The Effect of Homework Assignment on Mathematics Achievement of Secondary School Students in South West Nigeria

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Abstract
This study investigated the effect of homework assignment on Mathematics achievement of Secondary School Students in South West Nigeria. The study was an experimental research design that employed the pretest and posttest control group. A sample of 600 students was selected from six Senior Secondary School 1 from Oyo, Ondo and Ekiti States through the stratified random sampling technique. The subjects and schools were randomly assigned to treatment. The two groups were taught the same concepts in Mathematics for a period of four weeks. Group A (Experimental) was given homework assignment daily while Group B (Control) was not exposed to homework assignment. The two groups were pre tested and post tested using a 30-item multiple choice mathematics achievement test. Two hypotheses were generated and the data collected were analyzed using t-test statistics at 0.05 level of significance. The results showed that there was no significant difference in the students' achievement before treatment was given. It shows the homogeneity of the group. However, when post tested there was a significant difference between the achievement of students exposed to homework assignment and those not exposed to homework assignment. It was recommended that students should be given homework assignment daily and that teachers should be encouraged to supervise, mark, score, grade and correct students' assignment.
Keywords: Homework assignment, Mathematics achievement test, Experimental group, pretest posttest control group.

Introduction

Homework assignment refers to exercises or tasks assigned to students by their teachers to be completed outside the class. Some common homework assignments may include a quantity or period of reading to be performed, writing or typing to be completed, problems to be solved, a school project to be built some mathematical exercises to be solved or other skills to be practiced. It is an extension or elaboration of classroom work.

According to Oluwayemi (2010) and Wikipedia Free Encydopedia (2014), the objectives of assigning homework to students are the same as schooling in general: to increase the knowledge and improve the abilities and skills of the students, reinforce what students have already learnt, prepare them for incoming lessons and extend what they know by having them apply it to new situations. It gives opportunity to parents to participate in the children's education.

Home assignment according to Esan (1996) is the participation of students in learning activities outside the classroom teaching – learning environment. Mathematics as a discipline emphasizes problem- solving and to acquire skills, the learner must be actively engaged in home assignment given to him by the teacher. However, Haddock (2006) called for the abolition of homework citing it as rote, or grind work, designed to take up children's time, without offering tangible benefits. Also Bennett and Kalish (2006) and Kohn (2006) opined that homework is of little educational value, and that for young children (below 15 years) it may have a negative effect on learning. But Bishop (2008) opined that homework can also teach students to concentrate, write reports, spend time alone and develop a curiosity to be a continuous learner.

Some researches in the last decade had begun to focus on the relationship between school assignment and student's academic performance and their findings have greatly strengthened the case for school assignments. Esan (1996) opined…

Esan (1996) opined that some studies have established a close relationship between the school and the home as regards achievements in school. Iverson and Walberg (1982) and Oluwayemi (2010) reported that student's achievement positively correlates with the socio-psychological environment and the intellectual stimulation of the home. Chen (2009) believes that actively engaging in homework assignments encourages students to be advocates of their own learning.

Students' performance in mathematics courses has been problematic for many years. Students performed poorly at both internal and external examinations, Adebule (2009) and Ologunwa (2012). Examination bodies. Like West African Examination Council (WAEC), National Examination Council (NECO), National Business and Technical Examinations Board (NABTEB) in their Chief Examiners Reports for the past decade showed poor results of students in mathematics.

According to (www. ukessay 2014) even though a different set of constraints and challenges in education has been faced worldwide, educational development has been actively promoted by means of adapting

to rapid global changes. Ensuring quality of education is one of the six Education for all (EFA) goals agreed by over 160 governments during the World Education Forum in Dakar Senegal in 2000. The achievement of high School Students has been a great concern to educators, teachers, parents and government. Even though measures have been taken to improve the quality of education, a large proportion of students still perform poorly in the classroom and externally organized examinations. Thus homework assignment might be an invaluable tool to develop the skills of the learner and helped them to perform better in examinations.

Therefore, the study investigated the extent to which homework assignment improved the achievement of Senior Secondary School Students in Mathematics in South West Nigeria.

Research Hypotheses

Two null hypotheses were postulated and tested at 0.05 level of significance
1.   There is no significant difference between the achievement of students before treatment was given.
2.   There is no significant difference between the achievement of students exposed to homework assignment and those not exposed to homework assignment.

Research Method

The study was an experimental research design that used the pre-test and post – test control group. The independent variable of the study was homework versus no homework.

Table 1: Experimental and Control Groups

	GROUP A	GROUP B
S/N	Experimental Group	Control Group
1	Pre test	Pre test
2	Exposed to Homework assignment	No Homework assignment
3	Post test	Post test

The population for the study consisted all Senior Secondary School Students in South West Nigeria. There are a total of six states which include Lagos, Ogun, Oyo, Osun, Ondo and Ekiti States.

A sample of 600 students were selected from six Senior Secondary School 1 using stratified random sampling technique from Oyo, Ondo and Ekiti State. There are two groups.The only difference between the instructions administered to the two groups was the daily assignment of home work to the experimental group. The homework assignments were selected exercises from the students' textbooks. Each assignment provided drill upon materials already covered in the class. The homework assignments were given to the experimental group each day of the week and students were instructed to submit the completed assignment before class began on the following day. The instructors were to mark correct and award a grade.

The dependent variable was the performance of students who received homework assignment during the course compared to those that did not receive homework assignment in Mathematics. The extent which the students mastered the topics was determined on the basis of student's performance on a selected exercises prepared by the instructor using students textbooks.

The posttest instrument used was the same instrument used for the pretest and was administered by the instructor. It was a 30-item test Multiple Choices Mathematics Achievement test developed by the researcher and validated by some experts in Mathematics, Tests and Measurement for face, content and construct validity. The test retest method was used to establish the reliability of the instrument and the reliability coefficient(r) yielded 0.84 which according the rule of Thumb by MacIntosh (1974) is substantial. The treatment lasted for four weeks at the end of which the two groups were post tested. The scripts of the students were marked, scored and recorded. This was subjected to data analysis using mean, standard deviation, percentage gains and t-test statistics.

Results

Ho$_1$:   There is no significant difference between the achievement of students before treatment was given.

Table 2: t-test summary of pretest scores

Group	N	Mean	Sd	Df	t cal	t critical
Experimental	300	27.87	6.88	588	1.75	1.96
Control	300	26.95	5.99			

P › 0.05 (Result not significant)

To: establish the achievement level of the students and to compare their cognitive achievement, the two groups were pre tested before the commencement of the treatment. Table 2 shows that tcal equals 1.75 while t critical equals 1.96. Since tcal<tcritical i.e. 1.75 < 1.96, the null hypothesis is not rejected. Hence there is no

significant difference between the achievement of the students before treatment was administered. It shows the homogeneity of the groups.

Ho2: There is no significant difference between the achievement of students exposed to homework assignment and those not exposed to homework assignments.

Table 3 Analysis of pretest, post test and percentage gain

Groups	N	Pretest		Post test		percentage
		Mean	Sd	Mean	Sd	Gain
Experimental	300	27.87	6.88	33.86	7.76	22%
Control	300	26.95	5.99	28.97	5.84	8%

Table 3 reveals that the post test scores of the experimental group has a mean gain score of 22% while the control group has a mean gain score of 8%. It could be said that the higher mean score of the experimental group resulted from the homework assignment given.

Table 4 t-test summary of post-test scores

Groups	N	Mean	Sd	Df	t cal	t critical
Experimental	300	33.86	7.76	588	8.72	1.96
Control	300	28.97	5.84			

$P < 0.05$ (significant Result)

On Table 4, tcalculated equals 8.72 while t critical value equals 1.96. thus tcal > t critical (8.72 > 1.96), therefore the result is significant. Hence the null hypothesis is rejected in favour of the alternate hypothesis. There is a significant difference between the achievement of students exposed to homework assignment and those not exposed to homework assignment.

Discussion

The result of hypothesis 1 shows that there was no significant difference between the achievements of the two groups of students before the commencement of the treatment. It reveals the homogeneity of the groups. The implication is that given the same academic environment, treatment and exposure, they are likely to perform at the same level. Hypothesis 2 shows a significant difference between the mean achievement of students exposed to homework assignment and those not exposed to homework assignment. This confirms that the treatment given had some impact on their achievement.

The findings of the study provided a clear cut endorsement for the homework assignment group. This agrees with the findings of Sasser (1981) whose study and the literature reviewed suggests that there is a slight preponderance of evidence indicating that students who receive homework assignments achieve somewhat better academic results than do those who receive no homework assignments. Also the findings is in consonance with Esan (1996) and Oluwayemi (2010). In addition Sasser(1981) submitted that past and recent surveys indicate that teachers, parents, college professors and even students believe that homework in some way contributes to academic growth and that there is very little evidence that the assignment of homework has any negative effect on academic achievement. Also, McMulen (2010) in a study found out that homework assignment have visible impacts on academic achievement of students and therefore recommended more additional homework as this could be useful for lowering the achievement gap between high achieving and low achieving students. However the finding of the study contradicts friesen (1979) whose results of a study did not provide a clear cut endorsement for either the homework or the non-homework group. In contrast to the finding of this study Kohn (2006) challenged and discussed at length the motion that homework will promote a higher achieving student while Begley (1998) believed that homework at the middle class does not improve achievement.

Conclusion and Recommendations

It can be concluded that those students who were exposed to homework assignment in Mathematics had better academic achievement than those that were not exposed to homework assignment. It has confirmed that homework assignment given to complement classroom teaching improved students' academic achievement in Mathematics. Homework assignment is a veritable tool that can reduce the gap between no achieving and high achieving students in Mathematics if well handled. Based on the findings of the study, it is recommended that Mathematics teachers and instructors should be encouraged to give homework assignment to their students. These should be thoroughly marked scored and graded, while necessary corrections and guide should be given to all the students. Homework assignment marked and corrected should be returned to the students on time.

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