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Influence of Students Self-Made Model on Senior Secondary School Students' Interest towards Learning of Mathematics

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ABSTRACT

This Study investigates theInfluence of Students Self-Made Model On Secondary School Students' Interest Towards Learning of Mathematics.Three research questions were asked in the study and 2 research hypotheses were formulated and tested at 0.05 level of significance.The study adopted a sample survey research design. In this approach data was collected on sampled portion.The study was conducted in Makurdi Local Government Area of Benue State, Nigeria. The target population of the study is all 3,783 Senior Secondary (SS) 2 students. A sample size of 100 respondents was used for the study. A simple random sampling technique was used to select respondents for the study. The instrument for data collection was structured questionnaire. The questionnaire was prepared based on the likert 4-scale response points of Strongly Agree (SA)-4; Agree (A)-3; Disagree (D)-2, and Strongly Disagree (SD)-1.The instrument was validated anda pilot test was carried out in a school outside the target schools for the study and the reliability of the instrument was determined using Cronbach Alpha to be. In analyzing the data, descriptive and inferential statistic was used. Descriptive statistics of mean and standard deviation was used to answer the research questions posed for the study. Chi-square statistics was used to test the hypothesis for the study.The study shows that there is significant influence of students made model on secondary school students interest in mathematics and also that there is no significant influence of students made model on male and female secondary school students interest in mathematics.

Keywords: model, influence, interest, gender and mathematics

Introduction

Mathematics is central to many sciences related courses such as engineering, mathematics, computer science, medicine and so on. It is obvious that no student intending to study any disciplines can do without mathematics. Teaching and learning of mathematics occupies an important status in the societal needs (Iqbal, 2014). Based on the importance of mathematics, the Federal Ministry of Education in the National Policy on Education (Federal Republic of Nigeria, 2020) made mathematics one of the core subjects to be offered by every student from the primary to pre-tertiary levels of education in Nigeria. In spite of the importance and popularity of mathematics among Nigerian students, performance at senior secondary school level had been poor (Gimba, 2016 and Iwendi, 2019). The desire to know the causes of the poor performance in mathematics has been the focus of researchers for some time now

It has been observed that poor interest in mathematics is caused by the poor quality of mathematics teachers, overcrowded classrooms, and lack of suitable and adequate instructional materials (Iwendi, 2019). The potential benefits of mathematical models cannot be underestimated in the contemporary world especially in the teaching of abstract concepts (Gana, 2017). Araromi (2018) and Abimbade (2017) concluded that improvised instructional models enhance visual imagery, stimulates learning and assists the teacher to properly convey the topic content to the learner, to achieve better understanding and to perform well.

Models can be used to facilitate learning especially where real objects may not serve the purpose. In explaining model, Macdonal (2015) sees model as a plan, a design, a preliminary solid representation to be followed in construction, something to be copied. Nachimias and Nachimias (2014) sees model as a likeness of something and a representation of reality. In other words, model depicts the actual representation of the original. It also explains how and why a particular phenomenon comes about. Again Ezeh (2016) viewed a model as thus a simplified structuring of reality which presents-supposedly significant figures or relationships in a generalized form. Ezeh further stated that all models have basic identities in terms of characters and functions, and that model is dynamic

Interest is an activity that drives or motivates the individual for action. According to Chukwu (2018) interest has been viewed as emotionally oriented behavioral trait which determines a student"s vim and vigour in tackling educational programmes or other activities. Ngwoke (2014), Ogwo and Oranu (2016) laid emphasis on the need for teachers to stimulate students" interest in learning without which students" achievement will be minimal. Interest is a persisting tendency to pay attention and enjoy some activities (Jimoh, 2010).

Gender is regarded as a sense of awareness between male and female. Gender issues have been linked with interest of students in academic tasks in several studies but without any definite conclusion. The term gender has been described by many authors. According to Ikegulu and Familusi (2019), gender is any difference that is based on socio-cultural belief that evolves over time. According to Abari et.al, (2019) both male and female students can retain high scores in Geometry if the appropriate medium of instruction is applied in the classroom.

The influence of gender on students interest has in recent times been attracting attention from researchers and psychologists, and that there has been no consensus among scholars in terms of students" performance in schools (Adeyemi, 2019).

Methodology

The study adopts a sample survey research design. In this approach data was collected on sampled portion of a target population used to generalize for such populationThe study was conducted in Makurdi Local Government Area of Benue State, Nigeria. The target population of the study is all 3,783 Senior Secondary (SS) 2 students. A sample size of 100 respondents was used for the study. A simple random sampling technique will be used to select respondents for the study. The instrument of data collection will be structured questionnaire. The questionnaire was prepared based on the likert 4-scale response points of Strongly Agree (SA)-4; Agree (A)-3; Disagree (D)-2, and Strongly Disagree (SD)-1 .The instrument was validated by 3 experts. A pilot test was carried out in a school outside the target schools for the study and the reliability of the instrument was determined using Cronbach Alpha to be.The research instruments was administered and collected by the researcher and the research assistant on the same day of administration.In analyzing the data, descriptive and inferential statistic was used. Descriptive statistics of Frequency and mean was used to answer the research questions posed for the study. Chi-square statistics was used to test the hypothesis for the study at 0.05 level of significance.

Result

The data obtained from the questionnaire given to the students in order to ascertain the influence of students self-made model on secondary school students' interest towards learning of mathematics is given below;

Research Question 1

what is the extent to which secondary school students in Makurdi make use of students made models in learning mathematics?

Table 1: Mean and Standard deviation of the response to the extent to which Secondary School student make use of student made model in learning mathematics.

S/N	Items	$\bar{x}$	SD	Remark
1.	I make use of my own acronyms every time I study mathematics	3.10	0.785	Agreed
2.	I make use of my own diagrams every time I study mathematics	2.60	0.876	Agreed
3.	I make use of my own picture word charts every time I study mathematics	2.60	1.206	Agreed
4	I define terms in mathematics in my own way every time I study	2.790	1.0945	Agreed
5	I use my own approach in solving problems in mathematics every time I study	2.70	1.159	agreed
	Grand mean	2.75	1.024	Agreed

Table 1 shows the extent to which Secondary School student make use of student made model in learning mathematics. Item one (1) which says I make use of my own acronyms every time I study mathematics accepted with a highest mean of 3.10 which is greater than 2.5 and a standard deviation of 0.785. Item two (2) which says I make use of my own diagrams every time I study mathematics had a mean score of 2.60 which is greater than 2.5, with a standard deviation of 0.876. Hence, item two is accepted. Item three (3) which says I make use of my own picture word charts every time I study mathematics was accepted with a mean of 2.60 and a standard deviation of 1.201. Item four (4) which says I define terms in mathematics in my own way every time I study was also accepted with a mean score of 2.79 and a standard deviation of 1.95. Item two (5) which says I use my own approach in solving problems in mathematics every time I study had a mean score of 2.70 with a standard deviation of 1.16. Hence item five (5) is accepted. The Grand mean in is 2.75

Research question 2

what is the influence of student-made models on secondary school students interest in mathematics in Makurdi L.G.A?

Table 2: Mean and Standard deviation of the response to the influence student made model interest in learning mathematics.

S\N	Items	$\bar{x}$	SD	Remark
1.	The use of self-made acronyms makes mathematics interesting to me	3.10	0.785	Agreed
2.	The use of self-made diagrams makes mathematics interesting to me	2.60	0.876	Agreed
3.	The use of self-made picture word charts makes mathematics interesting to me	2.60	1.206	Agreed
4	The use of self-made definitions makes mathematics interesting to me	2.79	1.094	Agreed
5	The use of self-made approach in solving problems makes mathematics interesting to me	2.70	1.159	Agreed
	Grand mean	2.758	1.024	Agreed

Table 2 shows the extent to which student made model influence the learning mathematics. Item one (1) which says the use of self-made acronyms makes mathematics interesting to me is accepted with a highest mean of 3.10 which is greater than 2.5 and a standard deviation of 0.785. Item two (2) which says The use of self-made diagrams makes mathematics interesting to me had a mean score of 2.60 which is greater than 2.5, with a standard deviation of 0.876. Hence, item two is accepted. Item three (3) which says The use of self-made picture word charts makes mathematics interesting to me was accepted with a mean of 2.60 and a standard deviation of 1.21. Item four (4) which says The use of self-made definitions makes mathematics

interesting to me I study was also accepted with a mean score of 2.79 and a standard deviation of 1.095. Item two (5) which says The use of self-made approach in solving problems makes mathematics interesting to me had a mean score of 2.70 with a standard deviation of 1.16. Hence item five (5) is accepted. The Grand mean is 2.76

Research question 3

What is the influence of student-made models on male and female students interest in mathematics in Makurdi L.G.A?

Table 3: Mean and Standard deviation of the response to the influence student made model interest on gender.

Item	N	$\bar{x}$	SD
Female	46	2.85	1.003
Male	54	2.68	1.037

From table 3 shows that the mean of the female is 2.85 with a standard deviation of 1.003 and the mean and standard deviation for the male is 2.68 and 1.037 respectively the both mean is greater than 2.50

Hypothesis 1

there is no significant influence of students made model on secondary school students interest in mathematics in Makurdi L.G.A.

Table 4: Chi-square showing the analysis of how student made model influences students interest in mathematics.

Item	Dif	X2	Asymp.Sig
Chi-Square	6	15.080[a]	0.020

Table 4 shows that the x^2 calculated is 15.080[a] and sig (p-value) is 0.020. Hence p<0.05, the null hypothesis is rejected.

Hypothesis 2

there is no significant influence of students made model on male and female secondary school students interest in mathematics in Makurdi L.G.A.

Table 5: Chi-square showing the analysis of how Student made model influence interest of Gender

Sex	df	X2	Asymp.Sig
Chi-Square	1	0.640[b]	0.424

Table 5 shows that the x^2 calculated is 0.640[a] and sig (p-value) is 0.424. Hence p>0.05,

DISCUSSION AND FINDINGS

Table 1 shows the extent to which Secondary School student make use of student made model in learning mathematics. Item one (1) which says I make use of my own acronyms every time I study mathematics accepted with a highest mean of 3.10 which is greater than 2.5 and a standard deviation of 0.785. Item two (2) which says I make use of my own diagrams every time I study mathematics had a mean score of 2.60 which is greater than 2.5, with a standard deviation of 0.876. Hence, item two is accepted. Item three (3) which says I make use of my own picture word charts every time I study mathematics was accepted with a mean of 2.60 and a standard deviation of 1.201. Item four (4) which says I define terms in mathematics in my own way every time I study was also accepted with a mean score of 2.79 and a standard deviation of 1.95. Item two (5) which says I use my own approach in solving problems in mathematics every time I study had a mean score of 2.70 with a standard deviation of 1.16. Hence item five (5) is accepted. The Grand mean in is 2.75 which shows that, Secondary school students greatly make use of students made models to learning of mathematics. This implies that, students made models assist secondary school students in the learning of mathematics.

Table 2 shows the extent to which student made model influence the learning mathematics. Item one (1) which says the use of self-made acronyms makes mathematics interesting to me is accepted with a highest mean of 3.10 which is greater than 2.5 and a standard deviation of 0.785. Item two (2) which says The use of self-made diagrams makes mathematics interesting to me had a mean score of 2.60 which is greater than 2.5, with a standard deviation of 0.876. Hence, item two is accepted. Item three (3) which says The use of self-made picture word charts makes mathematics interesting to me was accepted with a mean of 2.60 and a standard deviation of 1.21. Item four (4) which says The use of self-made definitions makes mathematics interesting to me I study was also accepted with a mean score of 2.79 and a standard deviation of 1.095. Item two (5) which says The use of self-made approach in solving problems makes mathematics interesting to me had a mean score of 2.70 with a standard deviation of 1.16. Hence item five (5) is accepted. The Grand mean is 2.76 which shows that, students made models has influence on the interest of secondary school students in learning of mathematics. This implies that, students made models influences secondary school students interest in the learning of mathematics.

From table 3 shows that the mean of the female is 2.85 with a standard deviation of 1.003 and the mean and standard deviation for the male is 2.68 and 1.037 respectively the both mean is greater than 2.50 which implies that the student made model has a great influence on the interest of gender.

Table 4 shows that the x^2 calculated is 15.080[a] and sig (p-value) is 0.020. Hence p<0.05, the null hypothesis is rejected. There is significant influence of students made model on secondary school students interest in mathematics.

Table 5 shows that the x^2 calculated is 0.640[a] and sig (p-value) is 0.424. Hence p>0.05, the null hypothesis is accepted. The implies that there is no significant influence of students made model on male and female secondary school students interest in mathematics.

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