

Does Students' Homework Affect their Test Performance at the Middle School Level?

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An experimental study one group pretest and posttest on 60 students of class 7th was conducted in public Middle school of district Bannu to determine the effect of homework on middle-level students test performance. 22 lessons randomly selected from their textbook of mathematics were taught in the first phase and in the second phase. A pretest was given at the end of the first phase and posttest was given at the end of the second phase. Homework was given at the end of each lesson in the second phase. Paired sample t-test was used to compare the two scores of two tests. The difference was significant. Therefore the null hypothesis that homework has no effect on the test performance of students was rejected. It was concluded that homework has an optimistic effect on the test performance of middle-level students.

Keywords: *Experimental, homework, test performance, mathematics, Grade 7th*

Introduction

In this modern age, the public has a different concept of homework. On account of its prevailing pressure, parents have become anxious (Cooper, Robinson, & Patall, 2006). Educators, parents both are reflecting on the role of homework in children education. As public exposed their notions concerning education, debates become more serious; according to modern discourse of education more school training, more homework, more use of technology will equip individuals to shoulder the challenges of the 21st century (Baines, 2007).

Anne and Macgregor (2007) are of the view that homework is an activity performed by students outside the classroom. So that they could practice and strengthen what they have been taught at school and also apply the knowledge and skills in an independent situation. This will also make them independent learners. According to Meyer (2005), "homework is an activity of researching, studying or accomplishing tasks". Van Voorhis (2004) states that the general aims of homework are many for example the teaching purpose involves practice, preparation, participation and personal development,

communication purposes include successful interaction with fellows, coordination among children, parents, and teachers; and political purpose aims policy and establishment of relationships with the public. All these aims and objectives help students to attain their talents develop their skills of creative and independent learning. It also helps to create coordination between home and school in order to invigorate and strengthen what students have learned in school and enable them to practice their skills and help them to adopt good work habits for their future.

Statement of the Problem

Education is a multi-dimensional process. It has both theoretical and practical aspects and students in our educational institution go through various activities in order to fulfill their educational needs. On one hand they are thought different theories, facts, and principles from their course books and on the other hand, they are assigned various assignments related to their coursework in order to sharpen their knowledge and skills. Homework is one of these assignments, which is given to the students for completion after the instructional hours. It is getting more

importance in the present scenario because the volume of our educational curriculum is increasing day by day and it is becoming hard for our educational institutions to complete this heavy curriculum within the given time span. So they are compelled to give some homework assignments to their students to cope with this problem.

There have been numerous studies that investigate the effect that homework has on student achievement. Over the years, the studies have become more complex as researchers found that there were numerous variables that need to be controlled in order to truly find how homework effects achievement. Therefore the researcher was interested to conduct an experimental study in order to find out the effect of students' homework on their test performance at the middle school level in Bannu, Khyber Pakhtunkhwa, Pakistan.

The results of the study bring awareness to teachers regarding the importance of homework. The research has shown that time spent outside of school on learning can affect student achievement. If they choose to include homework as part of their class, they need to be aware of policies that play a role in helping the students to be successful. Giving homework does not result in greater student achievement. Giving well-planned, purposeful, and engaging homework is more likely to affect student achievement in a positive way.

Hypothesis (H₀): There is no significant effect of homework on students' test performance.

Methodology

Design of the study

This study was one group pretest-posttest experimental so the following experimental design was used.

O₁ X O₂

O₁ = Pretest

O₂ = Posttest

X = Treatment

The dependent variable in this study was the test performance while the independent variable was homework. The

pretest and posttest scores represented the test performance of student while homework was used as the treatment in this study. The extraneous variables which could affect the internal and external validity of the study were history, maturation, statistical regression, instrumentation, hawthorn effect, posttest sensitization and interaction of pretesting and treatment. The researcher has tried his best to ensure that the change in the dependent variable was due to the independent variable and not due to an extraneous variable. The researcher has taken the following measures to minimize the effects of extraneous variables on the results of the study.

1. **History:** To minimize the effects of history on the results of the experiment the interval between posttest and treatment was kept very short and the subjects were tested immediately at the end of the treatment.
2. **Maturation:** Since the interval between pretest and posttest was very short so there was minimal chance of maturation's effect on the results of the study.
3. **Instrumentation:** As both the pretest and posttest were pilot tested and made standardized so the effect of instrumentation was made minimal.
4. **Statistical Regression:** The effect of statistical regression was also kept under control as both the pretest and posttest were pilot tested and made reliable before they were actually used in the experiment.
5. **Hawthorn effect:** To control the Hawthorn effect, all the subjects of the study were kept unaware of the fact that they were being experimented as the study have no harmful effect on participants.

Sample

Public Middle School Nurar Bannu was selected as a sample for the study. As the researcher is working as a teacher in this school and was easy for him to conduct his experiment here. Since the study was delimited to the students of class 7th of this school, therefore all the students of class 7th of the sampled school were selected for the study. There were 73 students in class 7th but some students remained absent or dropped out of the class due to various reasons, the sample size decreased to 60 students.

Research Instruments

Two self-developed tests were used as research instruments of the study. The first one was used as a pretest and the second one was used as a posttest. Both of these tests were prepared with the help of subject specialists, and research experts. These tests were developed from the book of the mathematics of Khyber Pakhtunkhwa Text Book Board Peshawar for class 7th. Each one of these two tests consisted of 40 objective type questions. One question carried two marks. So each test was of 80 marks. Time allowed for each test was 80 minutes. The contents of the tests were randomly selected from the said book. Both the tests were prepared in the Urdu language so that all the students may easily comprehend them (see appendix 1 & 2).

**Table 1:
Tests of Normality**

Difference	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
	.11	60	.04	.96	60	.05

Table 1 According to the Shapiro-Wilks test, if the value of p is greater than 0.05, we consider the data to be statistically normal. Since the value of p under the column heading Shapiro-Wilk is (Sig=.05), therefore we assume that the data is normally distributed. This reassures us that the conclusion of the test can be relied on.

Data Collection

Pilot Testing

To check the reliability and validity of pretest and posttest they were pilot tested. Each test was administered to 30 randomly selected students of class 7th from three different schools. Data collected through pretest and posttest during the pilot testing was fed into SPSS-24 and Cronbach’s Alpha values for both the tests were calculated. The Cronbach’s Alpha value found for pre-test was 0.85 and for post-test was 0.77, which were reasonable as Nunnally (1978) has indicated that 0.7 is an acceptable reliability coefficient.

For participation of the students in the study one of the researchers personally sought verbal permission of the students’ parents, as most of the parents were not literate. which they gave happily.

Data was collected through pretest and posttest. The difference between the score on pretest score and posttest was calculated and then it was tested for normality. First, the data was visually inspected for normality with the help of histogram, Q-Q plot and box plot. So the assumption of normality of data for t-test holds true. A Shapiro-Wilk test was also used for checking the normality of data. The results of the test are given in table-1.

The selected students of class 7th were taught, the randomly selected lessons from their course textbook of mathematics by one of the researcher. These lessons were divided into two parts. The first part of these lessons was taught for 11 days. One lesson was taught per day. Each lesson was of 40 minutes. No homework was given during these lessons. And at the end of the first part, a pre-test was given to the

students. All the students were given necessary instructions about the test and they were asked to solve it within the given time. This test was personally administered by the researcher. The results of this test were recorded for later use.

As the design of this study was one group pretest-posttest design, therefore the same group was taught the second part of the randomly selected lessons for the next 11 days. One lesson was taught per day. Each lesson was of 40 minutes. Since the objective of this study was to determine

the effect of homework on the student's test performance, therefore homework assignments were given to the students at the end of each lesson. And they were asked to solve the assignments at home on the blank sheets which were provided to them. These sheets were collected from the students on the next day and they were kept in the concerned students' lodger. At the end of the second part of these lessons, a post-test was given to students.

Data Analysis

Table: 2

Scores obtained by each Subject on pre-test and post-test

S.No	Names of Subjects	Score on Pretest	Score on Posttest	Difference
1	MALIK DIN	72.0	72.0	0.0
2	ANWAR MAQSOOD	32.0	26.0	6.0
3	WAHED NIAZ	38.0	36.0	2.0
4	SHAH NOOR	20.0	40.0	-20.0
5	ABDUL WAHAB KHAN	38.0	48.0	-10.0
6	SHER NAWAZ KHAN	48.0	40.0	8.0
7	NASIR KHAN	10.0	38.0	-28.0
8	AMJED KHAN	34.0	36.0	-2.0
9	ASIM KHAN	46.0	28.0	18.0
10	RAHIMULLAH	42.0	38.0	4.0
11	SHFIULLAH KHAN	62.0	42.0	20.0
12	SAJID KHAN	50.0	56.0	-6.0
13	ZOHEB KHAN	38.0	48.0	-10.0
14	ZAR QIAZ KHAN	34.0	46.0	-12.0
15	MUHAMMAD SOHAIL	50.0	46.0	4.0
16	MUSHARAF KHAN	12.0	18.0	-6.0
17	WAJID KHAN	52.0	46.0	6.0
18	RAZAULLAH	24.0	24.0	0.0
19	ABIDULLAH KHAN	26.0	44.0	-18.0
20	IMSHAD KHAN	8.0	28.0	-20.0
21	MUHAMMAD YONUS	48.0	58.0	-10.0

22	M. ASIF KHAN	32.0	22.0	10.0
23	FARHAN	32.0	36.0	-4.0
24	SHAMS-U-REHMAN	26.0	20.0	6.0
25	SIRAJ KHAN	50.0	48.0	2.0
26	MOMEN	20.0	50.0	-30.0
27	ROMAN	30.0	26.0	4.0
28	FASIHULLAH	34.0	28.0	6.0
29	ARIFULLAH	44.0	48.0	-4.0
30	WASIM KHAN	26.0	40.0	-14.0
31	WAQAS KHAN	60.0	68.0	-8.0
32	SAFIRULLAH KHAN	30.0	42.0	-12.0
33	ZOHEB KAMRAN	26.0	30.0	-4.0
34	LUQMAN	28.0	30.0	-2.0
35	AFNAN KHAN 2	50.0	58.0	-8.0
36	TAMHID	8.0	38.0	-30.0
37	ATIF KHAN	62.0	70.0	-8.0
38	GUL TIAZ KHAN	38.0	34.0	4.0
39	TEHSEEN KHAN	32.0	20.0	12.0
40	ASMAR ALI	64.0	66.0	-2.0
41	SHAHID KHAN 1	26.0	34.0	-8.0
42	NADEEM AHMED	20.0	20.0	0.0
43	BABER KHAN	14.0	26.0	-12.0
44	NASEEB KHAN	18.0	24.0	-6.0
45	MUHSEN KHAN	22.0	24.0	-2.0
46	SHAH FAHAD	34.0	34.0	0.0
47	MUZAMIL SHAH	36.0	38.0	-2.0
48	SAFI ULLAH	28.0	30.0	-2.0
49	SHAHID KHAN 2	62.0	42.0	20.0
50	WARIS KHAN	30.0	34.0	-4.0
51	SAFIRULLAH	20.0	12.0	8.0
52	ABDULLAH KHAN	42.0	40.0	2.0
53	TEMOOR KHAN	24.0	28.0	-4.0
54	ABDUL WAHAB	28.0	64.0	-36.0

55	ZIAULLAH	8.0	12.0	-4.0
56	SHAHID ULLAH	40.0	32.0	8.0
57	ASHIQ ULLAH	28.0	22.0	6.0
58	AMINULLAH	74.0	78.0	-4.0
59	NOOR JID ALI	20.0	16.0	4.0
60	SABIR	12.0	28.0	-16.0

Table 2 Looking at the values in the different columns in table 2, we see that most of them are either smaller or greater

than zero which means that the scores on pretest and posttest are not equal.

Table 3

Descriptive statistics on pre and posttest score

	N	Mean	SD	Std. Error Mean
Score on Pretest	60	34.36	16.082	2.07
Score on Posttest	60	37.83	15.206	1.96

Table 3 Looking at table-3 we see that the mean score of students on pretest is 34.36 and the mean score on posttest is 37.83. Since the mean score on posttest is greater than the mean score on pretests which means that there is some improvement in the test performance of students. But it is

not enough for the rejection of the null hypothesis; therefore a Paired Sample t-test was used to conclude that whether the difference between the score on pretest and posttest score is significantly different. The results of the test are given in table 4.

Table: 4

Paired sample t-test on the difference between Pretest and Posttest Scores

Variables	Pretest (n=60)		Posttest (n60)		t(72)	p	95% CI		Effect size D
	M	SD	M	SD			LL	UL	
Pre and Post test Score	34.36	16.08	37.83	15.20	2.33	.02	6.43	.496	.29

Table 4 Using an alpha level of .05, a paired samples t-test was used to test the null hypothesis that homework has no significant effect on the test performance of students. Looking at table-4 we see that the p-value is =0.02, less than .05 level of significance. There is a significant difference between the pretest and posttest score. The difference is in the favour of posttest score. We reject the null hypothesis and accept the alternate hypothesis that homework has a significant effect on the students' test performance. The treatment homework effect on the test performance is .26, which is significant

but small according to Cohan (1988) formula.

DISCUSSION

The study basically aimed to determine the effect of homework on students test performance. According to the outcomes of the study, homework has a positive influence on students' test performance. Findings of the study are supported and approved by (Cooper, 1989, Cooper & Valentine, 2001, Trantwin& Ludtke, 2009). They matched two groups in which one group was given homework and the other group was not given homework. The results of their research revealed that the learners who were not given homework

and did not get any other treatment that could be a substitute for lack of domestic study time, their achievements were lower than their counterpart.

The results of this study are also in agreement with the previous studies conducted by (Hill, Spencer, Alston, and Fitzgerald, 1986; Cooper, 1989; Cooper et al, 2006; Keith, 1982; Tefvik Aksoy and Charles R. Link, 1999; Van Voorhis and Frances L, 2004; Cooper, Robinson, and Patall, 2006; Hayward J. M., 2010 and Dettmers et al. , 2009).

Trautwin et al (2002) conducted research in which he explored that students' homework and their achievement were positively correlated. At the completion of school, learners whom homework was often given had got higher marks as compared to those whom less homework was given. Those students who carried out homework got benefited in term of learning as it involved practice, preview, and review of the concepts.

Giving a large amount of homework at the school level may lead to differences. Slower students may have more gaps in their academic achievement with other students. The students could be confused by the excessive amount of homework given to them. (Mortinez, 2011; OECD, 2014; Suárez et al., [2016](#)).

Similarly, researches have also revealed other significant indicators concerning teachers' homework policies such as rationale for homework assignments its management and its characteristics, qualities and changing in accordance with students' mental level of learning (Trautwein et al., [2009a](#); Dettmers et al., [2010](#); Patall et al., [2010](#); Buijs and Admiraal, [2013](#); Murillo and Martínez-Garrido, [2013](#); Rosário et al., [2015b](#)).

There are different types of homework and similar home might have affected various students differently. Apart from the time and quantity of homework. There are also other relevant issues. Differences in the style and content may produce different effects. There are other possible areas of

research regarding homework, for example, one can explore the impact of values and attitudes of students on homework. These values can be applied to a classroom setting to whether it positively affect students' achievements. For example, if a class is interested that homework should be given to them on every alternate day in contrast to daily based homework. A plane should be carried out where there are such changes and make it sure whether learners get some advantage from it or not. In the same way, if learners don't like homework than such kind of home assignment should be given out which is family oriented or which pertains to students created problems. Whenever students considered homework to be interesting, they will be more likely to accomplish it to get an advantage from it. Many aspects of homework are there which could be explored to determine what is the most influential factor which affects students' achievement.

conclusion

on the basis of findings of the study, it has been concluded that there is a positive relationship between homework and the test performance of middle-level students. The researcher found that the students performed better after the treatment.

RECOMMENDATIONS

Keeping in view the findings and conclusions of the study the researchers suggest:

- 1- The first and the foremost requisite of homework is to design such assignment which is motivating and appealing for the students (Xu, 2009). If students are motivated they can be easily involved in specific tasks and it is more comprehensible for them to learn. While designing assignments it is not necessary to regard for students hobbies and sports but it should be according to their mental level and needs. It is essential for teachers to know the individual differences of students so that effective home

assignments may be prepared in order to fulfill their learning goals. (Erstein & Van Voorhis 2001)

- 2- The time and quantity of homework assignments should be determined according to the capacity and level of students. Homework assignments should not be merely a time-consuming activity but it should sharpen the skills and increase the cognitive abilities of students. It must be recognized that not all of the time spent on homework by a student is time well spent (Valle et al., 2015).
- 3- Educational administrators are suggested to implement specific homework policies in their institutions. Policy makers are also suggested to formulate clear policies for homework.
- 4- Parents may encourage their children to do their homework assignments regularly and supervise the homework of their children so that they may not cheat in their homework assignments.
- 5- Many subjects are taught per day in our schools, therefore, it is the duty of concerned teachers to consult with each other and decide about the number of homework assignments so that it may not be an extra burden for their students.
- 6- The teachers should also draw time for its evaluation give appreciation and guidance in homework.

Limitations of the study

The following points should be kept in mind while generalizing the results of this study. This study was conducted in the government schools on class 7th in the subject of mathematics in a rural area of district Bannu. It is possible that it may give a different result when conducted on a different level, context, and subjects applying different methodology.

Since the sample size was a small proportion of the population of the study,

therefore, it will give more accurate results if the sample size is increased.

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