

The Learning skills : an educational implication on students' performance in secondary school mathematics

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Abstract

There is poor performance in mathematics among secondary school students in Delta State, Nigeria. Teachers, Parents, the government are all complaining about the poor performance of students in mathematics, and they are trying to find out how this problem can be solved. Many kinds of research have been carried out trying to find out the real cause of students' poor performance in secondary mathematics, but they fail to focus much attention on the variable 'study skills' as one of the causes. The study is a survey type. Five hundred (500) students were sampled from 25 Government secondary schools, Delta State of Nigeria, through random sampling. The instrument used in gathering data for this study were the students' Learning Skills Questionnaire (SSSQ) and centrally set examination results from the state ministry of education. The result from the state ministry of education was used to gather data on the students' performance in mathematics, while the questionnaire was used to gather information on students' learning skills. Two hypotheses were stated to guide the study, which was tested at a 0.05 level of significance using the SPSS and t-test statistic to analyze the data obtained. The result shows that there is a significant influence on students' learning skills and their performance in Mathematics. There was a significant difference between students who possess good learning skills and those with poor learning skills.

Keywords: Learning kills; Students' performance; Mathematics

INTRODUCTION

The learning skills differ from one student to another and also from place to place. Learning skills is a very vital part of learning that is being overlooked. Students' performance depends greatly on study skills. Learning has been regarded as so complex in the educational system all over the world. Different studies have been carried out to ascertain the exact factors that influence the academic performance of students in mathematics, which have aroused the interest of researchers, teachers, counsellors, parents, psychologists, school administrators and many others who have concerns for the improvement of students' performance in mathematics. Many researchers have made different attempts to investigate how learning skills influence students' performance in mathematics in schools, but the problem still persists. No one study skills work for every situation, and it depends on the individual's choice of study. An individual student needs to carry out his

own responsibility to acquire the desired knowledge to enable him/her develop positive values, reasoning skills, critical thinking, attitudes and other skills to excel in the academic. Effective learning skills and strategies are necessary in tackling or carrying out learning tasks independently and systematically. And so, having effective learning skill is the key to achieving success in school mathematics. Having an effective learning skill will assist students in preparing for schoolwork and being able to cope easily, thereby achieve more success in school mathematics.

Much attention is not being paid to students' learning skills in the school, and the teachers focus more on teaching, neglecting this important aspect of learning. The way the students' study has been neglected, not minding the outcome of neglecting their learning skills. According to Shetty & Srinivasan (2014), learning skills are critical for student's academic success, and that competency in academic is connected to the knowledge and application of effective learning skills. There are numerous ways for students to study, but not all methods are effective; some may not promote learning. Shetty et al. (2014), stated further "learning skills include the competencies associated with acquiring, recording, organizing, synthesizing, remembering, and using information. These competencies contribute to success in both non-academic (e.g., employment) and academic settings." Most students are often not aware of some of their habits, such as studying while playing music; this may affect their learning and thereby hinder them from comprehending, most especially in mathematics which needed quietness, more concentration to grasp the concepts and skills.

Concept of study skills

Learning skills are strategies students used to achieve the stated learning objectives. According to Wikipedia, the free encyclopedia (2020) approaches applied to learning are academic skills, study skills or study strategies. These approaches are generally critical to school success, considered essential for getting good grades and which is very useful throughout someone's learning in life. Ezeani and Ibegbulem (2009) cited in Ossai (2012) stated that study skills are very vital to the success of students in school and important in obtaining good scores. It is considered to be very important in school learning. To develop the ability of students' skills on how to read, search and effectively use this to solve an academic problem and thereby make a decision with it has turned to a major problem and topic of discussion among researchers and educationist. Dunn, (1991) cited in Ossai(2012), view learning skills as when each student begins to focus, process, and retain difficult information.

Any skill a student used, which help him to boosts and improve his study ability and excel or pass examinations, can be regarded as a learning skill. There are various ways a student can study to boost or increase his ability to reason, retain information and has critical thinking (Ossai,2012). Study skill is very important, and it is a transferable life skill. learning skills are the skills that everyone, every student needed to have for effective study and efficient learning. Wikipedia (2020) stated further that study skills are a series of skills that handle the process of organizing and taking new information, retaining the information or dealing with an assessment. Ossai(2012) refers to study skills as those things students do when they have to search, organize, and retain information. According to wikipedia

(2020), study skills include mnemonics which assist students in retaining information, have effective reading, note-taking efficiency and concentration techniques. It is an application to all the field of study, and it is also a technique that students can usually learn in the shortest possible time.

According to Mutsotso and Abenga (2010) “The behavioural perspective of study skills address the environment, external conditions, and observable behaviours of students. Time management, note-taking skills, and the time and place of study are factors that can affect learning. The cognitive perspective of study skills examines the process by which students acquire, store, and recall information from memory.”

The study skills development plays a vital role in the academic performance of students’ learning process. These skills are very important in judging the overall potential and attainment levels of students (Nuthana & Yenagi, 2009; Samia, Gladson, Udayakumari & Dhafra, 2018). In attaining academic excellence, students need to have these essential learning skills such as organization, time-management, note-taking, reading and critical thinking. There are some studies which asserted that academic success of student lies on the type of learning skills adopted to acquire the outcomes expected (Maribeth & Jill, 2002; Meneghetti, De Beni, & Cornoldi, 2007, Samia et al, 2018).

Mathematics and study skills

For an effective study to take place in mathematics, the students need good study skills, need to be patient, use of acronyms and mnemonics, good time management, practicing during the class lesson and effective working of given exercises or assignment at home. This approach can help in increasing students study skills in mathematics since mathematics needs practicing. As they say, “practice makes perfect”, it is impossible for a student to excel in mathematics without working out or solving problems after school lesson. Mathematics being a subject that deals with deep reasoning and critical thinking, need patient; otherwise, such student will be frustrated and decided not to work or solve the mathematics problems again. There are some topics that needed acronyms and mnemonics for easy recall or understanding. For effective study skills to take place in a topic like trigonometrical ratios, the students can decide to make use of the acronyms and mnemonics ‘SohCahToa’, which means Sine=opposite divided by hypotenuse, Cosine=adjacent divided by hypotenuse and Tangent= opposite divided by adjacent for easy recall and understanding. There are other methods that can also be used. In studying mathematics, the students should be able to manage their time well; otherwise, nothing will be achieved, and it will result in to a waste of effort.

According to Ossai (2012), study skills refers to the methods, strategies, techniques and approaches which the students adopt in achieving the stated learning objectives. learning skills referred to the general methods of learning and skills for specific subjects of study (Ossai,2012). Every student has his own unique approaches to learning, and every subject has its own unique way of studying it. Study skills a student will use in studying the English language may not work or applicable in mathematics since mathematics involve calculation while the English language does not. When students adopt a good number of skills for study, the resultant effect is a good performance in mathematics. On the other hand, when the

students' learning skills are faulty, it results in poor performance. Learning skills are very vital to student's performance in secondary school mathematics.

The study skills of students differ from one student to another and also varies from one place to another. It is very vital as per student's success in school because students' performance depends greatly on their learning skills for good performance in mathematics (Onoshakpokaiye, 2015). According to Onoshakpokaiye (2015), students learning skills play a tremendous role in reflecting the education standard and the students' performance in mathematics. Students cannot learn all that is required in the subject from their teachers in the classroom alone, it is the combination of both learning in the classroom and out of classroom learning that entails learning skills.

The general belief is that a student who lacks effective and efficient study skills is eventually laying and building on a shaking foundation, which will eventually result in a weak foundation. Despite that, the students are taught together, but all do not get the same grades or scores; there are underachievers and high achievers in mathematics. These outcomes get the teachers worried about the situations and then do their best by trying or push too much (Riaz, Asma, & Niaz, 2002; Onoshakpokaiye, 2015). This reason for not doing well maybe that students fail to study what they were taught during the school lesson and also fail to expend good effort to practice mathematics assignment at home or due to ignorance about the importance of learning skills to their mathematics performance

Students who complete their homework on time may perform well and excel academically. To enhance the mathematics academic performance of students, they need a course in study skills that will examine their study skills and their effectiveness as pivotal to the performance of students in mathematics. The students' success in academic is dependent on the study methods that individual student applies. There is no specific method of studying for all students. The secret of student success depends on his ability to identify a personal way of studying that will work for him, and this depends on the subjects, environment, conditions and circumstances. There are some methods that may be applied to study a particular subject that cannot be used to study mathematics. For example, mathematics needs constant solving and practicing exercises to be perfect in the subject. This requires knowing oneself so as to make the best decisions on how to study and know the various strategies that may be best and applied.

Students confident towards mathematics influence and motivate them to study the subject and so the aspect of study skills became imperative to be considered when evaluating the affective factors which influence students' performance in mathematics (Hannula, 2002; Zimmerman, 1998, Alberta, 2015). Alberta (2015) stated that "Perhaps students' development, the use of study skills strategies contributes to students' confidence in studying mathematics because they are afforded an opportunity to gain insight into how they learn mathematics. "

According to Samia, et al (2018) "lack of learning skills placed the students at a disadvantage position and suffered tremendously at various different stages during their student journey. Such students are often victims of procrastination, overconfidence, mismanagement, and stress." The Use of effective learning skills leads to positive outcomes in all the school subjects. Students who are taught

different study strategies and able to apply them in the right way usually achieve more (Meneghetti et al, 2007, Samia et al, 2018).

Study skills and students' performance

According to Mutsotso and Abenga (2010) "High school students who are motivated by achievement, have coping skills, and have high educational and occupational expectations perform better in school." Tucker (1999) cited in Mutsotso et al (2010), found out that ineffective study skills lead to student's failure in academic; therefore, it suggested that parents and schools should try to implement learning skills throughout the education of their children. From different studies conducted by different researchers, it was discovered that learning skills could promote students' performance in secondary school mathematics. Entwistle (1960) cited in Mutsotso et al (2010) reported that learning skills improved the student's performance level, especially when the student volunteered to participate in a study skills course. According to Shetty & Srinivasan (2014) "learning skills are important for better academic performance." The poor performance of students in mathematics is consistently drawing attention in various countries educational system due to its importance to the development of science and technology and its role in national development and national growth. The skills and knowledge of students acquired in mathematics are very important in helping them overcome the difficulties they may face in their daily lives (Mohamed & Waheed, 2011, Reylan, Renante, Jonathan, Raymond, Gengen, Ramil, 2015). That is to say; the teacher should ensure students are guided to enable them to acquire good learning skills for good performance. Lack of good learning skills is among the factors that could also largely influence students' performance in mathematics, and if urgent attention is not taken or corrected, its resultant effect may be detrimental to the nation and students' academic performance or success (Ebele & Olofu, 2017, Reylan et al, 2015). Students need to have good learning skills in order to excel in their academic life because it will assist them in acquiring the needed mathematical skills and knowledge that is applicable in their academic work and everyday living. Therefore, a lack of these skills may lead to the poor performance of a student in school (Kaur & Pathania, 2015, Reylan et al, 2015).

Ogochukwu (2002) stated that students spend much time in the course of their studies, but when an examination or test is given to them, their performance is very poor. The poor performance of student in the subject may be due to the study methods they adopted, or they do not pay much importance to how they study and also it can be that the student learning skills are very poor. Ansari (1980) stated that learning skills are a significant variable that determines the academic performance of students.

In most secondary schools in Delta state and Nigeria as a nation, students do not know how to utilize effective methods, and this has become an obstacle to the progress of students' performance in mathematics. Most of them are not motivated as a result of a lack of effective learning skills, and it has resulted in the situation of having hatred for mathematics, exhibiting nonchalant attitudes towards the subject. Many teachers and researchers do not pay much attention to the students' learning skills so as to correct it; hence it has resulted in a general problem. This anomaly often results in students exhibiting mathematics anxiety, indulging in

examinations malpractices and consequently poor academic performance in mathematics. Purpose of the study : 1) to examine the influence of learning skills on students' performance in secondary school mathematics, 2). to examine the difference between students who possess good learning skills and those with bad study skills in mathematics performance.

The following hypotheses were stated to guide the study Hypotheses : 1). there is no significant influence of learning skills on secondary school students in Mathematics performance, 2). there is no significant difference between students who possess good learning skills and those with bad learning skills in mathematics performance.

RESEARCH METHOD

This study is a correlational study that was used to determine how study skills influence students' performance in mathematics. Some Senior secondary school (SSS 2) students in a public secondary school in Delta State, Nigeria were selected for the study. The sample was 500 students drawn from twenty-five (25) Government secondary schools within the state using random sampling techniques. The instrument used for data collection was a questionnaire on students' study skills to collect information on students' study skills, while a centrally set examination result from Delta state ministry of education was used to collect data on the students' performance in mathematics. The reliability of the instrument was tested using the Pearson product-moment, and the correlation coefficient of $r = 0.75$ was calculated. The hypotheses were tested at a 0.05 level of significance using the SPSS and t-test.

Hypothesis 1:

There is no significant influence of learning skills on secondary school students in Mathematics performance.

Table 1: The influence of students' study skills and mathematics Performance

Model	Sum of squares	Df	Mean square	F	Sig
Regression	104.672	1	104.672	0.414	0.520
Residual	125766.136	498	252.542		
Total	125870.808	499			

Table 1 reveals that the P-value (0.520) was greater than F- value (0.414) at 0.05 level of significance. Hence the null hypothesis is rejected. This implies that there is significance influence of students' learning skills on their secondary school Performance in mathematics.

Hypothesis 2:

There is no significant difference between students who possess good study skills and those with bad learning skills in mathematics performance.

Table: 2 Summary of t-test Analysis between students who possess good study skills and those with bad study skills in mathematics performance

Variables	N	Mean	SD	DF	t-cal	t-crit	Decision at P<0.05
Students with good study skills	260	18.35	5.94	498	1042.895	3.002	Significant
Students with bad study skills	240	8.11	4.87				

From table 2 above, it shows that there is a difference in mean between students with good study skills and those with bad learning skills in mathematics performance. The mean of students with good learning skills is (18.35), while that of students with bad study skills is (8.11). The difference in the mean shows that there is a difference between students with good study skills and those with bad learning skills. From table 2 also, the t-calculated value (1042.895) is greater than the critical value (3.002). Hence the null hypothesis is rejected. This implies that there is a significant difference between students who possess good learning skills and those with bad learning skills in mathematics performance. It therefore indicated that those students who possess good learning skills do better than those with bad study skills in mathematics.

RESULTS AND DISCUSSION

The result in table 1 revealed that there is a significant influence on student's study skills and mathematics performance. This study supported the view of Ogochukwu (2002), which states that students spend much time during their studies, but when an examination or test is given to them, their performance still very poor. The poor performance may be due to poor study skills they adopted, and also it may be they do not pay much attention to how to study. According to Ansari (1980) study skills are a significant variable that determines students' mathematics academic performance. Most students do not solve or practice mathematics problems after school because they view mathematics as time-consuming subject and the consequence is poor performance. Shetty & Srinivasan (2014), stated that learning skills are very important to student's academic success and that their competency in academic is connected to the knowledge they acquired and the application of effective learning skills. From the findings, it was discovered that learning skills are a predictor of students' performance in mathematics; hence students cannot do without the learning skills; otherwise, their performance in mathematics will continue to be poor.

The findings in hypothesis 2 showed that there is a significant difference between students with good learning skills and those with bad study skills in mathematics performance. The mean of the students with good learning skills was greater than that of students with bad study skills, which indicates that students with good learning skills perform better in mathematics than that of students with bad learning skills, which is in line with Mutsotso and Abenga (2010), they found out that ineffective learning skills lead to failure in academic. From the findings, we conclude that good learning skills are a predictor of students' performance.

Entwistle (1960) cited in Mutsotso et al (2010) reported that learning skills improved student's performance level, especially when the student volunteered to participate in a learning skills course. According to Ezeani and Ibegbulem (2009) in Ossai(2012), study skills are very vital to students success in schools and important in obtaining good scores. Students with poor study skills usually struggle to solve mathematics problems, and since there is no effective study skills, the result is poor performance. Onoshakpokaiye (2015), stated that students study skills play a tremendous role in reflecting the education standard of the students' performance in mathematics. For students to perform well in mathematics, they must use the appropriate methods to study the subjects; that is to say, their study skills must be effective.

CONCLUSION

Mathematics is a mandatory subject in all schools and also the basic foundation for all science courses and mathematics-related courses. There is a need for teachers and others in the education sectors to pay proper attention to the teaching and learning of the subject. Students' study skills should not be overlooked since it contributes to their good performance in mathematics. From this study findings, it shows that students with effective study skills excel in their academic and also students who possess good study skills performed significantly better than those students with bad study skills in mathematics. For this reason, students should be well guided in order for them to excel in mathematics.

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