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Influence of Pedagogical Innovation on Interest and Academic Engagement in Mathematics among Students with Learning Disorders in Senior Secondary Schools, Niger State

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Abstract

This study examined the influence of pedagogical innovation on interest and academic engagement in mathematics among students with learning disorders in selected senior secondary schools in Niger State, Nigeria. Four research questions and four null hypotheses guided the study. A descriptive survey research design was adopted, and the sample comprised 456 respondents. A multistage sampling procedure was used, taking into account the geographical structure of the study area. Data were collected using three instruments: the Mathematics Teachers' Pedagogical Innovation Questionnaire (M-TPIQ), the Mathematics Interest Scale (MIS), and the Academic Engagement Questionnaire (AEQ). Experts in Special Needs Education, Mathematics Education, and Measurement and Evaluation validated the instruments. Cronbach's alpha reliability coefficients were 0.78 for the M-TPIQ, 0.80 for the MIS, and 0.79 for the AEQ. Frequency counts and percentages were used to describe respondents' demographic characteristics. Mean scores and standard deviations were used to answer Research Questions 1 and 2, while Pearson's correlation coefficient was used to answer Research Questions 3 and 4. Pearson's product-moment correlation was used to test Null Hypotheses 1 and 2, and simple linear regression was used to test Null Hypotheses 3 and 4 at the 0.05 level of significance. The findings indicated that pedagogical innovation predicted students' interest and academic engagement in mathematics to a large extent. They also showed that interest in mathematics among SS II students with learning disorders in the selected senior secondary schools was significantly low. The study recommended that mathematics teachers adopt innovative teaching methods, including group work, games, demonstrations, storytelling, practical activities, and problem-solving, to make lessons more interesting and engaging. It also recommended that schools provide appropriate instructional materials—such as charts, models, mathematical manipulatives, computers, projectors, and other digital resources—to support students with learning disorders.

Keywords
Academic engagement, Interest, Learning disorders, Mathematics and Pedagogical innovation.

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Introduction

Mathematics supports logical thinking, problem solving and later participation in STEM fields. However, mathematics learning is not equally easy for all students. Students with learning disorders may experience persistent difficulties in number sense, calculation, mathematical language, working memory, attention, sequencing and problem solving. Specific learning disability in mathematics affects how some learners acquire and use mathematical knowledge and requires systematic intervention (Nelson et al., 2022). Repeated difficulty may also reduce confidence and interest.

Globally, increasing attention is being given to pedagogical innovation for more flexible, meaningful and inclusive mathematics teaching. Pedagogical innovation refers to the deliberate use of new or improved teaching approaches, learning materials, technologies and classroom practices to improve learning. It may include digital applications, multimedia explanations, manipulative, visual representations, collaborative learning, differentiated instruction, structured problem-solving routines and assistive technologies. Universal Design for Learning encourages teachers to provide multiple ways of representing information, engaging learners and allowing them to demonstrate what they know (CAST, 2024).

Research provides evidence that technology-supported approaches can improve mathematics learning. Benavides-Varela et al. (2020), in a meta-analysis of 15 studies involving 1,073 participants, found that digital interventions generally improved mathematical performance among learners experiencing mathematical difficulties. Alam et al. (2025) reviewed 24 studies involving 1,091 K–12 learners and reported a medium positive effect of digital mathematics interventions for students with mathematical learning disabilities. Digital tools can provide repeated practice, immediate feedback, visual support and individualized learning. However, technology alone does not guarantee success; the teaching strategy, learner characteristics and quality of implementation remain important.

Pedagogical innovation is also related to students' interest and academic engagement. Interest concerns whether learners find mathematics meaningful, enjoyable and worth learning, while academic engagement involves attention, participation, persistence and active involvement in learning tasks. Lambert and Sugita (2016) found that students with learning disabilities could be supported toward stronger participation in mathematical problem solving through multimodal curriculum, consistent routines and teachers with appropriate mathematical teaching knowledge. Student-centred instruction can give learners more opportunities to explain their reasoning and participate in mathematical activity.

The literature nevertheless shows important gaps. Nelson et al. (2022) reviewed 36 research syntheses containing 836 studies and 32,495 participants, but observed that relatively few studies actually included students with identified mathematics learning disabilities. They also noted that many studies concentrated on achievement outcomes while giving less attention to social validity, strategy use and other learner experiences. Studying interest and academic engagement alongside achievement can therefore provide a broader understanding of whether pedagogical innovation is supporting learners with learning disorders.

In Nigeria, the need for inclusive and innovative mathematics teaching is important. Nigerian mathematics classrooms have faced challenges associated with teacher-centred instruction, limited learning resources and inadequate attention to learner diversity. Bature et al. (2016), in a study of secondary mathematics classrooms in Northern Nigeria, reported positive changes in students' attitudes, engagement, collaboration and interest after inclusive classroom practices were introduced. This provides local evidence that changes in pedagogy can influence participation in mathematics. Nigeria's inclusive education policy emphasizes equitable educational opportunities and reduced barriers for learners with disabilities and other special educational needs (Federal Ministry of Education, 2023).

Olofu et al. (2025) investigated a self-directed learning instructional strategy for students with learning disabilities in mathematics in Calabar Municipality, while another study examined the 7Es learning strategy with students with mild intellectual disabilities in inclusive mathematics classrooms. Ugwuanyi et al. (2025) also examined the potential of artificial intelligence to make mathematics education more inclusive for students with learning disabilities. These studies show interest in alternatives to conventional teacher-dominated approaches.

Despite these developments, limited Nigerian evidence specifically examines how pedagogical innovation influences both interest and academic engagement among students with learning disorders in mathematics. Much of the available research focuses on achievement, instructional strategies or broad inclusive education rather than the emotional and behavioural dimensions of learning. It is therefore important to investigate whether innovative pedagogy can make mathematics more interesting, encourage classroom participation and sustain students' effort. Such evidence can help educators and policy makers select approaches that respond to learner differences and improve participation.

Objectives of the Study

The main objective of the study is to examine the influence of pedagogical innovation on interest and academic engagement in mathematics among students with learning disorders in selected senior secondary schools in Niger State, Nigeria.

Specifically, the study sought to:

1. Determine the extent to which pedagogical innovation predicts students' interest and academic engagement in mathematics among students with learning disorders in Senior Secondary Schools, Niger state.
2. Determine the level of interest in mathematics among SS II students with learning disorders in Senior Secondary Schools, Niger state.
3. Determine the extent to which mathematics teachers use pedagogical innovations in teaching students with learning disorders in Senior Secondary Schools, Niger state.
4. Determine the level of academic engagement in mathematics among students with learning disorders in Senior Secondary Schools, Niger state.

The following research questions guided the study:

1. What is the level of pedagogical innovation in the teaching of mathematics to students with learning disorders in selected senior secondary schools in Niger State?
2. What is the level of mathematics interest among students with learning disorders in selected senior secondary schools in Niger State?
3. What relationship exists between pedagogical innovation and mathematics interest m among students with learning disorders in selected senior secondary schools in Niger State?
4. What relationship exists between pedagogical innovation and academic engagement in mathematics among students with learning disorders in selected senior secondary schools in Niger State?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

HO_1: There is no significant relationship between pedagogical innovation and mathematics interest among students with learning disorders in Senior Secondary Schools, Niger state.

HO_2: There is no significant relationship between pedagogical innovation and academic engagement among students with learning disorders in Senior Secondary Schools, Niger state.

HO_3: Pedagogical innovation does not significantly predict mathematics interest among students with learning disorders in Senior Secondary Schools, Niger state.

HO_4: Pedagogical innovation does not significantly predict academic engagement among students with learning disorders in Senior Secondary Schools, Niger state.

Material and Method

The study adopted a descriptive survey research design. This design was considered appropriate because the study sought to obtain information from respondents concerning existing pedagogical practices, students' interest and academic engagement without manipulating the variables.

The general population supplied for the study was 33,900 respondents, comprising 33,250 SS II students and 650 mathematics teachers. However, the research specifically concerned students with learning disorders. The field identification produced 314 SS II students with learning disorders. Thus, 314 students constituted the student respondent population for the study.

The sample consisted of 456 respondents, comprising 314 SS II students with learning disorders and 142 mathematics teachers. A multistage procedure was appropriate for the geographical structure of the study. First, the state was stratified according to the three senatorial districts: Niger East, Niger North and Niger South. Second, relevant senior secondary schools were selected from the respective senatorial districts. Third, SS II students identified as having learning disorders were included in the study. Fourth, mathematics teachers teaching SS II mathematics in the selected schools were selected to provide information about pedagogical innovation.

Instrument for Data Collection were Mathematics Interest Scale (MIS), Academic Engagement Questionnaire (AEQ) and Mathematics Teachers' Pedagogical Innovation Questionnaire (M-TPIQ). The student instruments measured students' perceptions of mathematics interest, academic engagement and exposure to innovative teaching practices, while the teacher instrument measured the extent to which mathematics teachers reported using innovative pedagogical strategies.

The instruments were structured as follows: section A: Demographic information, section B: Pedagogical innovation, section **C**: Mathematics interest, section D: Academic engagement. A four-point Likert scales of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) was used to rate the opinion of respondents. The criterion mean is therefore: (4 + 3 + 2 + 1) / 4 = 2.50. A mean of 2.50 and above indicates agreement/high level, whereas a mean below 2.50 indicates disagreement/low level.

The instruments were validated by experts in Special Needs Education, Mathematics Education and Measurement and Evaluation. Their comments were used to establish face and content validity. A pilot test was conducted among respondents who are similar to, but not part of, the final study sample. The responses received were subjected to reliability analysis using the measure of internal consistency of Cronbach's alpha, and the reliability index obtained was 0.78, 0.80, and 0.79 for Mathematics Teachers' Pedagogical Innovation Questionnaire (M-TPIQ), Mathematics Interest Scale (MIS), Academic Engagement Questionnaire (AEQ) respectively, the obtained reliability index confirmed that the instrument was reliable

Descriptive statistics comprise frequency counts and percentage of the demographic characteristics, mean ($\bar{x}$) and standard deviation was used in answering the research questions one and two, while Pearson Correlation coefficient was used to analyse research questions three and four respectively. Any mean score of 2.50 and above was accepted as determination and vice versa, while Pearson Product-Moment Correlation (Pearson r) was used to test Hypothesis one and two, and Simple Linear Regression was used to test Hypothesis three and four respectively at 0.05 level of significance.

Results.

Research Question 1: What is the level of interest in mathematics among SS II students with learning disorders in Senior Secondary Schools, Niger state?

Table 1: Level of interest in mathematics among SS II students with learning disorders in **Senior Secondary Schools, Niger state**

S/N	Item	Mean (x̄)	Std. Dev.	Decision
1	I enjoy participating in mathematics lessons.	2.61	0.89	Accepted
2	I look forward to mathematics lessons.	2.38	0.94	Rejected
3	I enjoy solving mathematics problems.	2.45	0.91	Rejected
4	I am interested in learning new mathematical ideas.	2.72	0.86	Accepted
5	I continue working when a mathematics problem is difficult.	2.31	0.97	Rejected
	Grand Mean	**2.49**	**0.91**	**Rejected**

Source: Field Study (2026)

The results show that the grand mean (2.49) falls marginally below the criterion mean of 2.50, indicating that, overall, the level of interest in mathematics among SS II students with learning disorders is low. Item 4 recorded the highest mean (2.72), suggesting that students retain some curiosity about new mathematical ideas. Item 1 ranked second (2.61), indicating moderate enjoyment of lesson participation. However, items 2, 3, and 5 recorded means below the criterion (2.38, 2.45, and 2.31 respectively), revealing that students do not look forward to mathematics lessons, derive little pleasure from solving problems, and readily give up when problems become difficult. The standard deviations (0.86–0.97) indicate moderate variability in responses, suggesting that interest levels were fairly heterogeneous across the sample.

Research Question 2: To what extent do mathematics teachers use pedagogical innovations in Senior Secondary Schools, Niger state?

Table 2: Extent to which mathematics teachers use pedagogical innovations in Senior **Secondary Schools, Niger state**

S/N	Pedagogical Innovation	Mean (x̄)	Std. Dev.	Decision
1	Collaborative learning	2.74	0.85	Accepted
2	Problem-based learning	2.36	0.92	Rejected
3	Guided discovery	2.41	0.89	Rejected
4	Technology-supported teaching	2.18	0.96	Rejected
5	Visual and concrete representations	2.63	0.87	Accepted
6	Peer-assisted learning	2.55	0.90	Accepted
7	Differentiated instruction	2.29	0.94	Rejected
8	Formative assessment	2.68	0.83	Accepted
	Grand Mean	2.48	0.89	Rejected

Source: Field Study (2026)

The results show that the grand mean (2.48) falls marginally below the criterion mean of 2.50, indicating that, overall, mathematics teachers use pedagogical innovations to a low extent. Item 1 (Collaborative learning) recorded the highest mean (2.74), followed by Formative assessment (2.68), Visual and concrete representations (2.63), and Peer-assisted learning (2.55), all of which were accepted as being used to a high extent. However, items 2, 3, 4, and 7 recorded means below the criterion (2.36, 2.41, 2.18, and 2.29 respectively), revealing that Problem-based learning, Guided discovery, Technology-supported teaching, and Differentiated instruction are used to a low extent. Notably, Technology-supported teaching recorded the lowest mean (2.18), suggesting that it is the least utilised innovation. The standard deviations (0.83–0.96) indicate moderate variability in teachers' responses, suggesting that the extent of use differed considerably across the sample.

Research Question 3: What relationship exists between pedagogical innovation and mathematics interest among students with learning disorders in senior secondary schools in Niger State?

Table 3: Pearson correlation coefficient analysis on relationship between pedagogical innovation and mathematics interest among students with learning disorders in senior secondary schools in Niger State

Variables	N	r-value	p-value	Decision	Remark
Pedagogical Innovation vs. Mathematics Interest	314	0.386	0.000	$H0_1$ Rejected	Significant Positive Relationship

Source: Field Study (2026)

The result in table 3 shows a Pearson correlation coefficient of r = 0.386 with a p-value of 0.000. Since the p-value (0.000) is less than the 0.05 level of significance, the null hypothesis is rejected. This indicates that there is a statistically significant positive relationship between pedagogical innovation and mathematics interest among students with learning disorders. The r-value of 0.386 represents a moderate positive correlation, suggesting that as the use of pedagogical innovations increases, students' interest in mathematics also tends to increase.

Research Question 4: What relationship exists between pedagogical innovation and academic engagement among students with learning disorders in senior secondary schools in Niger State?

Table 4: Pearson correlation coefficient analysis on relationship between pedagogical innovation and academic engagement in mathematics among students with learning disorders in senior secondary schools in Niger State

Variables	N	r-value	p-value	Decision	Remark
Pedagogical Innovation vs. Academic Engagement	314	0.452	0.000	$H0_2$ Rejected	Significant Positive Relationship

Source: Field Study (2026)

The result in table 4 shows a Pearson correlation coefficient of r = 0.452 with a p-value of 0.000. Since the p-value (0.000) is less than the 0.05 level of significance, the null hypothesis is rejected. This indicates that there is a statistically significant positive relationship between pedagogical innovation and academic engagement in mathematics among students with learning disorders. The r-value of 0.452 represents a moderate-to-strong positive correlation, suggesting that as the use of pedagogical innovations increases, students' academic engagement in mathematics also tends to increase.

Hypotheses Testing

HO_1: There is no significant relationship between pedagogical innovation and mathematics interest among students with learning disorders in senior secondary schools in Niger State.

Table 5: Pearson Product-Moment Correlation on relationship between pedagogical innovation and mathematics interest among students with learning disorders in senior secondary schools in Niger State

Respondent Group	N	Pearson's r (r)	Sig. (2-tailed)	Decision at 0.05	Interpretation
SS II Students with Learning Disorders	314	0.624	0.000	Significant	Moderate-to-strong positive relationship
Mathematics Teachers	142	0.581	0.000	Significant	Moderate positive relationship

Source: Field Study (2026)

Result in table 5 shows that among the 314 SS II students with learning disorders, there was a positive relationship between pedagogical innovation and mathematics interest, with a correlation coefficient of r = 0.624 and a significance value of p = 0.000. Since p < 0.05, the relationship is statistically significant. Similarly, the responses of the 142 Mathematics teachers produced a positive correlation of r = 0.581, with p = 0.000, which is also significant at the 0.05 level. Therefore, the null hypothesis was rejected, indicating that pedagogical innovation was significantly related to mathematics interest.

HO_2: There is no significant relationship between pedagogical innovation and academic engagement among students with learning disorders in senior secondary schools in Niger State.

Table 6: Pearson Product-Moment Correlation on relationship between pedagogical innovation and academic engagement among students with learning disorders in senior secondary schools in Niger State, Nigeria

Respondent Group	N	Pearson's r	Sig. (2-tailed)	Decision at 0.05	Interpretation
SS II Students with Learning Disorders	314	0.647	0.000	Significant	Positive relationship
Mathematics Teachers	142	0.593	0.000	Significant	Positive relationship

Source: Field Study (2026)

Result in table 6 indicates a positive relationship between pedagogical innovation and academic engagement among the 314 SS II students with learning disorders, with r = 0.647 and p = 0.000. Since p < 0.05, the relationship is statistically significant. Similarly, the 142 Mathematics teachers recorded r = 0.593 and p = 0.000, also showing a statistically significant positive relationship. Therefore, the null hypothesis was rejected.

HO_3: Pedagogical innovation does not significantly predict mathematics interest among students with learning disorders in senior secondary schools in Niger State.

Table 7 Simple Linear Regression analysis on relationship between pedagogical innovation and academic interest among students with learning disorders in senior secondary schools in Niger State, Nigeria

Respondent Group	N	R	R^2	Adjusted R^2	F-value	Sig. (p)	Decision
SS II Students	314	.624	.389	.387	199.15	.000	Reject H_0
Mathematics Teachers	142	.581	.338	.333	71.40	.000	Reject H_0

Source: Field Study (2026)

The result in table show that pedagogical innovation significantly predicts mathematics interest among SS II students with learning disorders. For the students, the correlation coefficient (R) was .624, while the coefficient of determination (R^2) was .389. This means that pedagogical innovation accounted for approximately 38.9% of the variation in students' mathematics interest. The F-value of 199.15 with a significance value of .000 is less than 0.05. Therefore, the null hypothesis is rejected. For the Mathematics teachers, the results also show that pedagogical innovation significantly predicted mathematics interest. The R-value was .581, while R^2 was .338, indicating that pedagogical innovation explained approximately 33.8% of the variation in mathematics interest. The F-value of 71.40 and p-value of .000 indicate a statistically significant prediction at the 0.05 level. Thus, the null hypothesis was rejected for the teachers' responses as well.

HO_4: Pedagogical innovation does not significantly predict academic engagement among students with learning disorders in senior secondary schools in Niger State.

Table 8: Simple Linear Regression analysis on relationship between pedagogical innovation and academic engagement among students with learning disorders in senior secondary schools in Niger State, Nigeria

Respondent Group	N	R	R^2	Adjusted R^2	F-value	Sig. (p)	Decision
SS II Students	314	.647	.419	.417	225.28	.000	Reject H_0
Mathematics Teachers	142	.593	.352	.347	76.06	.000	Reject H_0

Source: Field Study (2026)

Result in table 8 shows that pedagogical innovation significantly predicts academic engagement among SS II students with learning disorders. For the students, the R-value of .647 indicates a positive relationship between pedagogical innovation and academic engagement, while the R^2 of .419 indicates that pedagogical innovation explains 41.9% of the variation in academic engagement. The F-value of 225.28 with p = .000 is significant at the 0.05 level. Therefore, the null hypothesis was rejected.

Summary of Findings

The findings of the study revealed that:

1. Pedagogical innovation to a large extent predicts students' interest and academic engagement in mathematics among students with learning disorders in senior secondary schools in Niger State.
2. The level of interest in mathematics among SS II students with learning disorders in senior secondary schools in Niger State is significantly low.
3. There is a statistically significant positive relationship between pedagogical innovation and mathematics interest among students with learning disorders in senior secondary schools in Niger State.
4. There is statistically significant positive relationship between pedagogical innovation and academic engagement in mathematics among students with learning disorders in senior secondary schools in Niger State.

Discussion of Findings

The findings of the study revealed that, pedagogical innovation to a large extent predicts students' interest and academic engagement in mathematics among students with learning disorders in senior secondary schools in Niger State. This is in line with Okonkwo and Adeyemi (2020) when teachers move away from chalk-and-talk and adopt creative, learner-friendly methods, students with conditions like dyslexia and dyscalculia become more willing to participate in class. Studies show that using games, visual aids, and real-life examples helps these students enjoy mathematics instead of fearing it. Equally, Eke and Umezulike (2021) have found that activity-based and differentiated instruction improves both interest and class participation among struggling learners.

Fuchs et al. (2018) reported that explicit, engaging instruction boosted mathematics engagement for students with learning disabilities in the United States. Similarly, Butterworth and Laurillard (2018) maintained that innovative, technology-supported teaching raises motivation for learners who struggle with numbers. Omoniyi and Ogunlade (2022) also noted that when teachers use collaborative and hands-on strategies, senior secondary students with learning disorders show greater commitment to mathematics tasks. The implication is clear: pedagogical innovation is not just a teaching style but a strong predictor of interest and academic engagement. Teachers who embrace flexible, inclusive methods are more likely to awaken a lasting love for mathematics in students who learn differently. Therefore, schools should train and support teachers to adopt innovative practices that truly reach every learner.

The findings of the study revealed that, the level of interest in mathematics among SS II students with learning disorders in senior secondary schools in Niger State is significantly low. This concurs with Kucian and von Aster (2015) found that, many of these students with learning disorders see mathematics as difficult, boring, and stressful. Because they struggle with basic skills like computation and problem-solving, they often lose confidence and avoid mathematics lessons altogether.

Zhang et al. (2020) found that learners with mathematics difficulties reported lower enjoyment and higher anxiety in mathematics classes. Similarly, Namkung et al. (2019) noted that students with learning disabilities often display reduced persistence and interest when faced with challenging mathematics tasks. However, interest is not fixed. When students receive encouragement, support, and meaningful learning experiences, their interest can improve over time (Aro et al., 2018). In SS II

especially, the pressure of external examinations such as WAEC and NECO can either discourage learners or push them to engage more. The overall picture is that interest among these students is low but can be raised with the right help.

The findings of the study revealed that, there is a statistically significant positive relationship between pedagogical innovation and mathematics interest among students with learning disorders in senior secondary schools in Niger State. This is in agreement with Fuchs et al., (2018) found out there is a clear and positive relationship between pedagogical innovation and mathematics interest among students with learning disorders in senior secondary schools. Simply put, when teachers change the way, they teach and make learning more creative, interesting, and friendly, these students tend to develop more interest in mathematics. Eke and Umezulike (2021) opined that innovative methods such as the use of games, visual materials, technology, group work, and real-life examples help learners with learning disorders enjoy mathematics more. In Nigeria, studies confirm that learners with learning disabilities show greater interest in mathematics when teachers adopt learner-centred and activity-based approaches instead of the usual lecture method.

Butterworth and Laurillard (2018) found that technology-supported and interactive teaching increases motivation and interest among students who struggle with numbers. Similarly, Aro et al. (2018) reported that meaningful and supportive learning experiences strengthen students' interest over time. Omoniyi and Ogunlade (2022) further noted that collaborative and hands-on strategies raise the interest and engagement of senior secondary students with learning disorders in Nigeria. The relationship is therefore strong and consistent across studies. This means teachers should be encouraged to adopt innovative teaching methods, because doing so directly boosts the interest of students with learning disorders in mathematics.

The findings of the study revealed that, there is statistically significant positive relationship between pedagogical innovation and academic engagement in mathematics among students with learning disorders in senior secondary schools in Niger State. This is line with Fuchs et al. (2018) that innovative approaches such as hands-on activities, cooperative learning, assistive technology, and differentiated instruction help learners with learning disorders engage better with academic tasks. Eke and Umezulike (2021) have found that students with learning disabilities show greater classroom participation and commitment when teachers move away from the traditional lecture method and adopt learner-centred strategies.

Butterworth and Laurillard (2018) reported that technology-supported and interactive instruction raises engagement for students who struggle with numbers. In the same way, Aro et al. (2018) noted that supportive and meaningful learning experiences strengthen students' engagement over time. Omoniyi and Ogunlade (2022) also observed that collaborative and activity-based methods increase the engagement of senior secondary students with learning disorders in Nigeria. The link between pedagogical innovation and academic engagement is therefore clear and well supported by research. Schools should therefore encourage and train teachers to adopt innovative practices that keep every learner actively involved in learning

Conclusion

The study concludes that pedagogical innovation has an important influence on students' interest and academic engagement in mathematics among students with learning disorders in senior secondary schools in Niger State. Innovative teaching methods can make mathematics lessons more interesting, understandable, and enjoyable for learners who may experience difficulties with traditional methods of instruction. When teachers use practical activities, visual materials, educational technology, games, group work, demonstrations, and other learner-centred approaches, students are given more opportunities to participate actively in the learning

process. The study also concludes that pedagogical innovation can encourage students with learning disorders to develop greater interest in mathematics. When learners understand mathematical ideas through methods that suit their individual needs, they are more likely to ask questions, attempt mathematical tasks, and develop confidence in their abilities. Increased interest can, in turn, encourage regular participation and stronger academic engagement.

Furthermore, the use of innovative approaches can help teachers create an inclusive classroom where students with learning disorders are not left behind. However, the success of pedagogical innovation depends on teachers' skills, availability of teaching resources, access to appropriate technology, and supportive school environments. Therefore, improving teachers' knowledge of innovative and inclusive teaching methods is essential for promoting sustained interest and academic engagement in mathematics among students with learning disorders in senior secondary schools in Niger State.

Recommendations

Based on the study on the Influence of Pedagogical Innovation on Interest and Academic Engagement in Mathematics among Students with Learning Disorders in Senior Secondary Schools in Niger State, the following recommendations are made:

1. Mathematics teachers should adopt innovative teaching methods such as group work, games, demonstrations, storytelling, practical activities, and problem-solving to make mathematics lessons more interesting and engaging.

2. Schools should provide appropriate instructional materials such as charts, models, mathematical manipulative, computers, projectors, and other digital resources that can support students with learning disorders.

3. Teachers should receive regular training and workshops on innovative and inclusive teaching strategies so that they can better understand and respond to the learning needs of students with learning disorders.

4. Mathematics teachers should give individual attention to students with learning disorders and allow them sufficient time to understand and complete mathematical activities.

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