Effects of Mastery Learning Approach on Interest and Performance in Trigonometry among Senior Secondary School Students, Katsina State, Nigeria.

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ABSTRACT

The study investigated the effects of mastery learning approach on interest and performance in trigonometry. It employs quasi-experimental design using pretest, post-test and control groups. The population of the study consists of all SS2 students in Katsina state. Four research objectives, research questions and null - hypothesis were posed and tested in the study. Four education zones were purposively sampled and four secondary schools were randomly selected from the four education zones. Multi-staged sampling technique was employed. The instruments used for the study were Trigonometric Interest Scale (TIS) and Trigonometric Performance Test (TPT). TPT and TIS were validated by experts from the department of psychology/counseling and department of mathematics Federal College of Education, Katsina. The reliability of both TPT and TIS were 0.63 and 0.73 using Pearson Product Moment Correlation Coefficient (PPMCC) and Cronbach alpha coefficient respectively. The data were analyzed using mean, standard deviation, Independent t-test, Mann Whitney U-test and ANCOVA. The four Null –hypotheses were tested at .05 level of significance and the study revealed that there was a significant difference between the interest mean level of students taught trigonometric concepts (M_{Re}=181.95; M_{Rc}=139.05; Z (319) = 4.152 ; p=.00< .05) using MLA and those using conventional method; there was a significant difference between performance mean score of students taught trigonometric concepts using MLA ($F_{(319)}$ = 225.2; P=0.000≤ .05) and those taught using conventional method; there was no significant difference between the interest mean level of boys (M_r =78.6, Z $_{(319)}$=556 , p = 0.53 > 0.05) and girls (M_r = 82.5) and there was no significant difference between the learning mean performances of boys and girls taught trigonometric concepts using MLA (Mm =61.6; M_f =62.7; S_{dm}=9.6; S_{df}=7.9; t($_{158}$)=0.74 and p=0.46>.05). By promoting an inclusive and supportive environment, MLA ensures that all students, regardless of gender, can achieve mastery and develop a sustained interest in mathematics. Adopting MLA can thus be a pivotal step towards improving educational outcomes and fostering a more equitable academic landscape. The study recommended that teachers should apply the Mastery Learning Approach (MLA) in classroom settings to stimulate students interest in mathematics. This method will help students thoroughly master the content of any given concept taught, leading to improved academic performance.

Keywords: Mastery Learning Approach, Trigonometry, Interest, Academic Performance and Mathematics.

INTRODUCTION

Mathematics is fundamentally about ideas, focusing on the intricate relationships between different concepts. It encompasses the understanding of problems and situations, and the development of solutions through logical thinking. In any nation where mathematical reasoning and consistency are prevalent, one can confidently claim that such a nation has effectively entered the realm of scientific and technological development. According to Gan (2018), mathematics is an indispensable medium by which science

expresses, formulates, continues, and communicates itself. Similarly, Bllom (1984) observed that mathematics is a comprehensive body of knowledge that opens up the mind to logical reasoning, analytical thinking, creative problem-solving, deep concentration, clarity of thought, and precision. It is the central axis on which all scientific and technological studies are anchored. Also Jade (2019) emphasized that the scientific and technological advancement of a nation largely depends on the mathematical understanding of its citizens. This therefore means that Mathematics has evolved into a powerful tool essential for practical sciences such as engineering and industry, among others. It has become integral to the development of technology and numerous inventions (Effiom, 2024). The field of mathematics includes various branches such as Trigonometry, Algebra, Geometry, and Statistics, among others. Trigonometry, for instance, is one of the branches commonly taught at the secondary school level in Nigeria (NPE, 2013). Each of these branches plays a vital role in the comprehensive understanding and application of mathematics in real-world scenarios, contributing significantly to scientific and technological progress. Students' interest here is vital.

The low interest of students in mathematics has been attributed to poor performance in examinations, which is further linked to the teaching approaches employed. Teaching is considered effective when it leads to a desirable change in the behavior of the learner (Omenka, 2019). The instructional methods used by teachers can significantly impact students' interest in learning trigonometry and mathematics in general. When students develop a positive interest in mathematics, it positively affects their performance. Okigbo and Okeke (2011) opined that interest is a crucial variable in learning, as an individual's interest in an activity is likely to enhance their engagement and performance in that activity. Michelson (2013) also views interest as a motivational factor in learning, noting that practical work increases students' understanding, experience, skills, and enjoyment of science. Lack of interest has been identified as a key cause of students' low academic performance (Okoro, 2011). It is possible that students with a positive interest in mathematics are more likely to develop a better understanding and interest in specific concepts such as trigonometry compared to those without an interest in mathematics. The concept performance and other factors such as gender associated with the teaching and learning of trigonometry has been widely researched. Yet scholars have different views on the stand point of gender as a variable that affect the learning of trigonometry.

Bichi (2017) defines gender as the amount of masculinity and femininity found in a person and obviously there are mixtures of both in a few human beings, the normal male has the prepondence of masculinity and the normal female has the prepondence of femininity. Gender related differences in mathematics seem to be present from an early age onwards and increases with age as observed by Hall and Strangman, (2015). Maclay (2010) studied gender differences in mathematics achievement, and the result favored males in achievement, interest and placement in advanced mathematics courses. Therefore, employing student-centered methods, like the Mastery Learning Approach (MLA), is necessary to help students develop a positive interest in trigonometry. This approach can engage students more effectively, fostering a deeper appreciation and understanding of mathematical concepts.

Balarabe and Muhammad (2018) define trigonometry as a branch of mathematics that primarily deals with the measurement of distances and the relationships between the sides and angles of a triangle. Orhun (2010) further describes trigonometry as a field that explores various properties of functions and applies these functions to determine unknown angles and sides of triangles. Trigonometry provides a critical foundation for solving problems across many disciplines, including astronomy, technology, and construction. Despite the importance of trigonometry in technological development and its applications in everyday activities, students' performance in this area of mathematics has been less than encouraging (Balarabe and Muhammad, 2018). Trigonometry is often perceived by students as particularly difficult and abstract compared to other areas of mathematics.

Several researchers, such as Omenka (2019), Balarabe and Muhammad (2018), have linked this negative perception to several factors such as poor teaching methods and overdependence on conventional method.

To address this issue, Thompson, Byerley, and Hatfield (2013) suggest the use of constructivist teaching strategies that place student engagement at the center of the teaching and learning process. By adopting these strategies, educators can help demystify trigonometry, making it more accessible and engaging for students. This approach emphasizes active learning, where students are encouraged to explore, question, and discover mathematical concepts, thereby fostering a deeper understanding and appreciation of trigonometry.

Mastery Learning Approach involves breaking down the subject matter to be learned into units of learning, each with its own objectives (Omenka, 2019). The strategy allows students to study contents unit after unit until they master them. Mastery of each unit is shown when the student has acquired the set pass mark of an evaluation test. MLA helps the student to acquire prerequisite skills to move to the next unit. Adeyemo and Babajide (2014) further state that Mastery Learning puts the techniques of tutoring and individualized instruction into a group learning situation and brings the learning strategies of successful students to nearly all the students of a given group. Mastery learning approach helps the student to acquire pre-requisite skill to move to the next unit. It divides subject matter into unit that have predetermined objectives or unit expectation. It can be student alone or group work through each unit in an organized fashion. Students who do not achieve mastery receive remediation through tutoring, peer monitoring, small group discussion or additional homework. The advantage of the approach is that students develop more positive attitudes about learning and their ability to learn and the teachers who use the method develop more positive attitudes towards teaching higher expectation for students and greater personal responsibility for learning outcomes. It is against this backdrop that the researchers intend to ascertain if the use of the approach will enhance good performance for students in trigonometry and will boost their interest in the concepts.

Several studies on the Mastery Learning Approach (MLA) have revealed mixed results regarding its effects on student performance. For instance, Agboghoroma (2014) found that the mastery learning approach was effective for teaching integrated science. This study employed a quasi-experimental non-randomized pre-test and post-test control group design, with 120 purposefully sampled junior secondary three students. The Integrated Science Achievement Test (ISAT) was used to measure students' achievement, and the data was analyzed using ANCOVA statistics, revealing that the mastery learning strategy led to higher achievement. Adeniji et al. (2018) also studied the effects of MLA on students' academic performance using a quasi-experimental non-randomized design. They sampled 172 SS II students from Kano metropolis and used Circle Geometry Achievement Test (CGAT) to gather information. Analysis with ANCOVA, mean, and standard deviation indicated that MLA improved student performance, with no gender differences observed. Omenka (2019) found that students taught using mastery learning showed greater improvement in achievement compared to those taught with traditional methods, with no gender differences. Similarly, Rahamatu, Bolarin-Akinwande, and Bichi (2022) concluded that mastery learning can facilitate positive outcomes for both male and female students, indicating its gender-neutral effectiveness. Oginni, Akinola, Fadiji, and Amole (2021) observed that students in mastery learning programs showed increased achievement levels compared to those in traditional instructional settings. Their research also highlighted that students retain what they have learned longer under mastery learning, both in short-term and long-term studies.

The present study focuses on the effects of the mastery learning approach on interest and performance in trigonometry among senior secondary school students in Katsina State. Unlike previous research, which primarily focused on achievement in geometry, this study considers both interest and performance in trigonometric concepts. This focus on interest is a new dimension, aiming to provide a more comprehensive understanding of how MLA impacts students' engagement and success in mathematics.

Statement of the Problem

Performance in mathematics at the Nigerian secondary school level in the West African Senior School Certificate Examination (WASSCE) has improved over the past few years, as reported by the WAEC Chief

Examiners' Report (2021), based on statistics of students achieving grades A, B, and C. Despite this improvement, more efforts are needed to sustain this progress. However, this improvement does not imply that the teaching of mathematics has fully succeeded, as various factors continue to challenge the teaching and learning of mathematics at the secondary school level. Among the most prominent challenges are students' interest in mathematics and the instructional methods often used by teachers. Enhancing students' interest is crucial for improving their performance and understanding of mathematics. For students to become more engaged and acquire the necessary knowledge and skills to solve mathematical problems, they need to be active participants in the classroom. This can be achieved through the use of appropriate instructional strategies, such as the mastery learning approach. Therefore, this study aims to investigate the effects of the mastery learning approach on students' interest and performance in trigonometry in senior secondary schools in Katsina State, Nigeria. By focusing on trigonometric concepts and considering both interest and performance, this research seeks to determine whether the mastery learning approach can effectively enhance students' engagement and success in mathematics.

Objectives of the Study

Specifically, the study intends to achieve the following research objectives which are to:

1. investigate whether mastery learning approach affects the interest of senior secondary school students in trigonometry.
2. find out the effect of mastery learning approach on performance of senior secondary students in trigonometry.
3. ascertain the effect of mastery learning approach on the interest of male and female senior secondary school students in trigonometry
4. investigate the effect of mastery learning approach on the performance of male and female senior secondary school students in trigonometry.

Research Questions

The following research questions were posed to guide the study:

1. to what extent will be the difference between the interest mean level of students taught trigonometric concepts using Mastery Learning Approach and those taught using conventional method?
2. what is the difference between the mean performance scores of students taught trigonometric concepts using mastery learning approach and those taught using conventional method?
3. What is the difference between the interest mean level of male and female students taught trigonometric concepts using Mastery Learning Approach?
4. What is the difference between performances mean scores of male and female students taught trigonometric concepts using mastery learning approach?

Research Hypotheses

The following hypotheses were formulated for the study.

H_{O1} There is no significant difference between the interest mean level of students taught trigonometric concepts using Mastery Learning Approach and those taught using conventional method.

H_{O2} There is no significant differences between performances mean scores of students taught trigonometric concepts using Mastery Learning Approach and those taught using conventional method.

H_{O3} There is no significant difference between the interest mean level of male and female students taught trigonometry concepts using Mastery Learning Approach.

H_{O4} There is no significant differences between performances mean scores of male and female students taught trigonometry concepts using Mastery Learning Approach.

RESEARCH METHODOLOGY

The study adopted a quasi-experimental control group design employing pre-test and post–test. It was used due to the fact that the researcher has no control over the sample size. A sample 320 (SS11) students were drawn purposively from a population of 69,932 within four (4) Education zones in Katsina state. The sample consists of 160 males and 160 females. Two instruments were developed: (1) Trigonometric Interest Scale (TIS) and Trigonometric Performance test (TPT) and both instruments were validated by experts. The reliability coefficients of .73 and .63 were obtained for TIS and TPT using Cronbach Alpha and Pearson Product Moment correlation coefficient (PPMCC) respectively. The students in both the Control and the Experimental groups were taught for 4 weeks using prepared plans for conventional and the steps involved in teaching MLA. At the end of 4 weeks, the post-test was given to the two groups to determine the effectiveness of the teaching strategy. The research design is illustrated in Fig. 1 below.

EG $\longrightarrow$ 0_1 $\longrightarrow$ X_1 $\longrightarrow$ 0_2

CG $\longrightarrow$ 0_1 $\longrightarrow$ X_o $\longrightarrow$ 0_2

KEY EG⇒ Experimental group

CG ⇒ Control group

0_1⇒ pretest treatment

0_2⇒ posttest treatment

X_{1-}⇒EG (treatment (MLA)

X_0⇒ CG (conventional method)

The data collected were analyzed using mean, mean rank and standard deviation while Null hypothesis were tested using independent sample t-test, Mann-Whitney U- test and ANCOVA at .05 level of significance

RESULTS

The results are presented below:

H_{O1} There is no significant difference between the interest mean level of students taught trigonometry concepts using Mastery Learning Approach and those taught using conventional method.

In order to test the null hypothesis one, the data generated via Trigonometric Interest Scale (TIS) were subjected to Mann Whitney U test. The results obtained were computed and used in Table 1 thus:

Table 1: Summary of Mann-Whitney U-test on the difference between the mean Interest level of Students in Experimental and Control Groups.

Variables	Groups	N	Mean Rank	Sum of Ranks	MR.D	Df.	U	Z	P
Interest	Experimental	160	181.95	29111.50	42.9	319	9368.500	4.150	0.000
	Control	160	139.05	22248.50					
	Total	320							

Significant at $P \leq 0.05$ level of significance.

The results presented in Table 1 indicates a significant difference in the mean interest levels of students in the experimental group compared to those in the control group, favoring the experimental group. This conclusion is drawn from the calculated p-value of 0.000, which is less than the adopted alpha level of significance of 0.05. This finding implies that there is a statistically significant difference in the interest levels between the two groups. Given this significant difference, the null hypothesis, which posited that there is no significant difference between the interests mean levels of students taught trigonometry using the Mastery Learning Approach and those taught using conventional teaching methods was rejected. This outcome indicates that the Mastery Learning Approach had a positive impact on students' interest in trigonometric concepts, making it a more effective instructional method in this context compared to conventional method.

The observed increase in interest among students in the experimental group can be attributed to the Mastery Learning Approach's emphasis on individualized learning paces, frequent feedback, and active engagement, which likely made the learning experience more engaging and motivating for students. This result aligns with the educational theory suggesting that when students are more interested and engaged in a subject, their overall performance and understanding improve. These findings support the idea that implementing mastery learning strategies in mathematics education can not only enhance students' academic performance but also boost their interest and motivation, leading to a more positive learning experience

H_{O2} There is no significant differences between performances mean scores of students taught trigonometric concepts using Mastery Learning Approach and those taught using conventional method.

In order to test the null hypothesis two, the data generated via Trigonometric Performance Test (TPT) were subjected to ANCOVA as shown in table 2 below

Table 2: Summary of ANCOVA analysis of mean performance scores of students in the Experiment (MLA) and Control groups (conventional method).

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1163.499[a]	2	581.749	198.402	.000	.556
Intercept	1043.365	1	1043.365	355.832	.000	.529
Pretest	455.449	1	455.449	155.328	.000	.329
Group	**660.313**	**1**	**660.313**	**225.195**	**.000**	**.415**
Error	929.501	317	2.932			
Total	31738.000	320				
Corrected Total	2093.000	319				
a. R Squared = .556 (Adjusted R Squared = .553)						

The results from Table 2 indicate that the treatment, as the main effect, had a significant effect on students' performance in trigonometric concepts. The result yielded an F-value of 225.195 and a p-value of 0.000, which is less than the 0.05 level of significance. This means that there is a statistically significant difference in the mean performance scores between students taught trigonometric concepts using the Mastery Learning Approach and those taught using conventional teaching methods. Consequently, the null hypothesis, which stated that there is no significant difference in performance mean score between the experimental and control groups, was rejected. .This significant difference in performance can be attributed to the effectiveness of the Mastery Learning Approach in fostering a deeper understanding of trigonometric concepts. The Mastery Learning Approach allows students to learn at their own pace, ensuring they fully grasp each concept before moving on to the next. This method includes continuous assessment, feedback, and remediation, which helps students identify and address their learning gaps, leading to improved performance.

In contrast, conventional teaching methods often follow a more rigid pace and may not accommodate individual learning needs as effectively, potentially leaving some students behind. The results suggest that the Mastery Learning Approach is more effective in enhancing students' understanding and performance in trigonometry compared to conventional teaching methods. These findings are significant for educators and curriculum developers as they highlight the benefits of adopting more personalized and student-centered instructional strategies. By integrating the Mastery Learning Approach into the mathematics curriculum, schools can potentially improve student outcomes not only in trigonometry but in other areas of mathematics and beyond. This approach can help ensure that all students have the opportunity to succeed by mastering foundational concepts before progressing, thereby building a solid base for more advanced learning.

H_{O3} There is no significant difference between the interest mean level of male and female students taught trigonometry concepts using Mastery Learning Approach.

In order to test the null hypothesis three, the data generated via Trigonometric Performance Test (TPT) were subjected to Mann Whitney U test. The results obtained were computed and used in Table 3 thus:

Table 3: Summary of the difference between the Interest levels of Male and Female Students in the Experimental Group.

Variable	Gender	N	Mean Rank	Sum of Ranks	MR.D	Df.	U	Z	P
Interest	Male	80	78.55	6284.00	3.9	159	3044	533	.534
	Female	80	82.45	6596.00					

Significant at $P \leq 0.05$ level of significance.

The results in Table 3 reveal that within the experimental group, the mean rank score for male students was 78.55, with a sum of ranks totaling 6284.0. For female students in the same group, the mean rank score was slightly higher at 82.45, with a sum of ranks totaling 6596.0. The difference in mean rank scores between male and female students was 3.9. The p-value of .53 was greater than .05 significant levels and so the null hypothesis is upheld. This relatively small difference in mean rank scores suggests that there is no significant difference between male and female students' interest in trigonometric concepts when taught using the Mastery Learning Approach (MLA). Both genders showed comparable levels of interest, indicating that the MLA is equally effective in engaging both male and female students.

These findings support the notion that the Mastery Learning Approach can be a gender-neutral instructional method that fosters interest in mathematics regardless of gender. This is significant as it underscores the approach's potential to create an inclusive learning environment where both male and female students can thrive and develop a strong interest in mathematical concepts like trigonometry.

H_{O4} There is no significant differences between performances mean scores of male and female students taught trigonometry concepts using Mastery Learning Approach.

In order to test the null hypothesis six, the data generated via Trigonometry Performance Test (TPT) were subjected to independent sample t-test statistics. The results obtained were computed and used in Table 4 respectively.

Table 4: Mean and Standard Deviation of performance scores of Male and Female Students in the Experimental Group

Variable	Gender	N	Mean	Std. Deviation	M.df.	D.f	T	P
Performance	Male	80	61.6375	9.59066	1.025	158	.738	0.46
	Female	80	62.6625	7.88516				

Significant at $P \leq 0.05$ level of significance.

The results presented in Table 4 reveal that male students achieved a mean score of 61.64, while their female counterparts recorded a mean score of 62.6625. This indicates that female students outperformed male students by a mean difference of 1.025; P= 0.46 ≥ .05 significant level. This indicates that the null hypothesis was upheld and so the findings suggest that the Mastery Learning Approach was effective for both genders, fostering similar levels of academic achievement in trigonometry. The slight edge in mean scores for female students does not imply a significant gender difference, rather highlighting the approach's potential to create an inclusive learning environment where both male and female students can succeed.

DISCUSSION

The findings of this study indicate that students who were exposed to the Mastery Learning Approach exhibited significantly better performance compared to their peers who were taught using conventional teaching methods. This outcome aligns with previous research conducted by Rahamatu et al. (2022), Oginni et al. (2021), Adeniji et al. (2018), and Lamidi, Oyelekan, and Olorundare (2015), all of which reported that students who received instruction through the Mastery Learning Approach outperformed those taught with conventional methods. The superiority of the Mastery Learning Approach can be attributed to its structured instructional framework. In this approach, students receive initial instructions on the topic, followed by group discussions that encourage collaborative learning. After these discussions, formative assessments are administered individually to evaluate each student's understanding of the material. The assessments are then marked, and detailed positive feedback is provided to the students, enabling them to understand their strengths and areas for improvement.

Students who demonstrate mastery of the topic continue to engage in enrichment activities that further deepen their understanding, while those who have not yet mastered the material receive parallel formative assessments designed to target their specific learning needs. This iterative process ensures that all students have the opportunity to master the content before advancing to the next topic. The combination of group discussions, positive feedback, and tailored assessments fosters an environment conducive to meaningful learning. This approach not only enhances students' understanding of the material but also promotes a positive learning outcome overall. As a result, a significant difference in performance was observed, highlighting the effectiveness of the Mastery Learning Approach compared to traditional teaching methods.

The findings of this study also revealed no significant difference in the performance of male and female students who were taught trigonometry concepts using the Mastery Learning Approach (MLA). The results indicate that MLA is effective in promoting academic performance equally among both genders, suggesting that it does not favor one over the other. The gender equality in performance observed in this study can be

attributed to the collaborative nature of the MLA. This instructional method encourages both male and female students in the various experimental groups to engage in discussions about their topics. By sharing ideas and perspectives with their peers, students can deepen their understanding of the concepts being taught. Additionally, each student undertakes individual assessments at the end of the topic, ensuring that all learners are evaluated based on their own understanding and mastery of the material. As a result, this approach not only enhances students' comprehension of trigonometric concepts but also helps to bridge the performance gap between male and female students. By providing an inclusive and supportive learning environment, the Mastery Learning Approach fosters academic achievement for all students, regardless of gender. This observation is supported by Abakpa and Iji (2011), whose investigation found that MLA effectively improved the achievement scores of both male and female students. However, previous research by Achufusi and Mgbemena (2012) indicated that while female students scored slightly higher than their male counterparts, the difference was not statistically significant at $p = 0.05$. This suggests that although there may be slight variations in performance between genders, these differences do not translate into meaningful disparities when using the Mastery Learning Approach.

The study also found no significant difference in academic performance between male and female students who were taught using the Mastery Learning Approach (MLA). This outcome can be attributed to the fact that both groups were exposed to the same concepts, taught by the same teacher, and using the same instructional method. Consequently, the Mastery Learning Approach is deemed gender-friendly, promoting equal academic performance across genders. This finding is consistent with the results of previous studies by Rahamatu et al. (2022), Oginni et al. (2021), Omenka (2019), and Lamidi, Oyelekan, and Olorundare (2015), all of which reported no significant gender difference in the academic performance of secondary school students exposed to MLA. These studies collectively support the notion that MLA provides an equitable learning environment that benefits all students, regardless of gender. However, this finding contradicts the results of Udo and Udofia (2014), who reported that gender had a significant influence on students' performance, with males outperforming females when the Mastery Learning Approach was employed. This discrepancy may be due to variations in study contexts, sample sizes, or instructional implementations.

The study further revealed a significant difference in the mean interest levels of students taught trigonometry using the Mastery Learning Approach (MLA) compared to those taught using conventional teaching methods. This finding aligns with Omenka (2019), who reported that students exposed to MLA achieved significantly higher mean interest ratings than their peers taught using traditional methods. Similarly, studies by Achor, Imoko, and Ajai (2010), and Hussain and Ali (2012) also found that the teaching approach has a significant effect on students' interest. The boost in interest observed among students taught with MLA can be attributed to several key factors inherent to this innovative teaching approach. First, MLA involves setting predetermined goals by clearly stating lesson objectives at the beginning of each lesson, which helps students understand what is expected and stay focused on achieving those goals. Additionally, continuous feedback on formative assessments provides students with regular updates on their progress, reinforcing their understanding and keeping them engaged.

Another critical aspect of MLA is the extra attention given to weaker students through re-teaching and remediation. This personalized support ensures that all students, regardless of their initial skill level, have the opportunity to master the material, fostering a sense of achievement and confidence. By addressing individual learning needs, MLA helps to sustain and enhance students' interest in the subject. Moreover, the inclusive nature of MLA inspires students to believe in their potential to attain mastery. The approach emphasizes that all students can succeed if they are provided with the necessary support and encouragement. This positive reinforcement and belief in their capabilities contribute significantly to increased interest and motivation. This demonstrates that the Mastery Learning Approach significantly enhances students' interest in trigonometry compared to conventional teaching methods. The structured goal-setting, continuous feedback, personalized support, and inclusive philosophy of MLA collectively contribute to fostering a

greater interest in the subject. These findings highlight the importance of adopting innovative teaching approaches like MLA to boost student engagement and interest in mathematics and other subjects.

CONCLUSION

Based on the findings of this study, it can be concluded that the Mastery Learning Approach (MLA) significantly enhances students' academic performance. This improvement is evident across both male and female students, indicating that MLA benefits all students equally regardless of gender. Additionally, MLA has proven to be highly effective in stimulating students' interest at various scoring levels, enabling them to achieve uniformly in their assigned tasks. Consequently, the use of MLA can potentially reduce educational inequalities, particularly those related to gender and achievement levels. The gender-neutral nature of MLA ensures that it provides an equitable learning environment, thereby promoting fairness and inclusivity in education. By fostering a more balanced and supportive educational setting, MLA can play a crucial role in bridging the performance gaps and enhancing the overall learning experience for all students.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Implementation of Mastery Learning Approach: Teachers should actively apply the Mastery Learning Approach (MLA) in classroom settings to stimulate student interest in mathematics. This method will help students thoroughly master the content of any given concept taught, leading to improved academic performance.
2. Professional Development: Education stakeholders should organize workshops and symposiums specifically focused on MLA and a variety of student-centered teaching methods. These events will enable teachers to become proficient in utilizing these approaches effectively, thereby enhancing student understanding and engagement.
3. Curriculum Development: Curriculum developers and planners should incorporate MLA into the educational framework. Additionally, they should allocate more time for teaching trigonometry, as the current time allotment is insufficient for the effective implementation of MLA.
4. Gender Inclusivity: Teachers should ensure active involvement of both male and female students in learning activities. This practice will help eliminate gender stereotyping and promote equal educational opportunities for all learners, fostering an inclusive learning environment.
5. Enhancing Teaching Practices: Mathematics teachers should focus on the effective and efficient utilization of MLA. By doing so, they can ensure students grasp the fundamental concepts of mathematics, moving away from rote learning and the mere memorization of formulas and procedures. This approach will lead to a deeper understanding of the material and better long-term retention of knowledge.

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