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Influence of Motivational Practices on the Academic Performance in Mathematics of Senior Secondary School Students in Makurdi Local Government Area, Benue State, Nigeria

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Abstract

The study found out the influence of motivational practices on the Academic Performance in Mathematics of Senior Secondary School students in Makurdi Local Government Area, Benue State, Nigeria. Four objectives with four research questions guided the study and one hypothesis was formulated and tested at 0.05 level of significance. The design of the study was the ex-post facto research design. The population of the study was 1738 senior secondary school students. A sample size of 100 students was drawn using simple random sampling techniques. The instrument for data collection was questionnaire titled “Motivational Practices Performance Questionnaire (MPPQ)” The instrument was validated and found to be highly reliable. The data collected was analyzed using mean, standard deviation and t-test statistic. The findings of the study revealed that, Motivational Practices have significant influence on the academic

performance of Senior Secondary schools students in mathematics, among others. The study recommended that Parents, mathematics teachers, school administrator should be made to realize the importance of motivating their children, and students in order to perform better in mathematics and general in their academics.

Keywords: Mathematics, Motivational Practices, Academic Performance, Mathematics Teachers, Secondary Education

Introduction

Educational psychologists have long recognized the importance of motivation for supporting students' learning, and societies all over the world have used education as an instrument for the achievement of their national interest and objectives. Education is an instrument par excellence for effective national development. It fosters the worth and development of the individual, for the individual's sake and for the general development of the society (Federal Republic of Nigeria, 2017). It therefore, calls for functional education for the promotion of a progressive and united country. School programmes need to be relevant, practical and comprehensive, while interest and ability should determine the individual's direction in education. In Nigeria for example, in order to achieve the goals and objectives of education, the government set up three levels of education: primary education, secondary education and tertiary education (FRN, 2017).

Secondary education (which is the main area of this study) is the second level of education in Nigeria. According to the Federal Republic of Nigeria (2017), secondary education is the education children receive after primary education and before the tertiary stage. The goals of secondary education are to prepare the individual for Useful living within the society, and higher education. Looking at the number of students that pass out from secondary school each year, one may say that secondary education is trying to fulfil these obligations for establishing it (Uwadiae, 2006). But on the other hand, considering the quality of those students that graduate every year, it appears secondary education is not realizing the goals and objectives for which it is set up (Uwadiae, 2006). This loophole in our secondary education is associated with lack of motivation among other factors (Awanbor, 2005 and Rusillo & Arias, 2004).

Students who lack sufficient level of academic motivation exhibit a frail and puny drive towards the pursuit of academic goals as well as manifest signs and symptoms of indifference and apathy towards school. Majority of such students, if not all, engage in examination malpractice (Awanbor, 2005), and other sorts of deviance to examination rubrics (Daniel, 2015).

What then is motivation? Etymologically, motivation is a concept that has its root from the Latin words "Motare" (which means to shake or stir), and "Motivus" (which means stirred or moved in the same way or, that which makes an individual do something or makes them move). It is defined by Broussard and Garrison (2004) as the attribute that moves us to do or not to do something. Brown (2017) defined it as what gets one going, keeps one going, and determine where one is to go. Also, Guay, Channel, Ratelle, Marsh, Larose, and Boivin, (2010) refer to motivation as the reasons underlying behaviour. These

scholastic views to motivation imply that motivation is a driving force that causes change from desire to trying to achieving.

Mathematics remains a subject that many students struggle with and this has become a global educational concern not only in the developed countries of the world but also in developing countries (Mabena, Mokgosi, & Ramapela, 2021).

In Nigeria, many students perform poorly in Mathematics at all levels of education (Agwagah, 2005). This poor performance in Mathematics is not only prevalent among students in the tertiary institutions but across the elementary, junior and senior secondary levels of education as well. For instance, Ahiakwo (2006) reports that academic performance of students in mathematics at the primary, secondary and tertiary levels of education had deteriorated over the years. Ahiakwo further states that the worrisome aspect is the high rate of student's failure in Mathematics at the senior secondary school certificate examinations. Consequently, this has led to a low percentage of students enrolling in Mathematics-related courses at the nation's tertiary institutions (Salman, 2001).

Although the Nigerian educational system is saddled with some challenges which include inadequate funding, lack of appropriate educational resources and facilities, Lack of motivation, poor remuneration of teaching personnel and non-conducive learning conditions among others, all of which may have negatively impacted on the quality of learning over the years, nevertheless, Mathematics education has consistently received tremendous attention probably due to the pivotal role it plays in the sustenance of any economy. A lot of researches and proposals have been made to address the problem of poor students Mathematics achievement. Some of these include efforts at curriculum change or development (Iruoma, 2012; Ayodele, 2011), instructional methods (Gambari & Ezenwa, 2011 and Aremu & Salami, 2013), use of technology (Adegoke, 2010 and Ebem, 2012), students study habits (Charles-Ogan & Alamina, 2014 and Oyedeji, 2006) and self-concept (Adebule, 2014 and Obilor, 2011). While few students have improved in their performances due to the recommendations of some of these researches, yet a greater proportion of students continue to perform below the level of proficiency expected in Mathematics compared to other subjects. One major factor that might be contributing to this problem among many Nigerian students is lack of Mathematics motivation (Aina & Adedo, 2013 and Akomolafe, Ogunmakin & Fasooto, 2013).

Basically, motivation can be said to be the internal force that propels and directs all forms of human behavior (Omrod, 2008). It is very crucial to the understanding of the different aspects of human actions including learning. Motivation also affects an individual cognitively, affectively and behaviorally (Thorkildsen & Nicholls, 2002). When people are motivated to learn, it impacts their reasoning, emotional feeling, participation and behavior. Specifically, it manifests in increased attention or concentration, greater and directed effort, continuous engagement, perseverance and personal fulfilment (Pintrich & Schunk, 2002). Its remarkable influence on students' learning cannot be overemphasized thereby making it a paramount educational issue for parents, educators and school administrators alike. Several researches have suggested that motivation is a significant

predictor of students' academic achievement (Mega, Ronconi & De Beni, 2014; Armitage, 2008).

Government, parents, teachers and students blame one another for students' poor performance in schools. Parents blame teachers for lack of dedication to duties. The teachers blame government for poor salaries hence they are poorly motivated, parents also accuse government for not equipping the schools with learning materials, government blame parents for not doing good homework and the students are blamed for lack of discipline and dedication to their studies, beyond the level of this blame, there is one key factor contributing to this students failure and until government, parents, teachers in the classroom, students realize, this trend of failure will never stop reoccurring.

Purpose of the Study

The objective of this study was to find out the influence of motivational practices on the Academic Performance of Senior Secondary School students in Mathematics. Specifically, the study sought to:

- i. Find out various motivational practices adopted by mathematics teachers in Makurdi Local Government Area of Benue State.
- ii. Ascertain the influence of extrinsic motivation on academic performance of students in mathematics in Makurdi Local Government Area of Benue State.
- iii. Find out the influence of intrinsic motivation on academic performance of students in mathematics in Makurdi Local Government Area of Benue State.
- iv. Find out the gender that is mostly affected in their academic performance in Mathematics due to the adoption of motivational practices in Makurdi Local Government Area of Benue State.

Research Questions

The study was guided by the following research questions:

- i. What are the motivational practices adopted by mathematics teachers in Makurdi Local Government Area of Benue State?
- ii. How does extrinsic motivation influence the academic performance of secondary school students in mathematics in Makurdi Local Government Area of Benue State?
- iii. How does intrinsic motivation influence academic performance of secondary school students in mathematics in Makurdi Local Government Area of Benue State?
- iv. Which gender is mostly affected in their academic performance in mathematics due to motivational adopted in Makurdi Local Government Area of Benue State?

Research Hypothesis

The hypothesis below was tested at 0.05 level of significance.

- i. There is no significant difference in the mean perception of male and female students on their academic performance in mathematics due to

motivational practices adopted by mathematics teachers in Makurdi Local Government Area of Benue State.

Methodology

The ex-post facto research design was used for the study. According to Kerlinger in Ezeh (2005), ex-post facto research is a systematic empirical inquiry in which the scientist does not have direct control on independent variables because they are inherently not manipulable. This study met the requirement for an ex-post facto design because the researcher could not manipulate the independent variable.

The population consisted of twenty-one (21) senior secondary school in Makurdi LGA, Benue state, with the total population of 1738 SS 1 students. 100 students out of this population was purposively sampled from the 21 secondary schools approximately ten each of the schools. The choice of senior secondary school one students was based on the fact that at this level, the students were expected to be well integrated into formal level of thinking. Senior secondary schools one (SS1) students are better placed than any other level to make meaningful impact on the study.

A structured questionnaire designed by the researchers tagged “Motivational Practices Performance Questionnaire (MPPQ)” was used to collect information from the students on the motivational practices employed by their mathematics teachers.

The Questionnaire has two sections (A and B). Section A was concerned with the basic information of the respondents such as age, gender. Section B contains 30 items which determined the motivational practices used by the teachers. The respondents were asked to respond to the questions on a four point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The Instrument was validated by experts in Mathematics Education and Measurement and Evaluation.

The scores obtained were analyzed using means and standard deviations to answer research questions while t-test was used to test the null hypothesis at 0.05 level of significance.

Results

The results obtained are presented according to research questions asked and hypothesis formulated.

Research Question One

What are the motivational practices adopted by mathematics teachers in Makurdi Local Government Area of Benue State?

The answer to this research question is presented in Table 1.

Influence of Motivational Practices on the Academic Performance in Mathematics of Senior Secondary School Students in Makurdi Local Government Area, Benue State, Nigeria

Table 1: Mean and Standard Deviation of students' response on the Motivational Practices adopted by Mathematics Teachers

S/No.	Items	MEAN	SD	DECISION
1	My mathematics teacher give me a prize whenever I made 70% and above in my terminal exams which is example of extrinsic motivation.	3.76	0.42	Accept
2	The encouragement given to me by my mathematics teacher motivated me to do better.	3.89	0.31	Accept
3	Positive encouragements given to me help me to perform excellently well in all my Mathematics tasks: assignments, continuous assessments and exams.	3.85	0.48	Accept
4	The friendliness and cares of my mathematics teacher motivate me to love and study mathematics.	3.70	0.80	Accept
5	Mathematics teachers and the school authority acknowledge good and excellent performance in mathematics and reward students by giving them prizes such as money, textbooks and other kinds of gifts.	3.47	0.81	Accept
6	Mathematics teachers are friendly to those who perform outstandingly in mathematics tasks.	3.80	0.61	Accept
7	Since I know that after solving some examples on board, my mathematics teacher will give me tasks to do including asking me to try it on board, that makes me to work very hard.	3.85	0.35	Accept
8	I got motivated by my mathematics teacher to learn hard in order to help my group/class members.	3.82	0.39	Accept
Grand Mean		3.77	-	Accept

The mean response of the influence of motivational practices on student ranged from 3.47 to 3.89 with standard deviation ranging from 0.31 to 0.81. However, item 2 has the highest mean of 3.89 and standard 0.31.

Research Question Two

How does extrinsic motivation influence the academic performance of secondary school students in mathematics in Makurdi Local Government Area of Benue State?

The answer to this research question is presented in Table 2.

Table 2: Mean and Standard deviation of Students' response on the influence of Extrinsic Motivation on their academic performance in mathematics

S/ No.	Items	MEAN	SD	DECISION
1	I strive to perform better academically in mathematics so that I will be given scholarships.	3.64	0.72	Accept
2	I perform better academically when my parents provide basic educational aids and equipment for my studies.	3.67	0.66	Accept
3	Parents concern about student's grades and performances motivates students academically.	3.71	0.65	Accept
4	My parents/guardians always practice mathematical problems with me at home.	3.00	0.83	Accept
5	There are family rules for doing homework in my house.	2.91	0.94	Accept
6	My parents/guardians buy learning materials such as CDs, textbook and practice books for me to learn at home.	3.25	0.94	Accept
7	My parents/guardians check, correct or help with my homework.	3.16	0.87	Accept
8	My Parent motivates me by paying my field trips or excursions so I can meet challenges from other places and people to motivate me to work harder.	3.20	0.94	Accept
9	I was motivated to work very hard after watching a programme on Television when someone of my age was given scholarship.	3.82	0.39	Accept
10	I love mathematics because I want to represent my school in a competition with another school to win prizes.	3.62	0.67	Accept
Grand Mean		3.40	-	Accept

The mean response of the influence of extrinsic motivation on student ranged from 2.91 to 3.82 with standard deviation ranging from 0.39 to 0.94. However, item 9 have the highest mean of 3.82 and standard 0.39.

Research Question Three

How does of intrinsic motivation influence academic performance of secondary school students in mathematics in Makurdi Local Government Area of Benue State?

The answer to this research question is presented in Table 3.

Table 3: Mean and Standard deviation of Students’ response on the influence of Intrinsic Motivation on their academic performance in Mathematics Secondary School Students

S/No.	Items	MEAN	SD	DECISION
1	I am sure I can do an excellent job on my Mathematics’ assignments and tests.	3.73	0.55	Accept
2	I am certain I will represent my school in the next STEM (Science, Technology, Engineering and Mathematics) competitions, so I have to work hard to achieve that goal	3.75	0.48	Accept
3	I want to do well at school so that I can take care of my parents and relatives in the future.	3.82	0.61	Accept
4	I want to do well at school so that I can help other students especially my junior ones with their mathematics tasks.	3.82	0.39	Accept
5	I am always happy and motivated to do well in mathematics because my fees were paid on time.	3.42	0.73	Accept
6	I often choose Mathematics topics that I will learn from, even if they require more work.	3.22	0.76	Accept
7	I love everything that has to do with calculations, so I am motivated towards mathematics.	3.15	0.82	Accept
8	As a student, I watch mathematical competitions on television and try to mimic their actions with my mathematical textbook	3.44	0.78	Accept
9	As a student, I help to provide cues to solving mathematics assignments for my classmates when they are stuck.	3.62	0.62	Accept
10	As a student I am always motivated to become a role model to others as the best mathematics students in my school.	3.76	0.57	Accept
Grand Mean		3.57	-	Accept

The mean response of the influence of intrinsic motivation on student ranged from 3.15 to 3.82 with standard deviation ranging from 0.39 to 0.82. However, item 9 has the highest mean of 3.82 and standard 0.39.

Hypothesis One

There is no significant mean perception of male and female students on how extrinsic and intrinsic motivation influences their academic performance in Mathematics in Makurdi Local Government Area of Benue State.

Table 4: t-Test analysis of male and female secondary school students on the influence of motivational practices adopted Mathematics Teachers.

Variable	N	Mean	STD	df	sig	Decision
Male	54	54	0.00	100	0.033	H ₀ is Rejected
Female	46	46	0.00			
Total	100					

From the table, p-value is less than the 0.05 level of significance. Therefore the null hypothesis is rejected. The implication is that there is difference in the mean perception of male and female students on how extrinsic and intrinsic motivations influence their academic performance in Mathematics.

Discussion

The findings revealed that, motivational practices influence academic performance of students in Mathematics. This is in agreement with Harmer (2001), motivation is kinds of internal drive, pushing someone to do things in order to achieve something. Furthermore, it is also in accordance to William and Burden (1997) in Harmer (2001) that motivation is a set of cognitive arousal which provokes a decision to act as a result of which there is sustained intellectual and/or physical effort so that the person can achieve some previously set goal.

The findings also revealed that, Intrinsic and Extrinsic Motivation influence academic performance of students in Mathematics as student are pushed towards achieving greater goals when they are motivated either by some set goals from the school or family, or societies at large.

Conclusion

These conclusions are drawn based on the findings of this study:

- i. Motivational Practices adopted by mathematics teachers have influence on the Academic Performance of Students.
- ii. Students who are motivated perform better academically than those students who are not motivated.
- iii. Intrinsic motivation gives room to students to learn on their own, which in turn build to broaden their knowledge.

Recommendations

Based on the findings, the following recommendations were made:

- i. To improve students' interest and better performance in Mathematics, teachers should make use of Motivational Practices regularly in teaching mathematics.
- ii. Principals, school authorities and owners should intensify effort in providing the appropriate audio-visual materials in order to help mathematics teachers maximize the use of audio-visual materials in teaching Mathematics.
- iii. Administrators of education should help by organizing workshops, seminars and conferences for Mathematics teachers to be enlightened on the influence of Motivational Practices on senior secondary school students.

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