TIME ON TASK AND STUDY HABIT AS DETERMINANTS OF STUDENTS' ACHIEVEMENT IN MATHEMATICS

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Abstract
Studies on academic achievement have been one of the most researched areas in education, evaluation and assessment. Student's time on task and study habit is important factors when considering the performance of students in their academics. The study used descriptive survey design. Simple random sampling technique was employed to sample students from both public and private junior secondary schools in Oyo State. Two instruments: Mathematics Time on Task and Study Habit (r=0.795) and Mathematics Achievement Test (MAT) were used in the study. Data were analysed using Pearson product moment Correlation, multiple regression and independent t-test at α = 0.05 level of significance. The result revealed among others that time on task has a significant correlation with academic achievement in mathematics [r= 0.233, p<0.05]. This article recommended that there is need for students to plan their learning time effectively and follow the time planned. Also, students should develop a good study habit

Keywords: Time on task, Study habit, Mathematics Achievement

Introduction

Quality education is the platform on which global development stands (Alex, 2011). Education is the channel by which a nation produces and reproduces values and development in her citizens and in society. It is the determining factor of any nation's stability and systemic strength. In order word, education is the cornerstone of economic growth and social development, it increases the productive capacities of societies and country's economic, political, social and cultural institutions (Owhonda, 2014). The quality of education Nigeria provides is one of

the major sources of her present state of national consciousness, character and growth. Omiebi-David (2004) stated that education is an intentional process that brings about the change of behaviour, conduct and the acquisition of knowledge, skills, and concepts in a learner by exposing him to activities aimed at practical results. It involves the acquisition of functional skills, moral identity, and ambition to succeed in life and improve the society.

Quality teaching and quality learning have taken a central stage in education these days irrespective of the level of educational level in our environment and quality education is still referred to as the bedrock of quality learning. This lack of quality in our educational system mostly at the primary and secondary school levels could be one of the reasons for poor performance of students in their academic pursuit. Quality is expected to reflect in the activities of every stakeholder, beginning from the curriculum planner down to the students. The unsatisfactory situation of students' academic performance necessitates this study.

Quality teaching and learning presents education with a range of challenges at a time when education sector is coming under pressure from globalisation through increased international competition, students paying high fees and demanding for quality, parents demanding for employability of their wards, industry demanding quality workplace skills and government demanding accountability from tax payers' investment in education. For education not to fail in its responsibilities, there is need to develop quality teaching and learning culture and framework, a culture of excellence in teaching and learning that will inform school teaching and learning policy, develop school strategies for teaching and learning and raise teaching standards. These would enhance the standard and quality of educational experiences provided to the students and this will build a good school teaching culture.

Teachers need to create an environment that will foster students' love for learning but the environment that will help students build skills useful in a world where jobs are increasingly information and knowledge based (Katrina, 2013). According to Katrina (2013), learners have to be at the centre of what happens in the classroom with activities focused on their cognition and growth. They have to actively engage in learning in order to become self-regulated learners who are

able to control their emotions and motivations during the study process, set goals and monitor their own learning. Groft in Katrina (2013) argued it is important to develop students' ability to go beyond learning in the classroom, to question and apply learning in new situations.

Time-on-task refers to the amount of time students spend attending to school-related tasks (Prater, 1992), such as following directions and engaging in learning activities. Time-on-task is also sometimes referred to as engaged time. Also, time on task is the amount of time that students are actively engaged in learning tasks during lesson hours. According to Poway (2002), time on task refers to portions of time when students are paying attention to learning tasks and attempting to learn. Time on task (Engaged time) excludes the time students spend socializing, wandering about with no apparent purpose, daydreaming, or out of the classroom.

Time on task plays a vital role in improving student's academic performance and achievements. Each and every student should have time management ability which includes setting goals and priorities, using time management mechanism and being organized in using time. More so, time management is only possible through self-motivation, performance, ability and external motivation (Brigitte, Claessens, Eerde and Rutte, 2005). There are few activities performed by today's students, which act as a barrier between them and their academic performance and due to mismanagement of time they have left some gaps behind. There is no one right way to manage our time, however, it is important to get to know our self, so we can make good decisions about how to use our time. Likewise, in the process of providing educational services, this issue has been a subject of interest discussed and emphasized in several platforms and an attempt has been initiated to assess and analyze time and the time management attitudes and behaviours of students in educational institutes (Denlinger, 2009). However, consideration needs to be given to the quality of the time spent as well as the quantity of time spent on the learning task.

In addition, the following instructional conditions are associated with time on task: interactive activities with a teacher, carefully prepared activities and closely monitored seat work, focusing students' thoughts on cognitive strategies and on motivational tasks, immediate feedback, focused questions, praise and reinforcement,

listening and thinking, discussion, review, thinking out loud and drill and practice (Poway, 2002)

In 1963, John B. Carroll introduced a model of school learning that attempted to explain the role of the time variable and its relationship to learning rate and academic achievement. Since that time, a number of studies have produced results which encourage the conclusion that the amount of time pupils spend actively engaged in learning is related to their achievement outcomes (Anderson, 1973; Berliner and Rosen- shine, 1977; Bloom, 1974, 1976). These reported relationships between amount of learning time and achievement lead logically to speculation about the effects upon performance, increasing the proportion of instructional time pupils spend on-task. The importance of the time variable to learning is explicit in Carroll's model. The critical variables in the model are (1) time needed to achieve a task and (2) time actually spent on the task. These variables determine the degree of learning. The relationship among these variables is expressed in the formula:

Degree of learning = (time actually spent) ÷ (time needed)

Bloom's (1974) studies of the relationship between time and learning suggest that increased time-on-task increases achievement and most classrooms contain children who attain only a low degree of learning, perhaps because the amount of time they are actively engaged in learning is low in comparison to the time needed for them to learn.

Alex (2011) described a habit as something that is done on scheduled, regular and planned basis that is not relegated to a second place or optional place in one's life. It was further stated that a habit is what is simply done, no reservation, no excuses and no exceptions. Thus, the habit formed can be improved upon by constant practice; and it is very hard to give up a habit once it is formed. Furthermore, to study is to buy out the time and dedicate self to the application and task of study, and to become engrossed in a process of learning, practice, enlightenment and education of one's self (Alex,2011). Therefore, study habit can be derived from the above as buying out a dedicated schedule and uninterrupted time to apply one's self to the task of learning. Study habit is an action such as reading, taking notes, holding study groups which the students perform regularly and habitually in order to accomplish the task of learning. In more

operational term reading habits is often considered in terms of the amount of materials being read, the frequency of reading as well as the average time spent on reading (Wagner, 2002), and this habit can be cultivated (Wijesuriya, 1995).

A creative and pragmatic education involves the habit of personal investigation. The act of personal investigation requires self-study to be followed by self-thinking and analysis. Self-study, otherwise referred to as reading at one's own accord, requires a habit, which is known as reading habit. Reading makes way for a better understanding of one's own experiences and it can ban exciting voyage to self-discovery (Owusu-Acheaw, 2014). The quality of development of any nation depends on the level of education and the literacy level of her people. Nigeria cannot produce competent people or experts in differently fields if the foundation of her education is not laid upon good study culture. The essence of education is in ability to read and write, therefore to cultivate and propagate study habit in our school children is to promote literacy and quality education, which determines the state of national development. This above statement was supported by Greene (2011) as he posited that reading habit is best formed at a young impressionable age in school, but once formed it can last one's life time. If school children are inducted into good studying habit at the primary school, then strong based education would be laid. Effective reading is important avenue of effective learning and reading is interrelated with the total educational process and hence, educational success requires successful reading habit. Before the advent of the television, both the young and the old found enough time to read, but it has become a thing of the past. Palani (2012) gave credence to the above statement when he posited that nowadays, reading habit has lost its importance as both the young and the old are glued to the television. Africa is a not reading society, but chatting society, the background of learning through culture, the cultural habit of people. In this part of the globe we prefer listening and chatting to reading (Busayo, 2011, cited in Sangkaeo, 1999). In the light of this, creating good study habits is very germane to African children/students' success in schools.

Academic achievement is the level of performance that is exhibited by an individual (Ireogbu, 1992). In other words, it is the degree of success attained at the end of an academic exercise which

can be conceived to mean the extent one is able to accomplish after learning has taken place. Academic achievement can be known as the level of efficiency and knowledge demonstrated by an individual after learning has occurred (Irogbo 2002), Odinko (2014) and Oguniyi (1996). Also sees it as the extent to which a student, teacher and institution has achieved their educational goals. Academic achievement is commonly measured by examination or continuous assessment (Adedipe, 1985) but there is no general agreement on how it is best tested. Achievement encompasses ability and performance (Busari, 2000 and Ireogbu, 1992). Ability (cognitive and affective) and performance (psychomotor)

Achievement had been the major indicator over the years in the measurement of educational outcomes. The performance and effectiveness of teachers is based on how well the students had achieved in and out of the school (Odinko, 2014) and (Fabayo, 1998). Osokoya, (1998) sees it as the outcome of education.

Poor performance in test and examination is caused by various factors which incudes but not limited to inability to manage time on task, poor and ineffective study habit by students. It has been observed that the students' inability to effectively plan their time on task which includes study time a have affected achievement of students in understanding concept taught in class. Based on the above, this study looked at the interacting and main relationship among the variables (students' time on task, and study habit) of the study on achievement in Mathematics at the junior secondary school.

Research Questions

1. Is there any statistical significant relationship between students on task and study habit in mathematics achievement?
2. What is the relative contribution of the students' time on task, study habit and achievement in Mathematics?
3. What is the composite contribution of the students' time on task, study habit and on the achievement in Mathematics?

Methodology

The study will adopted the survey type of non-experimental design. The target population of the study was made up of all JSS 2 students in Junior Secondary School in Oyo State. Multistage sampling technique

was used the study. Oyo State has three senatorial districts namely, Oyo South, Oyo North and Oyo Central senatorial districts. Oyo Central senatorial district was randomly selected. Simple random sampling technique was used to select Ido and Akinyele Local Government Areas from the selected Senatorial Districts. Five private and five public junior secondary schools were randomly selected from the selected Local Government Area, making a total of ten schools for the two selected Local Government Area. Twenty 20 male and 20 female JSS 2 students were selected from each school, giving a total of 400 students as sample. Two instruments used for the study are:

1. Mathematics Achievement Test (MAT)
2. Mathematics time on task and study habit scale.

Data Analysis

The data collected was analysed using Pearson product moment correlation, multiple regression and independent t-test.

Results and Discussions Research Question 1

1. Is any statistical significant relationship between students on task and study habit in mathematics achievement?

Table 1: Correlation Matrix of Variables of Achievement in Mathematics

	Time on task	Study habit	MAT
Time on task	1.000	0.764	0.233
Study habit	0.764	1.000	0.146
MAT	0.233	0.146	1.000
Mean	22.09	20.82	17.85
Standard deviation	9.27	7.62	4.55

The table above showed that the correlation between time on task and study habit was high with a value r=0.764. This implies that the relationship between the two predictors is positive and relatively strong. Correlation between time on task and mathematics achievement had a value of r=0.233 and study habit and mathematics achievement has r=0.146. The correlations between them are positive but low. This implies that there was positive correlation which means that student's time on task and achievement in mathematics are in the

same direction. The more efficient the students are on time on task the more they do well in mathematics. Furthermore, the correlation between study habit of students and achievement in mathematics is r=0.146, p<0.05. This implies that student's study habit and achievement in mathematics are positive. That is, the more they have good study habit, the more they do well in mathematics.

Research Question 2

What is the relative contribution of the students' time on task, study habit and achievement in Mathematics?

Table 2: Summary of Relative Contribution of Students' Time on Task, Study Habit and Mathematics Achievement

	Unstandardized Coefficient		Standardized Coefficient		
Model	B	Std.Error	Beta	T	Sig.
(Constant)	15.705	0.722		21.740	.000
Study habit	-.044	.046	-.073	-.960	.337
Time on task	.146	.038	.297	3.824	.000

Table shows that students' time on task significantly predict the student performance in mathematics. This is time on task (β = .297, $t_{(3,96)}$ =3.824, p< .05),which means that time on task contributed significantly to the prediction of students' performance in mathematics. The study reveals that time on task turned out to be the strongest predictor of students' academic achievement in mathematics.

Research Question 3

What is the composite contribution of the students' time on task, study habit and on the achievement in Mathematics?

Table 3: Summary of Regression Analysis Showing the Composite Contribution of Time on Task and Study Habit on Mathematics Achievement

R = 0.240
R Squared = 0.057
Adjusted R Square = 0.050
Standard Error of the Estimate = 4.442

ANOVA					
Model	Sum of Square	DF	Mean Square	F	Sig
Regression	474.919	2	158.306	8.024	.000
Residual	7793.357	395	19.730		
Total	8268.276	397			

Significant at $p<0.05$
$F(2,397)=8.024, P=0.00$

The value obtained revealed that the coefficient of Multiple Regression is (R) =0.240, (R^2) = 0.057 and adjusted R square is (R_{adj}) = 0.050. The model has a positive correlation. Therefore, the variance observed is 0.057 which accounts for 5.7% estimate of the total variation of student performance in mathematics. Hence, it is attributable to the contribution of the predictor variables built into the regression model.
Furthermore, F-test examines the relationship to which the independent variables and dependent variable were linear. The F-ratio ($_{3,396}$) = 8.024, $p<0.05$ was significant and allows for a reliable prediction of student performance in mathematics.

Discussion of results
The result revealed that time on task had a significant correlation with academic achievement in mathematics. It implies that achievement in mathematics positively influenced time plan and task plan, indicating that students with good productive time and task will have high grades in school. They will also have the ability to combine their learning activities with other activities. The present study is in agreement with the work of Hattie (2009) that says productive use of time determined achievement, implying that what matters most is to create conditions

that keep students engaged, rather than just extending time. Also, Cotton (1989), in the finding reported that increasing time on task is more beneficial in more highly structured subjects, such as mathematics and foreign languages, than in the less structured ones, such as language, arts and social studies, unless the content in those areas is largely skill-based (e.g. writing, reading) and, therefore, more structured.

The result also reveals that study habit had a significant correlation with academic achievement in mathematics, this is also in line with earlier findings of Owusu-Acheaw and Larsondelete (2014), who in their study confirmed that reading habit influence academic performance and there was a relationship between reading habit and academic performance. Mashayekhi, Rafati, Mohamad and Yahaghi (2014) also reported positive correlation between the study habits and academic achievement. Given that variable, such as study habits have a significant relationship with the academic achievement. Successful achievement in any form of activity is based upon study, interpretation and application (Yoloye, 1999), and that study should have a purpose. It therefore depends on individual to decide why he or she wants to study, either to gain new ideas or to find out relationship between two different things. What one learns as a result of study depends on the degree at which one succeeds in achieving that aim or purpose. The implication of the result is that many students may fail, not because they lack ability, but because they may not have adequate study skills, hence failure is inevitable.

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different things. What one learns as a result of study depends on the degree at which one succeeds in achieving that aim or purpose. The implication of the result is that many students may fail not because they lack ability but because they may not have adequate study skills, hence failure is inevitable. Bashir and Mattoo (2012) findings revealed a highly significant relation among various variables of study habits and academic performance. The essence of education is in ability to study. Therefore to cultivate and propagate study habit in our student is to promote study education, which determines the state of national development. This above statement was supported by Greene (2011) as he posited that reading habit is best formed at a young impressionable age in school, but once formed, it can last one's life time.

The study reveals that time on task is the strongest predictor of students' academic achievement in mathematics. This result is explainable bearing in mind that many variables are time bound and that time and planning are highly vital to student academic achievement. The other predictor also needs the factor of time to be able to be relevant to academic achievement. The result of finding corroborates the opinion of Onu (2016) who opined that time allocation for study has to do the process of organizing one's activities to achieve the best results within the available times. This is also the view of Okobiah and Okorodudu (2006) who claimed that students should be conscious of how their time is utilized and not just letting them waste away. Therefore, it is worthy of note to say that, there is a significant relationship between time allocation for study and students' academic performance in mathematics in secondary schools.

The result of the analysis shows that the students' time on task, and study habit significantly predicts students' academic achievement in mathematics. The result revealed that academically successful students must be able to achieve to perfection how the two predictors supplement each other in jointly predicting achievement in mathematics.

Conclusion

In conclusion, the result also revealed that study habit contributed significantly to academic achievement in mathematics. Time on task contributed significantly to the prediction of students' performance in

mathematics. Furthermore, students' time on task, and study habit also significantly predicts students' academic achievement in mathematics. The result revealed that academically successful students must be able to achieve to perfection how the two predictors supplement each other by jointly predicting achievement in mathematics. The findings of the study showed that the more efficient the students are on time on task the more they do well in mathematics. Also, study habit significantly predicts students' academic achievement in mathematics. Conclusively, the findings established that time on task and study habits determine students' achievement in mathematics.

Recommendations

The following recommendations are hereby made:

1. There is need for students to plan their learning time effectively, this will help them to perform better in their academics
2. Following time plan can help reduce wastage of time, as this will help students to be more focused. Student will know next step to take if the time is well planned
3. It is recommended that students improve their study habit by following the plans and time schedule for each activity of the day.
4. There is need for students to develop good study habit, by having good time table and adhere to it strictly.

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