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Psychological impact of class duration on students' academic performance in mathematics

Ajiyo KA[1], Idiong US[2]

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Author Affiliation:
[1]Department of Mathematics, Adeyemi College of Education, Ondo, Ondo State, Nigeria; Email: surestarkay@gmail.com
[2]Department of Mathematics, Adeyemi College of Education, Ondo, Ondo State, Nigeria; Email: idiongus@aceondo.edu.ng

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ABSTRACT

The study examined psychological impact of class duration on academics performance of Adeyemi college of Education' students in mathematics. A survey sampling procedure were used for the study and a total of three (300) students were selected as respondents. Questionnaire of eighteen (18) items was used in data collection. The data was analysed using t-test with the aid of Statistical Packages for Social Science (SPSS). The null hypotheses generated on the student interest, learning environment condition, student assimilation and class timing were rejected while their alternative hypotheses were accepted at 5% alpha level of significance. The findings reveal that, student love fixing their mathematics class in the morning than afternoon due to the fact that, they assimilate mathematics and mathematical concept faster at that time compare to other time. Conducive environment enhance teaching-learning process in view of this findings, government should provide schools with more teachers so that all mathematics and mathematical related subjects would be slated for morning and school site should be located in a conducive environment where teaching-learning process will be convenient for both teachers and students.

Keywords: Achievement, assimilation, class timing, conducive environment.

1. INTRODUCTION

Over the past decades there have been numerous discussions within the mathematics education community. It seems obvious that the nature and quality of classroom instructional time would influence students' achievements, but the investigation into teaching and student achievement reveal very different perspectives.

Conflicting views on relationship between teaching and students' achievement has been reported since 1970s. For example, some researchers reported that there were not enough evidences to link teaching with students learning (Davies S. C., and Peltz, L. J. 2012). However, other researchers argued that the relationship did exist. Among the researchers who argue for the existence of the relationship between teaching and learning outcome, some people propose that actual engaged instructional time predict students' achievement (Reardon S. F. 2011) while others propose the view that teaching and learning is content specific since teaching is a very complex behaviour (Stonehill et al. 2011).

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Researchers on instructional time and learning have found that class time needs to be allocated regularly during the school day and week, and that instructional time is a key equity issue (Dobbie, Will and Roland G. & Fryer Jr. 2011). Time devoted to core academic subjects was a primary focus of the reform recommendations of the National Commission on Excellence in Education report. In recent years, almost all states increased core academic subject requirement even to the present, with a particular focus on mathematics and science education (Reardon S. F. 2011).

Nigeria learn a great deal of information on how the brain take in, store and retrieves information. Given what is now known as "how people learn Mathematics". It is important to consider the way people learn Mathematics when considering class duration/instructional time and the interest of the student toward Mathematics. In order to maximize long or short term learning Mathematics and mathematical concept these conditions work best because the brain functions best when:

- The class is de-stressed, when it is more open to taking in information
- Attention is obtained, curiosity is aroused and the presentation has some form of novelty.
- Different example are used by teacher and learner for emphasis on particular concept because all the concept being introduced in Mathematics have personal meaning and real world application or relevance to the learner and is connected to their prior knowledge.
- There is an opportunity to rehearse information learned in a variety of way (Lavy 2010).

Contrary to short term change in behaviour potential (caused e.g. by fatigue), learning implies long term change in behaviour and also in contrary to change caused by ageing and development, learning implies change related directly to experience.

1.1. Statement of problem

To achieve the basis goal of teaching which is for learning to take place, class timing can never be over-emphasised due to roles it place on academic performance of the student in mathematics. However, the impact of long and short instructional time on student performance and the effect of environment condition on student assimilation in teaching and learning mathematics and mathematical concept.

1.2 Purpose of the study

The study is intended to investigate whether long or short instructional time or time of institution will improve student assimilation (which enhance academic performance of student in mathematics or not). It will also extend to access then availability of normal, stable and well conductive environment in conjunction with assimilation of mathematics and mathematical concept.

1.3. Research hypotheses

i. H_{10}: There is no significant difference between the performances of the student thought in the morning and those taught in the afternoon.
ii. H_{20}: There is no significant difference between the length of class duration and student academic performance in mathematics.
iii. H_{30}: There is no significant difference between class duration and sustainability of keen participation of student in teaching and learning mathematics.
iv. H_{40}; There is no significant difference between conducive environment on students' assimilation.

2. METHODOLOGY DESIGN

The inferential survey research design was adopted for the study. Questionnaire named psychological impact of class duration on academic performance of student in mathematics was used for collecting data for study. The instrument was a four likert type scale whose response ranges from strong agreed (SA) to strongly disagreed (SD). The instrument required subject to respond appropriately to the items.

2.1. Population of the study

The population of the study consist of students of Adeyemi College of education, Ondo, Ondo State.

2.2. Sampling and sampling technique

The stratified random sampling technique was used for the study. Sampling was used with consideration for the institution, school of science was used .three (3) department in the school of science (mathematics, physics and chemistry) were randomly sampling

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sampled from the stratification of the school. From the each sampled department, one hundred (100) were sampled out. This make a total of three hundred (300) students sampled for the study.

2.3. Research instrument

The psychological impact of class duration on student academic performance survey questionnaire of eighteen (18) items was used for the collection of data. The instrument was vested by expert in the school of education at Adeyemi College of education, Obafemi Awolowo University, Ile-Ife, Osun state.

2.4. Administration of the instrument

The instrument was taken personally to the student of the institution by the researcher for administration. On the whole, one hundred and fifty (150) male and one hundred and fifty (150) female respondents filled all the copies of questionnaire.

3. DATA ANALYSIS

The data were subjected to inferential statistics for the analysis .the statistical package for social science (spss) were used to run the t-test. Result were tested at the 0.05 alpha level of significance.

3.1. Class Timing versus Students' Performance

3.1.1. Hypotheses

H_{10}: There is no significant different between academic performances of the student taught in the morning and those taught in the afternoon.

H_{11}: there is significant different between academic performances of the student taught in the morning and those taught in the afternoon.

Table 1 A Table showing the different in performance of students' who are taught mathematics in the morning and those whose are taught in the afternoon

	N	Mean	Standard deviation	t-cal.	t-table	Remark
Student taught in the morning	150	10.2051	5.27607	2.011	1.96	significant
Student taught in the afternoon	150	8.9744	4.46360			

3.1.2. Discussion

From the table above, t-calculated value 2.011 was greater than t-table value 1.96 at 5% level of significant. Therefore, the null hypothesis was rejected, while alternative hypothesis was accepted. Thus, this implies that there was significance difference between the academics performance of the student taught in the morning and those taught in the afternoon. It was observed that there is average significant different between the academic performances of the student taught in the morning compare to those taught in the afternoon.

Secondly, we shall consider the effect of length of the class duration on academic performance of student in mathematics.

3.2. Class Duration versus Students' Performance

3.2.1. Hypotheses

H_{20}: There is no significant difference between the length of the class duration and student academic performance in mathematics.

H_{21}: There is significant difference between the length of the class duration and student academic performance in mathematics.

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Table 2 A table showing the effect of length of class duration on student academics performance in mathematics

	N	Mean	Standard deviation	t-cal.	t-table	Remark
Length of class duration (< 2 hours)	150	12.4103	5.36655	2.214	1.96	Significant
Length of class duration (>2 hours)	150	15.3333	6.92434			

3.2.2 Discussion

From the table 4.2 above, t-calculated value 2.214 was greater than the t- table value 1.96 at 0.05 level of significant. Therefore, the null hypothesis was rejected, while alternative hypothesis was accepted .Thus, this implies that there was significant different between the length of class duration and student academics performance in mathematics. It was discovered that there is high significant impact of class duration on academic performance of student in mathematics.

Thirdly, we shall consider the effect of different learning environment on assimilation of student in mathematics.

3.3. Environmental condition versus Students' Assimilation

3.3.1. Hypotheses

H_{30}: There is no significant different between the learning environment condition and student assimilation in mathematics.

H_{31}: There is significant different between the learning environment condition and student assimilation in mathematics.

Table 3 A table showing the effect of learning environment on student assimilation in mathematics

	N	Mean	Standard deviation	t-cal.	t-table	Remark
Learning environment	150	15.3333	6.81323	2.95	1.96	significant
Assimilation	150	8.9744	4.14961			

3.3.2. Discussion

From the table 4.3 above, t-Calculated value 2.95 was greater than the t-table value 1.96 at 0.05 level of significant .therefore, the null hypothesis was rejected, while alternative hypothesis was accepted. Thus, this implies that there was significant different between the learning environment condition and student learning environment mathematics. From relationship between t-calculated and t-table, discovered that there is significant different between learning environment condition and student assimilation in mathematics.

Finally, we shall consider the effect of learning environment in sustaining keen participation of student in mathematics class.

3.4. Learning Environment versus Students' Participation

3.4.1. Hypotheses

H_{40}: There is no significant different between the learning environment condition and sustainability of keen participation of student in teaching and learning mathematics.

H_{41}: There is significant different between the environment condition and sustainability of keen participation of student in teaching and learning mathematics.

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Table 4 A table showing the effect of learning environment condition on keen participation of student in mathematics class

	N	Mean	Standard deviation	t-cal.	t-table	Remark
Learning environment	150	11.6438	5.7109	2.71	1.96	Significant
Keen participation	150	8.5478	4.3811			

3.4.2. Discussion

From the table 4.4 above, t-calculated values 2.71 was greater than t-table 1.96 at 0.05 level of significant. Therefore, the null hypothesis was rejected while alternative hypothesis was accepted. Thus, this implies that there was significant different between the learning environment condition and sustainability of keen participation of student in teaching and learning mathematics. It was discovered that there is high significant different between learning environment condition and sustainability of keen participation of student in mathematics.

4. CONCLUSION

From the analysis of the results, the researcher generated that the student taught in the morning perform better in mathematics compare to their colleague taught in the afternoon , most student prefer their afternoon lecture to be short if they will have afternoon lecture. Also, for teacher to maintain/ sustain keen participation of students, the class should not be mind-numbing and the learning environment must be conducive to avoid inconvenience which will develop stress that result in low assimilation of student which reduce student performance.

SUMMARY

The research studies the psychological impact of class duration on academic performance of Adeyemi College of education student in mathematics. The study involves the use of questionnaire, three hundred questionnaires were assigned to three department i.e., one hundred (100) questionnaire to each department. To obtain an accurate and more dependable result, the research use statistical package for social science (spss) to carry out analysis using t-test to know the significance of each parameter of the test.

RECOMMENDATION

Based on the finding of the project, the following recommendations were hereby made;

1. To the school management, conducive environment should be provided for teaching-learning process and should demonstrate democratic style of leadership in managing the school consulting student opinion before formulating time-table.
2. To the teacher, they should be concise when teaching and this can be achieve by preparing well organised lesson note which will guide them and they shouldn't diverted from it doing this will prevent time wastage so that stipulated time will be adequately utilized.
3. To curriculum planner, they should design the curriculum in a systematic manner which will be accomplishable within a stipulated time.
4. To government, the ministry of education must frequently be organising seminar for teachers to update their knowledge of teaching, to upgrade their profession. Government should always pay the salary and their allowances to boost them to work and attend workshop.

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Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Davies S. C., and Peltz, L. J. 2012. Students in after-school Programs: Outcomes and recommendation. *Principal leadership*, 13 (2): 13 – 18.
2. Dobbie, Will and Roland G, Fryer Jr 2011. *Getting beneath the veil of effective school*. Evidence from New York City.
3. Lavy, V. 2010. Do differences in school instructional time explain international achievements gap in mathematics science and languages: evidence from developed and developing centre. *NASSP Bulletin*, 97(54), 76-79.
4. Reardon, S. F 2011. The widening academic achievement gap between rich and poor: New evidence and possible explanations. *Review of Education Research*, pp. (91-115).
5. Stonehill *et al* 2011. *From after school to expanded learning: A decade of progress. New Directions for Youth Development*, 2011(131), 29-30. *http://eric.ed.gov/?id=EJ842604s.*

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