ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25sep718

Effects of Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method on Mathematics Students' Attitude in Delta State, Nigeria

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Publication Date: 2025/09/25

Abstract: The study aimed to examine the effects of Merrill's First Principles of Instruction, Gagné's Nine-Event Instructional Strategy, and the Lecture Method on students' attitude scores. To guide the study, three research questions and three hypotheses were formulated. A 3×2×2 factorial quasi-experimental design was adopted, incorporating three instructional approaches (Merrill's First Principles, Gagné's Nine Events, and Lecture Method), gender (male and female), and repeated testing (pre-test and post-test). The independent variables were the instructional models, while the dependent variable was achievement scores, with gender serving as an intervening variable. The sample comprised 318 students drawn from six secondary schools in Delta State. Data were collected using the Mathematics Achievement Test (MAT), which was validated and tested for reliability before administration. The instrument yielded a reliability coefficient of 0.82 based on the Kuder-Richardson Formula 21. Data analysis employed descriptive statistics (mean and standard deviation) and inferential statistics, including the independent samples t-test, Analysis of Variance (ANOVA), and Analysis of Covariance (ANCOVA), with all hypotheses tested at the 0.05 significance level. The findings revealed that: (i) there was a significant difference in the mean attitude scores of students taught using Merrill's First Principles, Gagné's Nine Events, and the Lecture Method; (ii) no significant difference existed between the mean attitude scores of male and female students across the instructional models; and (iii) there was no significant interaction effect between instructional methods and gender on students' attitudes. The study concluded that Merrill's First Principles and Gagné's Nine Events are more effective than the Lecture Method in enhancing students' attitudes toward mathematics. It was therefore recommended that both teachers and students receive adequate training in the application of these instructional models and be encouraged to integrate them into the teaching and learning of mathematics.

Keywords: *Principle, Instruction, Instructional Strategy, Merrill's First Principles, Gagne's Nine-Event Instructional Models and Attitude.*

How to Cite: Eravwoke Erhijere; Ajaja Osawaru Patrick; Kpangban Emperor (2025) Effects of Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method on Mathematics Students' Attitude in Delta State, Nigeria. *International Journal of Innovative Science and Research Technology*, 10(9), 1530-1537. https://doi.org/10.38124/ijisrt/25sep718

I. INTRODUCTION

Attitude toward mathematics refers to the emotions, feelings, and beliefs that students hold about the subject (Hwang & Son, 2021). Such attitudes—whether positive or negative—are shaped by personal experiences or by learning from others. As students' progress through different academic stages, they inevitably develop varying attitudes toward the subjects they study. A negative attitude often leads to poor performance in a subject, since attitude strongly influences learning outcomes. In mathematics, students' attitudes are particularly critical to both teaching and learning. The manner in which a subject is presented can shape these attitudes. For instance, the way mathematics is taught in many classrooms has discouraged and alienated students (Furinghetti & Pehkonen, 2002). A key contributor to negative attitudes is the absence of effective, student-centered teaching strategies. When mathematics is taught through non-participatory methods, it tends to appear boring, abstract, and difficult.

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Evidence from experience and observations indicates that mathematics, a subject that demands critical thinking and active student participation, is often taught using the lecture method. This approach positions the teacher as the sole source of knowledge rather than a facilitator of learning, leaving students passive in the process. The lecture method also promotes rote learning and memorization, which leads students to quickly forget concepts since they are stored only in short-term memory. Consequently, the method is considered ineffective for engaging students meaningfully, as it provides limited learning experiences and often results in poor achievement linked to negative attitudes. Researchers such as Obumanu and Adaramola (2011) have identified teaching methodology as a major factor influencing students' attitudes, emphasizing that the absence of appropriate instructional activities fosters negative dispositions toward science. Similarly, Hacieminoglu (2016) argued that reliance on rote memorization and teacher-centered approaches generates negative attitudes among students. Supporting this, Hwang and Son (2021) concluded that positive attitudes enhance mathematics success, thereby highlighting the need to adopt teaching strategies that can improve students' attitudes toward mathematics regardless of gender.

Among the instructional models that encourage active student participation in the classroom are Merrill's First Principles of Instruction and Gagné's Nine-Event Instructional Model. Merrill's First Principles of Instruction (MPI), developed by David Merrill in 2002, serves as a learner-centered instructional design framework that emphasizes meaningful engagement in the teaching–learning process. It is widely recognized for maximizing knowledge acquisition through learning experiences and is built around five core principles: Task-Centered, Activation, Demonstration, Application, and Integration. The task-centered stage focuses on designing authentic, real-world problems that learners are likely to face, thereby promoting active involvement, critical thinking, and problem-solving skills. The activation stage emphasizes drawing on learners' prior knowledge and experiences to build a foundation for new learning by stimulating curiosity through real-life examples and connections to existing knowledge. The demonstration stage highlights the use of clear models or examples that illustrate expected outcomes, enabling learners to observe and understand how tasks should be performed. After the demonstration principle, comes the application principle. This principle put emphasis on providing opportunities for learners to practice and apply their knowledge and skills in authentic contexts. This involves designing activities that require learners to actively apply what they have learnt in solving problems, making decisions, and engaging in realistic tasks. The last is the integration principle which focuses on promoting the transfer of knowledge and skills to new situations.

Another instructional model that encourages active student participation is Gagné's Nine Events of Instruction. This framework is structured into nine sequential steps: gaining attention, informing learners of objectives, stimulating recall of prior knowledge, presenting content, eliciting performance, providing feedback, assessing performance, enhancing retention, and promoting transfer. In Step I, the teacher captures learners' attention by asking what they already know about the topic, allowing them to explain concepts in their own words. This helps determine their prior knowledge. In Step II, students are informed of the lesson objectives, while Step III involves solving related problems to activate prior learning and build a foundation for understanding new concepts. Step IV engages students in activities connected to the lesson content, further encouraging active participation. In Step V, learners generate problems to solve, which promotes both participation and critical thinking. Step VI requires the teacher to review students' work to check for accuracy, followed by Step VII where corrections and clarifications are provided to strengthen understanding. In Step VIII, learners practice further through classwork and homework with feedback, reinforcing knowledge and encouraging retrieval. Finally, Step IX involves consolidating learning: the teacher explains key procedures, addresses misconceptions, relates concepts to real-life contexts, and ensures comprehension through questioning and summarization. This final step fosters varied practice, deeper understanding, and the transfer of knowledge.

The effectiveness of any instructional model or strategy is evident in students' attitudes toward the subject, regardless of gender. Both Merrill's First Principles of Instruction and Gagné's Nine Events of Instruction provide useful frameworks that encourage active student engagement in the teaching–learning process. Research has shown that these strategies can positively impact students' performance. Building on this background, the present study seeks to determine which of the two approaches exerts a greater influence on students' attitudes, while also comparing their effectiveness with the lecture method.

- *Statement of the Problem*

Over the years, examination bodies—particularly the Basic Education Certificate Examination (BECE) Chief Examiners' Reports (2019–2022)—have consistently highlighted weaknesses in students' responses to mathematics questions, which have contributed to the decline in performance in the subject. To address this challenge, research has shown that students' achievement in mathematics can be enhanced through the adoption of student-centered teaching methods that foster positive attitudes. Such methods are recommended because they reduce the abstract nature of mathematics and stimulate students' interest. This underscores the need to shift away from traditional approaches toward more effective instructional strategies. Consequently, the problem of this study is framed as follows: What effect do Merrill's First Principles of Instruction, Gagné's Nine Events of Instruction, and the Lecture Method have on students' attitudes toward mathematics?

- *Research Questions*

The study was guided by the following research questions:

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- What differences exist in the mean attitude scores of Mathematics students taught using Merrill's First Principles, Gagné's Nine-Event Instructional Model, and the Lecture Method?
- What differences exist in the mean attitude scores of male and female Mathematics students taught using Merrill's First Principles, Gagné's Nine-Event Instructional Model, and the Lecture Method?
- What is the interaction effect of teaching method and gender on students' attitudes toward Mathematics?

➢ *Hypotheses*

- $H0_1$: There is no significant difference in the mean attitude scores of Mathematics students taught using Merrill's First Principles, Gagné's Nine-Event Instructional Model, and the Lecture Method.
- $H0_2$: There is no significant difference in the mean attitude scores of male and female Mathematics students taught using Merrill's First Principles, Gagné's Nine-Event Instructional Model, and the Lecture Method.
- $H0_3$: There is no significant effect of interaction between sex and Methods on mathematics student's attitude?

II. METHODOLOGY

➢ *Research Design*

The study employed a planned variation quasi-experimental 3×2×2 factorial design. This design incorporated three instructional models (Merrill's First Principles of Instruction, Gagné's Nine-Event Instructional Model, and the Lecture Method), gender (male and female), and repeated testing (pre-test and post-test). As noted by Johnson and Christensen (2000), any design that does not involve randomization, which is a condition for a true experimental design, is classified as quasi-experimental.

➢ *Study Population and Sample*

The study population comprised all mixed public Junior Secondary School II mathematics students in Delta State, totaling 50,525 across 471 schools (Delta State Ministry of Basic and Secondary Education, 2022). Public schools were chosen because they operate under similar conditions and are managed by the Post-Primary Education Board. A sample of 318 students was drawn from six randomly selected mixed junior secondary schools, with two schools chosen from each of the three senatorial districts. The sample also included six intact classes and six mathematics teachers. Schools were selected using simple random sampling (balloting with replacement).

➢ *Instruments and Materials*

The instrument for data collection was the Mathematics Students' Attitude Questionnaire developed by Jackson (2010) and adapted for this study. The adaptation involved reducing the response format from a 5-point to a 4-point scale and increasing the number of items from 22 to 25. The final questionnaire, structured on a four-point Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree), was administered as both pre-test and post-test to measure students' attitudes. The intervention packages were Merrill's First Principles of Instruction and Gagné's Nine-Event Instructional Model. Each package consisted of two sections: the first explained the concept and instructional steps of the model, while the second provided lesson plans and classroom activities for teachers and students to implement the strategies effectively.

➢ *Validation of Instrument*

Its face validity was determined by a panel of three experts, made up of one mathematics educator, one mathematics teacher and one expert in measurement and evaluation. The instrument was given to them with the research questions and hypotheses to enable them to determine the suitability of the questionnaire. Their suggestions included the reframing and modification of some items (19 to 22). This was done before producing the final version of the instrument. This made the instrument valid for the study.

➢ *Reliability of Instruments*

Also, in order to determine the reliability of the Mathematics Students' Attitude questionnaire (MSAQ), a set of questionnaire was administered to twenty students from a schoo lwhich was not part of the study. The data collected were analyzed using Cronbach's Alpha Statistical Procedure. This procedure was adopted because the questionnaire options had varying values. In this case, the questionnaire administered was found to have a reliability value of 0.78. This shows that the instrument was reliable.

➢ *Treatment Procedure*

One week prior to the commencement of the treatment, students assigned to the Merrill's First Principles group, the Gagné's Nine-Event group, and the Lecture Method group were administered the Mathematics Students' Attitude Questionnaire (MSAQ) as a pre-test. The completed questionnaires were collected after one hour, scored, and recorded as pre-test results. These scores were used to establish the equivalence of the groups. Immediately afterward, the researcher distributed instructional plans for the respective models to the teachers (serving as research assistants) and instructed them to adhere strictly to the guidelines in implementing the assigned teaching methods in their classes.

➢ *Post-Testing*

At the end of the treatment which lasted for six weeks, the researcher administered another copy of the Mathematics Students' Attitude Questionnaire (MSAQ),as post-test on both the Merrill's First principles of instruction model, Gagne's nine-event instructional and lecture group students as post-test.

➢ *Method of Data Analysis*

To analyze the data collected, Research questions 1-3 were answered using descriptive statistics of the mean and standard deviation, while the hypotheses were tested using Analysis of Variance, Analysis of Covariance and independent sample t-test,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25sep718

III. RESULTS

➢ *Research Question One:*

What is the difference in the mean attitude test scores of Mathematics students taught with Merrill's first principles, Gagne's nine-event Instructional Models and Lecture Method?

To answer this research question descriptive statistics of the mean and standard deviation were used to compare the post attitude test scores of the students in the three groups, and the result is shown in Table 1.

Table 1 Descriptive Statistics of Mean and Standard Deviations Showing the Mean Attitude Scores of Mathematics Students Taught with Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method

Groups	N	Mean	SD
Merrill's	135	65.46	13.02
Ganges	101	67.74	9.72
Lecture	82	62.24	11.25

Table 1 shows that at posttest, the Merrill's first principle of instruction group had a mean attitude score of 65.46 with a standard deviation of 13.02. For the Gagne's nine-events of instruction group, the students had a mean attitude score of 67.74 with a standard deviation of 9.72, Lastly, the lecture method had a mean attitude score of 62.24 with a standard deviation of 11.25.There exists a mean difference among the mean attitude scores of the three group students. To determine if the difference was significant, analysis of Covariance statistics was used to test $H0_1$,as shown in Table 3.

➢ *Hypothesis One:*

There is no significant difference in the mean attitude test scores of Mathematics Students taught with Merrill's first principles, Gagne's nine-event Instructional Models and Lecture Method.

In order to determine the appropriate statistics to be used to test $H0_1$, Analysis of Variance Statistics was used to test their pre-test scores.

Table 2 ANOVA Statistics Comparing the Attitude Scores of Students Taught with Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method at Pre-Test

	Sum of Square	df	Mean Square	F	Sig
Between Groups	865.811	2	432.905	4.485	0.012
Within Groups	30402.520	315	96.516		
Total	31268.330	317			

Table 2 shows that the difference is significant at pre-test since the cal. significant value of 0.012 which was less than 0.05 was obtained. Therefore, Analysis of Covariance became the appropriate statistics to be used to test hypotheses eight, as shown in Table 3.

Table 3 ANCOVA Statistics Comparing the Post Attitude Scores of Students Taught with Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method at Post-Test.

Source	Type 111 Sum Of Square	df	Mean Square	F	Sig
Corrected Model	2282.063	3	760.688	4.653	0.003
Intercept	60942.165	1	60942.165	372.738	0.000
Pre-attitude	721.685	1	721.685	4.414	0.036
Group	1725.464	2	862.732	5.277	0.006
Error	51338.616	314	163.499		
Total	1116424.000	318			
Corrected Total	53620.679	317			

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25sep718

Table 3 shows that the difference was significant at post-test since the cal. significant value of 0.006 which was less than 0.05 alpha level was obtained. Therefore, $H0_8$ which states that there is no significant difference in the mean attitude test scores of Mathematics students taught with Merrill's first principles, Gagne's nine-event Instructional Models and Lecture Method was rejected.

To determine the direction of the significance, a Post Hoc Analysis using Bonferroni test was carried out and the result is shown in Table 4.

Table 4.a: Bonferroni Test Showing the Direction of Significance in the Attitude Scores of Mathematics Students Taught with Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method

Group (I)	Group (J)	Mean Difference I-J	Std. Error	Sig
Merrill's	Gagne	2.354	1.539	.381
	Lecture	3.259	1.630	.139
Gagne	Merrill's	2.354	1.539	.381
	Lecture	5.613	1.750	.004
Lecture	Merrill's	-3.259	1.630	.139
	Gagne	5.613	1.750	.004

Table 4a shows that the directions of the difference is between Lecture method Gagne's nine-event of instructional model and lecture method (P= 0.004).The significant difference is in favour of the Gagne's nine-event of instructional model whose students had a mean attitude score of 67.74 which is greater than the mean score of 62.24 obtained by the lecture method group students.

- *Research Questions Two:*

What is the difference in the mean attitude test scores of male and female Mathematics Students taught with Merrill's first principles, Gagne's nine-event Instructional Models and Lecture Method?

To answer the research question descriptive statistics of the mean and standard deviation was used to compare the post achievement scores of the male and female mathematics students in the three groups and the result is shown in Table 5.

Table 5 Descriptive Statistics of Mean and Standard Deviations Showing the Difference in the Mean Attitude T Scores of Male and Female Mathematics Students Taught with Merrill's First Principles, Gagne's Nine-Event Instructional Model and Lecture Method at Post-Test

Groups	Sex	N	Mean	Mean Diff.	SD
Merrill's	**Male**	58	66.48		13.43
				1.79	
	female	77	64.69		12.73
Gagne's	**Male**	37	70.16		8.41
				3.81	
	Female	64	66.34		10.21
Lecture	**Male**	31	62.35		10.32
				0.18	
	Female	51	62.18		11.89

Table 5 shows that at posttest, male students taught with Merrill's first principle of instruction group had an attitude mean score of 66.48 with a standard deviation of 13.43 and their female counterparts had a mean score of 64.69with a standard deviation of 12.73. The mean difference between the two sets of scores was 1.79, in favour of the female students. For the Gagne's nine-events of instruction group, the male students had a mean attitude

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25sep718

score of 70.16 with a standard deviation of 8.41 and a mean of 66.34with a standard deviation of 10.21 for the female students. The mean difference between the two sets of scores is 3.81, in favour of the males. Lastly, the lecture method group the male students, had a mean attitude score of 62.35 with a standard deviation of 10.32 and a mean attitude score of 62.18 with a standard deviation of 11.89 for their female counterparts. The mean difference between the two sets of scores was 0.18 in favour of their male counterparts. To determine if the difference is significant, independent sample t-test statistics was used to test HO_2, as shown in Table 6.

➢ *Hypothesis Two:*

There is no significant difference in the mean attitude test scores of male and female Mathematics Students taught with Merrill's first principles, Gagne's nine-event Instructional Models and Lecture Method**.**

In order to determine the appropriate statistics to be used to test $H0_2$, independent sample t-test statistics was used to test their pre-test scores.

Table 6 Independent Sample T-T Statistics Comparing the Difference in Mean Attitude Scores of Male and Female Mathematics Students Taught Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method on Mathematics Students at Pre -Test

Group	Sex	N	Mean	Mean Diff	SD	df	tcal	Sig
Merrill's	Male	58	48.07		15.88			
				2.97		133	1.036	0.302
	Female	77	51.04		16.92			
Gagne	Male	37	49.73		10.77			
				2.88		99	1.298	0.197
	Female	64	46.84		10.76			
Lecture	Male	31	62.35		10.32			
				0.71		80	0.247	0.805
	Female	51	62.18		13.26			

Table 6 shows that the difference is not significant at pre-test since the calculated sig. value of 0.320, 0.197 and 0.805 which are greater than 0.05 were obtained, therefore independent sample t-test statistics becomes the appropriate statistics to be used to test $H0_2$ and the result is shown in Table 7.

Table 7 Independent Sample T-T Statistics Comparing the Difference in the Attitude Mean Scores of Male and Female Mathematics Students Taught with Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method on Mathematics Students at Post-Test

Groups	Sex	N	Mean	Mean Diff.	SD	df	tcal	Sig (2-tail)
Merrill's	Male	58	66.48		13.43			
				1.79		133	0.792	0.430
	female	77	64.69		12.73			
Ganges	Male	37	70.16		8.41			
				3.81		99	1.927	0.060
	Female	64	66.34		10.21			
Lecture	Male	31	62.35		10.32			
				0.18		80	0.069	0.945
	Female	51	62.18		11.89			

Table 7 shows that the difference is not significant at post-test since the calculated sig values of 0.430, 0.060 and 0.945 which are greater than the alpha value of 0.05 were obtained. Therefore, hypothesis two which states that there is no significant difference in the mean attitude test scores of male and female Mathematics students taught with Merrill's first principles, Gagne's nine-event Instructional Models and Lecture Method is not rejected.

➢ *Research Question Three:*

What is the effect of interaction between sex and Method on mathematics students' attitude?

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25sep718

To answer the research question descriptive statistics of the mean and standard deviation were used to compare the post attitude scores of the students' in the three groups and the result is shown in Table 8.

Table 8 Descriptive Statistics of Mean and Standard Deviations Showing the Mean Attitude Scores of Mathematics Students Taught with Merrill's First Principles, Gagne's Nine-Event Instructional Models and Lecture Method

Groups		N	Mean	Mean Diff	SD
Merrill's		135	65.46		13.02
Ganges		101	67.74		9.72
Lecture		82	62.24		11.25
	Sex				
Merrill's	Male	58	66.48		13.43
				1.79	
	Female	77	64.69		12.73
Gagne's	Male	37	70.16		8.41
				3.81	
	Female	64	66.34		10.21
Lecture	Male	31	62.35		10.32
				0.18	
	Female	51	62.18		11.89

Table 8 shows that at posttest, the Merrill's first principle of instruction group had a mean attitude score of 65.46 with a standard deviation of 13.02. For the Gagne's nine-events of instruction group, the students had a mean attitude score of 67.74 with a standard deviation of 9.72. Lastly, the lecture method had a mean attitude score of 62.24 with a standard deviation of 11.25. There exists a mean difference among the mean attitude scores of the three group students. Also, the Table shows that at posttest, male students taught with Merrill's first principle of instruction group had an attitude mean score of 66.48 with a standard deviation of 13.43 and their female counterparts had a mean score of 64.69 with a standard deviation of 12.73. The mean difference between the two sets of scores was 1.79, in favour of the female students. For the Gagne's nine events of instruction group, the male students had a mean attitude score of 70.16 with a standard deviation of 8.41 and a mean of 66.34 with a standard deviation of10.21 for the female students. The mean difference between the two sets of scores is 3.81, in favour of the males. Lastly, in the lecture method group the male students, had a mean attitude score of 62.35 with a standard deviation of 10.32 and a mean attitude score of 62.18 with a standard deviation of 11.89 for their female counterparts. The mean difference between the two sets of scores was 0.18 in favour of their male counterparts. To determine if the difference is significant, ANCOVA statistics was used to test HO_3, as shown in Table 9.

- *Hypothesis Three:*

There is no significant effect of interaction between sex and Method on mathematics student's attitude

To test this hypothesis ANCOVA statistics was used to analyze the data collected and the result is shown in Table 9.

Table 9 ANCOVA Statistics Comparing the Interaction Effects Between Methods and Sex on Mathematics Student's Attitude

Source	Type 111 Sum Of Square	df	Mean Square	F	Sig
Corrected Model	2105.406	6	350.901	2.618	0.017
Intercept	85384.181	1	85384.181	637.082	0.000
Pre-attitude	285.536	1	285.536	2.130	0.145
Group	1644.933	2	822.467	6.137	0.002
Sex	264.827	1	264.827	1.976	0.161
Group*Sex	128.859	2	64.430	0.481	0.619
Error	41681.439	311	134.024		
Total	1402067.00	318			
Corrected Total	43786.846	317			

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25sep718

Table 9 shows that the interaction effect between method and sex is not significant since the cal. significant value of 0.619 which is greater than 0.05 alpha level was obtained.Therefore,$H0_3$ which states that there is no significant effect between methods and sex scores on mathematics student's attitude is not rejected.

IV. DISCUSSION

The first finding of the study showed that there is a significant effect of Merrill's first principles of instruction, Gagne's nine-event Instructional Models and Lecture Method on Mathematics students' attitude. This implied a considerable variation in the methods. The observed significant difference found is due to the various activities that the various group students were exposed to during the teaching and learning process. These activities may have made them enjoyed the learning of the various concepts, hence the attainment of a higher post-attitude scores. This finding showed that the three methods caused the students developed better attitude towards the study of mathematics, hence the high post attitude scores obtained. Literature as shown that when students' passes through different stages in academics, they are bound to develop either positive or negative attitude towards the subjects studied and that there is a relationship between method and attitude. This finding agrees with that of Agboghoroma, Bebenimibo and Akpokiniovo (2022) found a positive relationship between the method and attitude.

The second finding of the study showed that there is no significant difference in the mean attitude test scores of male and female Mathematics Students taught with Merrill's first principles, Gagne's nine-event Instructional Models and Lecture Method. This shows that the methods irrespective of their attitude had equal influence on the male and female students' attitude. This finding agrees with that of Rasheed (2017) who found non -significant effect of Ethno-science instruction on male and female students' attitude

The third finding of the study showed that there is no significant effect of interaction between methods and sex on mathematics students' attitude. This means that the student's attitude scores was not influenced by sex when the methods were used. This agrees with findings of Obodo, and Ifunanya (2023), Agboro-Eravwoke (2022) and Ajaja (2013) who found no significant interaction effects of teaching method and sex on student's attitude scores in basic science.

V. CONCLUSION

➢ *Based on the Findings of the Study, the Following Conclusions were Drawn*

- Merrill's first principles of instruction and Gagne's nine-event Instructional Models are suitable strategies for improving mathematics attitudes when compared with Lecture method.
- Merrill's first principles of instruction, Gagne's nine events and Lecture method influences mathematics students attitude scores irrespective of sex.

RECOMMENDATION

Based on the study's findings, it is recommended that both teachers and students receive adequate training in the use of Merrill's First Principles of Instruction and Gagné's Nine-Event Instructional Model, and be encouraged to apply these strategies in the teaching and learning of mathematics.

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