizzes when I do my math homework.	4	4
Math homework helps teach me things for the future.	4	4
I like when other people help me on my math homework.	4	3
People help me with my math homework at home.	3	4
I am very focused when I do my math homework.	4	3

Math homework does not make me frustrated.	4	4
My parents do not make me more confused when they try to help me on my math homework.	4	4
Doing my math homework does not allow me to study less.	4	4
My math teacher does not assign too much homework.	4	4
Even if I don't understand the math homework, I don't give up on it.	4	4

Table 2 describes about the perception of students on math homework. The median of almost all the statements is 4 indicating that these statements are agreed upon by the respondent students. While the students have neutral view on the statement "People help me with my math hw at home'.

Bivariate Analysis

Based on the total scores from Likert scale, the values were summed together and treated as dependent variable (evaluated as 1 = strongly agree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). An independent sample t-test was applied to create the difference among students regarding perception of math homework on the basis of gender.

Table 3: Independent Sample t-test for Difference among students regarding perception of maths hw on the Basis of Gender and Subject

Variable			N	Mean	SD	t-value	Sig.
Perception about maths hw	Gender	Male	204	78.514	10.579	-0.994	0.321
		Female	198	79.500	9.274		
	Level	Basic	93	84.2581	8.7126	6.448	0.000
		Secondary	309	77.4175	9.7755		

Table 4: Spearman's Rho for Difference among students regarding perception of maths hw on the Basis of Academic Achievement

			Achievement in Annual Exam	Cumulative Score
Spearman's rho	Achievement in Exam	Correlation Coefficient	1.000	.175**
		Sig. (2-tailed)		.000
		N	402	402
	Cumulative Score	Correlation Coefficient	.175**	1.000
		Sig. (2-tailed)	.000	
		N	402	402

** . Correlation is significant at the 0.01 level (2-tailed).

Discussion and Conclusion

Overall, the sample responded with positive attitudes towards math homework and math class. Most students reported completing their homework consistently regardless of their attitude towards math homework. The instrument was designed to measure students' feelings about homework in relation to purpose of homework, students' self-efficacy, and students' support resources. However, the survey did not hold for any of these constructs. Despite this, some important trends could still be gathered from the data. The high achievement in math reported by students relates to high self-efficacy and positive feelings held by students. Some questions related to self-efficacy also displayed general attitude differences between males and females, showing males with potentially higher self-efficacy than females in math, regardless of actual ability or performance. The survey also showed positive perceptions of parental support during homework. However, as seen in past studies, parents are often not instructed on how to help their students during homework. Providing parents with guidelines to help students' complete homework could increase the effectiveness of homework, thus affecting student achievement.

The study's results implicating a relationship between students' achievement and attitudes towards math, in particular their self-efficacy, support the relationship between achievement and self-efficacy found by Kitsantas et al. (2011). The current study was inconclusive, however, in determining if there is a correlation between the concepts, because of the limited internal consistency of the proposed self-efficacy scale. Students responded positively ($md=4$) to the statement "I understand why teachers assign math homework." This is in line with the results found by Corno and Xu (2004) in which students reported homework as their job: a necessary part of school even if they did not want to do it. The lower median response to the statement "People help me with my math homework at home," indicates a pattern similar to that found by Corno and Xu (2004). The researcher saw that while some students had positive relationships with their parents during homework, other parents provided too much or not enough assistance during homework, therefore confusing the student. Independent Sample t-test for difference among students regarding perception of maths hw on the basis of gender signifies that there is no significant difference on the perception of boys and girls ($p=0.321$). However, the perception of maths hw on the basis of level ie basic and secondary level has a significant difference ($p=0.000$) among the students. On the basis of achievement of exam, it is also found significant difference among the high achievers and low achievers regarding perception of maths homework.

Implications for Further Research

In the future, further research could be gathered from a survey better designed to study the constructs of homework. This survey focused on math homework, yet did not specify the types of homework that are assigned by teachers, as evidenced by the teacher survey. A more in depth survey could be given discussing students' feelings towards various types of math homework. Also, homework has been historically designed to serve as practice of the day's lesson. However, a new trend in education called a flipped classroom uses homework to introduce a new topic to students (Lage, Platt, & Treglia, 2000). Future studies could be

performed researching students' attitudes and perceptions towards homework used to introduce a new topic. While the survey asked students how long they spent on math homework on a given day, it did not adjust for the type of learner. Some students, despite their achievement in math, simply take longer to complete their homework. Future research could look at the relationship between the length of time spent on homework and the type of student more closely.

References

- The Brown Center on Educational Policy. (2003, October). *Do students have too much homework?* Retrieved from http://education-consumers.org/research/briefs_1003.htm.
- Cooper, H. (2001). Homework for all – in moderation. *Educational Leadership*, 58 (7), 34-38.
- Cooper, H. & Valentine, J. C. (2001). Using research to answer practical questions about homework. *Educational Psychologist*, 36, 143-153.
- Cooper, H., Lindsay, J. J., Nye, B., & Greathouse, S. (1998). Relationships among attitudes about homework, amount of homework assigned and completed, and student achievement. *Journal of Educational Psychology*, 90, 70-83.
- Cooper, H., Robinson, J. C., & Patall, E. A. (2006). Does homework improve academic achievement? A synthesis of research, 1987-2003. *Review of Educational Research*, 76, 1-62.
- Corno, L., & Xu, J. (2004). Homework as the job of childhood. *Theory Into Practice*, 43, 227-233.
- Eren, O. & Henderson, D. J. (2011) Are we wasting our children's time by giving them more homework? *Economics of Education Review*, 30, 950-961.
- Keith, T. Z., Diamond-Hallam, C., & Fine, J. G. (2004). Longitudinal effects of in-school and out-of-school homework on high school grades. *School Psychology Quarterly*, 19, 187-211. DOI: 10.1521/scpq.19.3.187.40278
- Kitsantas, A., Cheema, J., & Ware, H. W. (2011). Mathematics achievement: the role of homework and self-efficacy beliefs. *Journal of Advanced Academics*, 22, 310-339.
- Lage, M. T., Platt, G. J., & Treglia, M. (2000). Inverting the classroom; a gateway to creating an inclusive learning environment. *The Journal of Economic Education*, 31, 30-43
- Sallee, B., & Rigler, N. (2008). Doing our homework on homework: how does homework help? *The English Journal*, 98, 46-51.
- Van Voorhis, F. L. (2011). Costs and benefits of family involvement in homework. *Journal of Advanced Academics*, 22, 220-249. DOI: 10.1177/1932202X1102200203
- Warton, P. (2001). The forgotten voices in homework: views of students. *Educational Psychologist*, 36, 155-165.
- Zimmerman, B. J., & Kitsantas, A. (2005). Homework practices and academic achievement: the mediating role of self-efficacy and perceived responsibility beliefs. *Contemporary Educational Psychology*, 30, 397-417.