

Effect Of
Ethnomathematics On
Senior Secondary School
Students' Achievement In
Ikwuano Local
Government Area, Abia
State

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ABSTRACT

This study is designed to determine the efficacy of ethnomathematics (Mathematics in a cultural context) on senior secondary school students' achievement in mathematics. It is also aimed at determining whether any of the sexes (male or female) benefited more than the other from the teaching. The study employed the non-equivalent control group quasi experimental design. Four research questions and four null hypotheses guided the study. The experimental and control groups were taught probability using ethnomathematics and conventional approaches respectively. The researcher constructed instruments-Mathematics Achievement Test on Probability (MATP) and Mathematics Interest Inventory on probability (MIIP) were used for data collection. Mean and Standard Deviation were used to answer the research questions while T-test statistics was used to answer the hypotheses at alpha level < 0.05 . The results revealed among others that ethnomathematics approach was more effective in facilitating students' achievement. Both gender benefited significantly in achievement using ethnomathematics approach. The study revealed that interaction effect between method and gender was significant in interest. These revelations had serious implications for mathematics teachers and stakeholders in mathematics education. Recommendations were made based on findings.

Keywords: Ethnomathematics, Probability, Achievement, Experimental, Gender, Standard Deviation, Quasi and Hypothesis

1. INTRODUCTION

One Subject that has generated interest consistently over the years is Mathematics. This is as a result of its importance to humanity. It affects every area of human activity such as politics, economy, science and technology. Salman (2005) described it as a precursor of scientific discoveries and inventions. Since 20th century, mathematics has become the backbone of all scientific investigations and activities. This is to say that the only route to effectively understand the modern world is through mathematics knowledge (D'Ambrosio, 2002; Obodo, 2008). It is at the core of scientific and technological advancement of any nation (Kurumeh, 2004).

Mathematics can be viewed as an unending activity without limitations (Harbor-Peters, 2000). i.e. all the interrelationship and combination of ideas for decisions involved in adult life, his practical use of numbers for domestic and business deals are aspects of his mathematical knowledge. As regards to its importance to man, it has been inculcated to school curricula as a compulsory subject for every school child to acquire the appropriate mathematical skills which will enable him cope with every challenge of life. Indeed mathematics is the best way to teach youngsters how to think, reason, subdue nature and understand his environment (Uzo, 2002). Mathematics serves as a culture and language to all studies and development of human.

Coming to terms with its numerous and great importance in the nation building and daily living, Nigeria made mathematics one of the core subjects in primary and secondary curriculum. In spite of these numerous importance not forgetting its exalted position, students still end up performing below expectation in both external and internal examinations. Their achievement has been relatively low over the years (Agwagah, 2004; Obodo, 2004; Osemwinyen, 2008; WAEC, 2011; and Gimba, 2013). This situation has caused anxiety, restlessness and perplexity to parents, government, students and the general public. Attempts to check this tide gave rise to this study.

Some recent research reports have identified several reasons for students' poor performance and lack of interest in mathematics. These reasons include lack of qualified mathematics teachers (Ali, 2003; Obodo, 2004 and Ale, 2003) teachers find it difficult to teach many topics (Amazigo, 2000), poor teaching methods (Harbor-Peters, 2001), poor interest in mathematics (Badmus, 2004 and Obodo, 2008), gender difference (Agwagah, 2004), lack of appropriate instructional mathematical materials for teaching at all levels in Nigeria (Gambari, 2010) and students negative attitude (Ale, 200; Badmus, 2002).

Obodo (2004) is of the opinion that the method of teaching mathematics in Nigeria is foreign because it does not have Nigeria-cultural-bearing. He further said that this method is rooted in the British culture and students learn by rote memorization. It does not move from cultural known problems to the unknown problems of the learners, thereby giving little or no room to the practical aspects of students' life. The method of teaching and learning of mathematics in Africa particularly Nigeria is foreign and Euro-centric in origin and taught in foreign language was a fact opined by both Eshewari (1993) and Fasheh (2002). Students neither understand the basic mathematics principles, computation, or logic nor the underlying process that gave rise to the mathematics facts. Eshewari (1993) opined further that the teaching and learning of mathematics in Nigeria is aggregated by hasty curriculum transportation from highly industrialized capitalist nation to Nigeria.

In order to put an end to the poor performance and interest in mathematics, Chief examiner of West African Examination Council (WAEC, 2007) have recommended that mathematics teaching method should be practical, applicable and project oriented (Obodo, 2008). To heed this call, a variety of methods of teaching mathematics have been employed by recent research studies. Such methods includes discovery, expository, laboratory, inquiry (Kurumeh, 2004), target-task, delayed formalization, computer aided instruction and problem solving method (Harbor-Peter, 2000). However, the teachers were not able to implement these innovations in their classrooms because of lack of knowledge on how to use them, logistics or lack of fund for materials' provision. The situation is most pathetic in the junior secondary school level (Ozofor, 2015). There is therefore a need to bring in a method which does not require foreign or alien instructional material to arouse and sustain the learner's interest and help them achieve a better result. Hence the effort to use Ethnomathematics approach which focus on the use of materials within a given cultural setting. Ethnomathematics is an approach to

curriculum adaptation in mathematics which builds on the student's previous knowledge, background of the learner, the role of his environment in terms of content and methods and his past and present experiences of his immediate environment (D'Ambrosio, 2010).

Abonyi (2015) sees ethnomathematics as the science of numbers and its manipulations that are embedded in the people's culture. He further said that these manifest in cultural artifact's such as mats, clay pots, clay bed, houses (round and rectangular), decorations, baskets, local drums and fish traps. Hence, for this study, ethnomathematics has been defined as the culturally influenced mathematical approach, which makes the learning of mathematics very meaningful. It is the mathematics used by a defined, peculiar or specified cultural group in the course of dealing with environmental problems and activities (Kurumeh, 2004). For mathematical instruction to improve the achievement of the learner there is need for mathematics teaching that has the learner's cultural background, that which will bridge the gap between the indigenous mathematics and euro-centric mathematics (present classroom mathematics) says Erukona (2002).

In Nigeria, it is believed that mathematics is masculine and therefore should be male dominated. There is a general belief that boys are superior to girls in terms of physique, cognition and logical reasoning and even superior in terms of academic performance (Anigbogu, 2002). The WAEC Chief examiners' report from WAEC (2011) confirmed that the percentage of boys who passed with credit in mathematics were greater than girls. But others have counter opinion like Ozofo (2001) found that girls performed better than the boys. Vale (2004), Abiam and Odok (2006) reported that gender difference in mathematics achievement exists but that is reducing over the years. Analyzing the WAEC results of 2008, Uwaidiae (2008) reported that 7.2% and 6.42% of male and female student respectively obtained credit pass. But generally speaking, students do not show interest in mathematics. Nna (2002) discovered that students' poor achievement was as a result of lack of interest in mathematics. Hence the opinion that low interest of male and female students in mathematics led to a poor achievement.

Teachers have the potential of exerting strong influence on students learning. Uloko (2008) and Usman (2008) reported that there is a positive correlation between good teaching approach and student' achievement in mathematics. Iji (2010) states that good teaching approach produces high achievement among learners, while poor teaching approach will lead to poor learning in mathematics. The research wonders whether the use of ethnomathematics, which is student and activity-centered, will improve student's achievement.

2. RESEARCH OBJECTIVES

The specific objectives include:

- To find out the effect of ethnomathematics on students' achievement in mathematics?
- To find out the effect of ethnomathematics on students' achievement in mathematics based on gender?

- To find out the extent to which ethnomathematics affect students' interest in mathematics?
- To find out the extent to which ethnomathematics affect students' interest in mathematics based on gender?

3. LITERATURE REVIEW

A lot of studies have been carried out on ethnomathematics which are very interesting and relevant to this study. An interesting and enriching study titled "The Algorithm collection project using ethnomathematics for pedagogical action" was carried out by Orey (2006) in California. He used an interview protocol developed by D'Ambrosio, Brassanezi and Pompeu Jr. He had a nine-step modeling process. This algorithm collection project is innovative from an ethnomathematics perspective because it seeks to develop a new protocol for the applied study of modern algorithm using modeling and an ethnomathematics perspective.

Another study titled "Ethnomathematics and Mathematics education edited by Franco Favilli which was based on the international congress of mathematics education 10, which took place in Copenhagen ((DK), 4-11 July 2004, with ethnomathematics as there was aimed to discuss, the relationship between ethnomathematics, mathematics and anthropology, what evidence was gotten and how can more be collected based on the fact that school programmes incorporating ethnomathematical ideas succeed in achieving their aims, the implication of existing ethnomathematical studies for mathematics and education, the relationship of different languages (or other cultural features) to the production of different sorts of mathematics.

Enukoha (1991) in this research study carried out by the above named person on mathematical practices in the traditional Igboland. He discovered that Igbos in general has logical and systematic ways of classifying things, have their own mathematical practices even before the advent of the white man. He went further to say that the mathematics curriculum in Igboland should be modified as to reflect some of the traditional mathematical practices which will guarantee a solid foundation for effective learning of mathematics as a discipline.

Enukoha (2000) also investigated "mathematical heritage of the Igbo" using the survey designs although two states sampled are inadequate. He also examined two major problems teachers encounter in teaching of mathematics through the use of Igbo language which include;

- The ambiguous description of numerals in the new Igbo decimal numeration system.
- The issue of providing Igbo names for the symbols and terms used in mathematical operations.

Harbor-Peters (2000) worked on Igbo numeration systems and investigated the opinion of students with regards to language used in mathematics instruction. Kurumeh (2006) worked on the effect of ethnomathematics approach on students' achievement and interest in geometry and mensuration. Unodiaku (2013) conducted a study to ascertain the effect of ethnomathematics teaching materials on students' achievement in mathematics.

Though all these studies revealed were done based on different aspects of Igbo mathematics, none has actually utilized the ethnomathematical knowledge approach per se, hence this study.

3.1 INTEREST IN MATHEMATICS

A lot has been done in connection with students' interest in mathematics. One of such studies include Okere (2003) who utilized seven-day school students as his research subjects in his study title the "impact of the expositing and discovery approach on Junior secondary school students' interest in mathematics". This study used the quasi-experimental design and the experiment group was taught mathematics topic using discovery approach, the result showed that discovery approach fostered students' interest in mathematics better than their counterparts in expository though the study failed to explore the interaction effect as it pertains gender.

Harbor-Peter (2000) also conducted a study to compare the effect of the Target-Task, delayed formalization and expository models of teaching on achievement, retention and interest of junior secondary school (JSS2) students in algebra. The design was non-equivalent quasi-experimental. It showed that target-task was the most effective in producing interest of students in algebra.

Ozofor (2015) carried out an investigation on the "effect of how modes of computer aided instruction on students' achievement and interest in statistics and probability". A non-equivalent quasi-experimental research design was adopted in the study. The findings reviewed that students performed better as well as show more interest in solving mathematics problems when the drill and practice method of computer aided instruction in mathematics (CAIM) was used than when the tutorial approach was used.

Although a number of empirical studies on interest achievement in mathematics have been presented, it is keenly seen that none of the studies above took ethnomathematical knowledge approach into consideration except Kurumeh (2006) who designed a study to determine the efficacy of ethnomathematics approach on students' achievement and interest in JSS1 geometry and mensuration. The study employed non-equivalent quasi-experimental design. The study revealed that interaction effect between method and gender was significant in interest. It is then essential to investigate on the effect of ethnomathematics on students' mathematics achievement.

3.2 GENDER ISSUES IN MATHEMATICS ACHIEVEMENT

Many researchers have made immerse contribution to ascertain whether or not the gender of the learners influences their academic achievement. Differences in opinion continually arise as regards this gender differentiation. There is this notion from some eminent scholars that the academic performance of male students are significantly superior to their female counterparts, such scholars include; Ezike (1996) who determined the effect of gender and school type on mathematics achievement of students. The analysis of data revealed that male students were superior to the female in mathematics achievement. Ezeameyi (2002), in his study on the effect of games of mathematical achievement, interest and retention of junior secondary students in Igbo-Etiti

Local Government Area, Enugu state purposely sampled two secondary schools by simple random sampling. The findings revealed that the male students benefited more than their female colleagues. Some other researchers have conflicting views in their findings. Such favored girls more than boys. Alio (2000) and Ozofor (2015) discovered a different fact that females are superior to male in achievement but interaction between school-type and location in achievement was not significant. Agwagah (2004) had reported that female students perform better than their male counterpart. Same goes for Etukudo (2002). Some other researcher still held neutral opinion of how gender makes no difference as regards performance of students. For instance, Anyanwu, (2000), maintained that there is no significant difference in the performance of boys and girls in mathematics and that they both perform equally well. Abeam and Odok (2006) found that there is no significant relationship between gender and achievement in mathematics.

3.3 SUMMARY OF LITERATURE REVIEW

It was observed that ethnomathematics is no other than the mathematics of the indigenous cultural group. This type of mathematics includes the mathematics of the non-literate people. It is used to express the relationship between culture and mathematics. This type of mathematics according to the father of ethnomathematics exposes such mathematical activities of counting, measuring, explaining, comparing, classifying, playing and in a particular cultural environment. Ethnomathematics takes into account the cultural background of the learner, the experiences, which the learner brought to school. It's based on what the learner already know (his past experience) and builds the present thereby blending the past and present to build the future. It makes mathematics functional and relevant to the students particularly of the third world countries. It exposes the fact that every country has their own mathematics but no mathematics of any cultural group is perfect. Each cultural group borrows something from another cultural for better development. The literature reviewed addressed that Igbos have their own cultural mathematics which must not be relegated to the background. This is because their cultural mathematics is not only dear to them but that it is their way of conquering their environment thereby causing a better relationship. In ethnomathematics activities both males and females members of cultural group manifest their different ways of carrying out those mathematical activities which are exposed in their dedication and interest as manifested in those activities. Their achievements are seen in their final product of arts, style, design of pattern and craftworks.

4. RESEARCH METHODOLOGY

It talks about the methods adopted by the researcher in carrying out the study, area of study, population, sampling procedures, instrument for data collection, validation and reliability, the data preparation and scoring.

4.1 RESEARCH DESIGN

This study adopted a non-equivalent quasi-experimental design. Specifically, the design is pretest-posttest control group design.

4.2 AREA OF THE STUDY

This study was conducted in Ikwuano local government area of Abia state, Nigeria. Ikwuano has its headquarters at Isiala Oboro with a total area of 28kms, a land mass of 268.710 square kilometer and a population of 137,933 people at the 2008 census of the National population commission. A total of nineteen (19) government secondary schools and numerous private schools are located in Ikwuano.

4.3 POPULATION OF THE STUDY

The population of the study consisted of senior secondary two (SSII) students in the 19 secondary schools in Ikwuano local government of Abia state. The justification for the use of SSII students was based on the fact that they were no more adjusting to the senior secondary school syllabus as the SSI students and they were not preparing for external examination as the SSIII students.

4.4 SAMPLE AND SAMPLING TECHINQUE

The sample was selected using simple random sampling techniques to pick the classes for experimental and control group. Based on this technique, a school selected out of 19 government schools has three classes SSII A, B and C. This was followed by randomly selecting a total of two intact classes from the SSII classes. This brought the total number of sample subjects to 84 students used for the study. Out of the three classes, one class picked to be experimental group, the other picked none while the other picked control group through a simple balloting technique i.e. control, none and experimental was written on a folded piece of paper and then the representative of each class was asked to pick. The experimental group was made up of 44 students (SSII A) while the control group consisted of 40 students (SSII B) both groups comprised of 48 males and 36 females used for this study.

4.5 INSTRUMENT FOR DATA COLLECTION

For this study the instrument used for data collection is the Mathematics Achievement Test on Probability (MATP) which will be used to answer research questions one and two while research questions three and four will be answered with Mathematics Interest Inventory on Probability (MIIP).

4.6 DEVELOPMENT OF INSTRUCTIONAL MATERIAL

Two sets of lesson plan were prepared for the two groups. The ethnomathematics lesson plan for the experimental group and the conventional lesson plan for the control group.

4.7 EXPERIMENTAL PROCEDURE

To avoid any hitch, the researcher sought the co-operation of the principal of the school involved in the study before the commencement of the teaching. Explanations were given to the principal on purpose of the study and the benefits that would be derived from it if well conducted. Teaching was done at the stipulated time by the researcher within a time frame of 40 minutes.

5. DATA ANALYSIS/FINDINGS

For the statistical analysis of the study, T-test statistic was used to test the stated null hypotheses. Mean and standard deviation scores were used in answering the research questions. The results of data analyzed for the study is presented. The presentation was organized according to the research questions answered and hypothesis tested.

5.1 RESEARCH QUESTION ONE

What is the effect of ethnomathematics on students' achievement in mathematics?

The data for answering research question one is presented in table 1. The result presented in Table 1 shows that students taught mathematics with ethnomathematics has pre-test mean score of 12.48, post-test mean score of 15.14 and mean achievement gain score of 2.66. On the other hand, those taught with conventional method had pre-test mean achievement score of 11.23, post-test mean achievement score of 12.05 and mean achievement gain score of 0.82. This result indicates that teaching mathematics using ethnomathematics approach appreciably increased academic achievement of the students than the use of conventional method.

5.1.1 HYPOTHESIS 1

H₀: There is no significant difference between the effect of ethnomathematics and students achievements.

H₁: There is significant difference between the effect of ethnomathematics and students achievement in mathematics.

This null hypothesis was tested using the t-test analysis and the result of the analysis is presented on table 1.1. The result of the analysis showed that the calculated t-value of 0.27 is less than the critical t-value of 1.67 when tested at 0.05 alpha level and at 82 degree of freedom. The researcher accepted the null hypothesis that there is no significant difference between ethnomathematics and students' achievement in mathematics. The research concluded that the effect of ethnomathematics and students' achievement in mathematics has no statistical significant difference.

5.2 RESEARCH QUESTION TWO

What is the effect of ethnomathematics on students' achievement in mathematics based on gender?

The data for answering research question two are presented in table 2. From the result presented in Table 2, it is revealed that male students who were taught mathematics with ethnomathematics approach had pre-test mean achievement score of 10.24, post-test mean score of 14.84 and mean achievement gain score of 4.6. Their female counterparts that were taught with the same ethnomathematics approach had pre-test mean achievement score of 11.56, post-test score of 15.28 and mean achievement gain score of 3.72. This result indicate that the use of ethnomathematics approach for teaching students is not gender biased as it significantly increased academic achievement in both male and female students

5.2.1 HYPOTHESIS 2

H₀: There is no significant difference between the effects of ethnomathematics on students' achievement in mathematics based on gender.

H₁: There is significant difference between the effects of ethnomathematics on student achievement in mathematics based on gender.

This null hypothesis was tested using the independent t-test analysis. The result of the analysis is presented in table 2.1. The calculated t-value of 0.19 was found to be less than the critical t-value of 1.68 at 0.05 alpha levels and at 42 degree of freedom. The null hypothesis was therefore accepted and the alternate hypothesis rejected. The researcher concluded that since the null hypothesis is not rejected, it holds that there is no significant difference between the effects of ethnomathematics on students' achievement in mathematics based on gender.

5.3 RESEARCH QUESTION THREE

To what extent does ethnomathematics affect students' interest in mathematics?

The data for answering research question three are presented in the table 3. The result presented in this Table revealed that ethnomathematics students exposed to probability interest inventory had a mean score of 3.27. on the other hand, their conventional counterpart exposed to probability interest inventory had a mean score of 2.19. This result indicates that teaching probability using ethnomathematics approach appreciably increased academic achievement in students than the conventional method.

5.3.1 HYPOTHESIS 3

H₀: There is no significant difference between the effect of ethnomathematics and students' interest in mathematics.

H₁: There is significant difference between the effect of ethnomathematics and students' interest in mathematics

The analysis is presented in the table 3.1. The result of the above analysis showed that the calculated t-value of 5.20 was greater than the critical t-value of 1.665 when tested at 0.05 alpha levels with 82 degree of significant. This implies that there exists significant difference the level of productivity among interest in ethnomathematics and the conventional method. Since $t_{cal} = 5.20 > t_{cv} = 1.665$ the researcher rejects the null hypothesis that there is no significant difference between the effect of ethnomathematics and students' interest in mathematics. The research concluded that since the null hypothesis is rejected, it holds that there is significant difference between the effect of ethnomathematics and students' interest in mathematics.

5.4 RESEARCH QUESTION FOUR

To what extent does ethnomathematics affect students' interest in mathematics based on gender?

The data for answering research question four are presented in the table 4, From the result presented on Table 4, it showed that male students who were taught probability using the ethnomathematics approach had a mean

score of 3.31 in the probability interest inventory while their counterpart had a mean score of 3.24. This result signifies that the use of ethnomathematics for teaching students is not gender sensitive since it significantly stimulated the interest of both male and female students in mathematics.

5.4.1 HYPOTHESIS 4

H₀: There is no significant difference between the effect of ethnomathematics and students' interest in mathematics based on gender.

H₁: There is significant difference between the effect of ethnomathematics and students' interest in mathematics based on gender.

The analysis is presented in the table 4.1. Since $t_{cal} = 0.27 < t_{cv} = 1.675$ the research accepted the null hypothesis that posits there is no significant difference between the effect of ethnomathematics and students' interest in mathematics based on gender. The research concluded that the effect of ethnomathematics and students' interest in mathematics based on gender has no statistical significant difference.

6. CONCLUSION

The findings of this study served as the bases for making the following conclusions;

- The ethnomathematics approach affected students' achievement more positively than the conventional method used in teaching their counterparts in probability. It enhanced and facilitated higher and better performance in mathematics.
- The ethnomathematics approach had pronounced no statistical significant differential effect in achievement among male and female since they scored in the post-test ensured. Their mean difference in achievement was not significant. Gender had no influence on ethnomathematics approach as regards achievement in PAT.
- The ethnomathematics approach was more effective in fostering and stimulating students' interest in PII than the conventional method. The difference between their mean interest was statistically significant and in favor of the ethnomathematics (experimental) group.
- The ethnomathematics approach again favored female students and male students. They had similar scores and obtained same mean interest. The difference in the mean score was not highly significant too. This approach was relatively efficacious in enhancing the interest of students in mathematics. Gender had no influence on ethnomathematics approach as regards interest in mathematics.

6.1 RECOMMENDATION

Based on the findings of this study, the researcher made the following recommendations;

- Ethnomathematics approach should be adopted in our school system. If mathematics is to gain popularity, capture the interest of the learners and challenge their intellect, the content must be made more appealing

in terms of basic instructional approaches. This is done by linking instruction to the learners' immediate environmental experience. This makes it relevant to their daily activities. These incorporate ethnomathematics concepts, materials and techniques in a system and well-organized way and thereby help improve mathematics instruction in our school system and foster achievement of better result.

- Teaching should be trained on the use and importance of ethnomathematics approach. This training should be done through organizing workshops, seminars, conferences, in-service training, annual teachers' vacation courses and re-fresher courses. This is to provide them with tools to stimulate and sustain students' interest in mathematics.
- Authors of mathematics textbook should generally reflect the background of a typical Nigerian society. This method of instruction should reflect our education background, culture and philosophy. This will help to generate interest in the learning of mathematics, which is said to be the “foundations of modern mathematics.

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8. TABLES

Table 1: Pre-test and post-test Mean scores of students exposed to Ethnomathematics approach and those exposed to Conventional method in Probability Achievement Test

Groups	N	Pre-test		Post-test		Pre/post test Gain Scores
		\bar{x}	σ	\bar{x}	σ	
Ethnomathematics	44	12.48	5.20	15.14	5.78	2.66
Conventional	40	11.23	5.95	12.05	5.99	0.82

Table 1.1: T-test analysis to determine the effect of ethnomathematics on students' achievement in mathematics using the post-test scores

Parameter	\bar{x}_1	\bar{x}_2	σ_1	σ_2	n_1	n_2	μ	tcal	t_{cv}	Decision
Value	15.14	12.05	5.78	5.99	44	40	2.5	0.27	1.67	Reject H_1

Table 2: Pre-test and Post-test mean scores of male and female students exposed to ethnomathematics approach in probability achievement test.

Groups	Gender	N	Post-test		Pre-test		Pre/post test Gain Scores
			\bar{x}	σ	\bar{x}	σ	
Ethnomathematics	Males	19	14.84	5.59	10.24	5.59	4.60
	Females	25	15.28	5.92	11.56	5.59	3.72

Table 2.1: T-test analysis to determine the effect of ethnomathematics on student's achievement in mathematics based on gender using the post-test score

Parameter	\bar{x}_1	\bar{x}_2	σ_1	σ_2	n_1	n_2	μ	tcal	t_{cv}	Decision
Value	14.84	15.28	5.59	5.92	19	25	2.5	0.19	1.68	Reject H_1

Table 3: Scores of students exposed to Ethnomathematics and those exposed to conventional method in Probability Interest Inventory

Groups	N	\bar{x}	σ
Ethnomathematics	44	3.27	0.95
Conventional	40	2.19	0.95

Table 3.1: T-test analysis of the extent to which Ethnomathematics affects students' interest in mathematics

Parameter	\bar{x}_1	\bar{x}_2	σ_1	σ_2	n_1	n_2	μ	tcal	t_{cv}	Decision
Value	3.27	2.19	0.95	0.95	44	40	2.5	5.20	1.67	Reject H_0

Table 4: Scores of male and female students exposed to ethnomathematics in mathematics using probability interest inventory

Groups	Gender	N	\bar{x}	σ
Ethnomathematics	Males	19	3.31	0.87
	Females	25	3.24	0.87

Table 4.1: T-test analysis of the extent to which ethnomathematics affects students' interest in mathematics based on gender.

Parameter	\bar{x}_1	\bar{x}_2	σ_1	σ_2	n_1	n_2	μ	tcal	t_{cv}	Decision
Value	3.31	3.24	0.87	0.87	19	25	2.5	0.27	1.68	Reject H_1