Unizik Journal of
STM Education Volume 9 Issue 1
ISSN: 1597-8249

ACHIEVEMENT BELIEFS, CREATIVITY AND ACADEMIC MOTIVATION AS PREDICTORS OF ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN MATHEMATICS IN ANAMBRA STATE, NIGERIA

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Abstract
The study investigated achievement belief, creativity and academic motivation as predictors of academic achievement of secondary school students in mathematics in Anambra state, Nigeria. Four research questions guided the study and four were tested at 0.05 level of significance. The predictive correlation design was adopted for the study. The population of the study comprised 21,204 senior secondary two (SS2) students in Anambra State, out of which 720 students obtained using random and purposive sampling techniques were involved in the study. The instruments for data collection were validated by three experts from the Departments of Science Education and Educational Foundations (Measurement and Evaluation), Nnamdi Azikiwe University, Awka. The reliability of achievement beliefs scale, creativity inventory and academic motivation scale was established using Cronbach Alpha. For achievement beliefs scale and .73, Creativity inventory, .73 for academic motivation scale, .71. The students' achievement scores in Mathematics were obtained from the teachers' proforma whereas achievement beliefs scale creativity inventory and academic motivation scale and were administered on the students with the help of six research assistants. Data obtained were analyzed using simple and multiple linear regressions. The findings of the study among others revealed that achievement beliefs, creativity, and academic motivation jointly made significant contribution to the prediction of students' mental ability. Among the predictors, achievement beliefs enhanced students' mental ability and academic achievement in Mathematics while academic motivation showed the highest beta weight, indicating that motivated students tend to exhibit and improved academic outcome in Mathematics. Creativity also positively influenced mental ability in Mathematics. Based on the above findings. It was recommended among others that teachers and school administrators design instructional strategies that foster creativity, sustain academic motivation and strengthen positive achievement beliefs to improve students' mental ability and academic achievement. From the findings recommendations and conclusions were made.

Keywords: Mathematics, Students Achievement, Achievement beliefs, Creativity and Academic Motivation

Introduction

Mathematics is a fundamental pillar of human development and progress. It transcends simple calculations, functioning as a universal language that helps us understand and interpret the world. Across disciplines science, engineering, economics, and technology Math drives innovations that enhance quality of life. In science, it provides the frameworks and tools to model

phenomena, conduct experiments, and analyze data, fueling breakthroughs in Physics, Chemistry, and Biology. In engineering, mathematical principles underpin the design of safe, efficient structures, systems, and technologies. Beyond theory, Mathematics sparks technological progress, economic stability, and essential skills for individuals and societies (Yarin et al., 2022). Yet WAEC reports weaknesses in key concepts, signaling a need for stronger foundational teaching.

The Chief Examiners' Mathematics reports for 2019–2023 indicate a general improvement in Nigerian students' achievement in the SSCE May/June, with notable gains in Anambra State. Despite this progress and the pivotal role of Mathematics in scientific and technological advancement, there is still significant work to do to sustain and elevate achievement levels. Nationally, the percentage of candidates who passed Mathematics with credit and above in WAEC exams rose or fluctuated as follows: 52.36% (2019), 65.24% (2020), 81.70% (2021), 76.35% (2022), and 79.81% (2023). In Anambra State, the credit-plus pass rates were 70.02% (2019), 72.97% (2020), 91.23% (2021), 86% (2022), and 81.73% (2023). Although these figures reflect commendable achievement over the period, there is a need to sustain excellence, particularly in Anambra, where a large, business-oriented population requires solid Mathematical foundations to support entrepreneurial activities.

Several factors have been identified as contributors to fluctuating Mathematics performance: parental attitudes toward the subject, insufficient or inadequate teacher supply at the secondary level, and widespread math anxiety among students (Obafemi, 2021). Beyond these variables, other determinants such as achievement beliefs, creativity and academic motivation may influence students' Mathematical achievement. It remains essential to address these facets to ensure that high performance translates into consistent, real-world competence among graduates.

Achievement beliefs refer to students' convictions about their capacity to succeed, and they significantly influence performance. Nwaukwa (2019) and Yarin et. al. (2022) describe achievement beliefs as beliefs about one's ability to perform tasks successfully, shaping cognitive, motivational, affective, and selection processes. High achievement beliefs are

associated with greater commitment, perseverance, and better outcomes, while low beliefs correspond with reduced effort and underachievement. Synder and Lopez (2017) and Ofole and Okopi (2012) further argue that individuals with strong academic beliefs are more likely to engage in demanding tasks and excel, whereas those with weaker beliefs are at greater risk of underperforming. This could be the reason Bandura's (1997) self-efficacy theory, which emphasizes that individuals' beliefs in their capabilities influence their motivation, effort and resilience when faced with challenging tasks. Students with high achievement beliefs are more likely to approach difficult mathematics problems with persistence and confidence, which enhances understanding and performance. Similarly, Osadelor (2022) held that growth mindset theory supports this result, suggesting that students who believe their abilities can improve through effort and strategy tend to achieve higher academic outcomes. While Pajares and Graham (2021) who reported that students' positive achievement beliefs significantly influenced their mathematics achievement through improved goal orientation and task engagement. Likewise, Schunk and DiBenedetto (2020) found that learners with high self-beliefs set challenging goals, employ effective learning strategies and perform better academically.

Another variable under consideration in this study is creativity. Creativity fuels new creations and innovations, enabling the emergence of ideas that are both novel and valuable. Penick (2022) conceptualizes creativity as a dynamic process: from noticing problems and knowledge gaps to seeking solutions, forming hypotheses, testing ideas, and communicating results. This perspective treats creativity as a systemic capability rather than a single moment of inspiration, underscoring its essential role in student success. When learners engage creatively, they transform experiences and resources into actionable ideas, new concepts, and opportunities, while innovation adds value to these outcomes. Authors like Osadelor (2022) emphasized that creativity enhanced students' ability to think divergently, which supports problem-solving and conceptual understanding both critical for academic success. Similarly, Uduala (2021) asserted that creative students often perform better because they are able to approach learning tasks with flexibility and innovation. While Erhuvwu and Adeyemi (2019), who argued that creativity's effect on achievement is often domain-specific and may not strongly predict success in structured, rule-based subjects such as mathematics or sciences. This suggests that while

creativity may facilitate learning, its direct effect on measurable academic outcomes is limited when compared to other cognitive and motivational factors like academic motivation.

Academic motivation, defined as the drive to pursue and sustain effort toward goals, is a foundational element of effective learning. Tucker et. al. (2012) characterize academic motivation as task-oriented behavior, a lens through which performance and achievement are understood. Okonkwo, (2024) posits through Self-Determination Theory that motivation drives effort, persistence and engagement in learning tasks, ultimately leading to higher achievement. In the further study of Okonkwo, the scholar explained variance was modest, it is important in educational research contexts, where psychological factors often account for small but meaningful portions of variance in performance due to the complexity of human behaviour (Okonkwo, 2024). This suggests that while academic motivation is crucial, it likely interacts with other variables such as learning strategies, instructional methods, socio-environmental and other psychological factors like achievement beliefs, creativity to influence achievement.

From the variable discussed above one could notice the importance of these variables under study in enhancing and maintaining individual achievement. But these variables seems to be rare in senior secondary school Mathematics. Also, the scholar that worked on one of the variable in Mathematics did it outside the present scope because most studies reviewed in this study was done outside Nigeria. Additionally, these variables under study, seems to have been studied independently with individual achievement not collectively. On this premise the researchers investigated achievement beliefs, creativity and academic motivation as predictors of academic achievement of secondary school students in Mathematics in Anambra State, Nigeria.

Purpose of the Study

The purpose of this study was to determine achievement beliefs, creativity and academic motivation as predictors of academic achievement of secondary school students in Mathematics in Anambra State, Nigeria. Specifically, the study sought to determine the;

1. predictive value of achievement beliefs on academic achievement of senior secondary

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ISSN: 1597-8249

school students scores in Mathematics in Anambra State.

2. predictive value of creativity on academic achievement scores of senior secondary school students in Mathematics in Anambra State.
3. predictive value of academic motivation on academic achievement of senior secondary school students scores in Mathematics in Anambra State.
4. predictive value of achievement beliefs, creativity and academic motivation combine on achievement scores in Mathematics of secondary school students in Anambra State.

Research Questions

The following research questions guided the study:

1. What is the predictive value of achievement beliefs on academic achievement of senior secondary school students in Mathematics in Anambra State?
2. What is the predictive value of creativity on academic achievement of senior secondary school students in Mathematics in Anambra State?
3. What is the predictive value of academic motivation on academic achievement of senior secondary school students in Mathematics in Anambra State?
4. Achievement beliefs, creativity and academic motivation do not jointly predict Mathematics achievement scores of secondary school students in Anambra State.

Hypotheses

In line with the research questions, the following null hypotheses were tested at .05 level of significance:

1. Achievement beliefs is not a significant predictor of academic achievement of senior secondary school students in mathematics in Anambra State.
2. Creativity is not a significant predictor on academic achievement of senior secondary school students in mathematics in Anambra State.
3. Academic motivation is not a significant predictor of academic achievement of senior secondary school students in mathematics in Anambra State.
4. Achievement beliefs, creativity and academic motivation are not significant predictors

of achievement in mathematics of secondary school students in Anambra State.

Methodology

This study adopted predictive correlation research design. The area of study was Anambra State, Nigeria. The population of senior secondary two SS2 Mathematics students is 21,204 students of Mathematics in the 263 public secondary schools in the six education zones in Anambra State. The sample of the students used in the study was 720 students which was drawn using a three-stage random sampling process. First, names of the state's education zones were written on folded papers, then the first three were drawn with replacement to ensure equal representation of zones in the sample. In the second stage, two local government areas (LGAs) were selected from each education zone using simple random sampling: again, names were written on folded papers, with the first three drawn with replacement to give each LGA an equal chance of selection. In the third stage, eight public secondary schools were chosen from each selected LGA by writing each school's name on folded papers and drawing the first eight with replacement, ensuring each school had an equal probability of inclusion. In total, 24 public secondary schools were sampled. From these, 30 Senior Secondary Two (SS2) students in the sampled schools participated in the study. The approach emphasizes equal-probability sampling at each stage to enhance representativeness.

Instrument

Four instruments namely: Achievement Belief scale Creativity Inventory, Academic Motivation, and Student Mathematics achievement scores were used for data collection. Achievement Belief scale developed by Frysten, Nurmi and Lyytinen (2006) was used to measure students' achievement belief. The inventory contained 31 items used a 1–5 scale; two factors helplessness (8 items) and mastery orientation (6 items) yield total 14–56; higher scores show stronger achievement beliefs.

Creativity Inventory developed by Epstein et. al. (2024) was used to measure students' creativity. It measured students' creativity with 20 items on a 5-point scale. Factor analysis yielded four dimensions fluency, flexibility, originality, elaboration each with five items. Total scores range 20–100; higher scores indicate greater creativity.

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Academic Motivation Scale by Ogundokun and Odofin (2017) was used. The academic motivation scale with 16 items across three factors Intrinsic (0.72), Amotivation (0.70), Extrinsic (0.73) uses a 5-point Likert scale (16–80 range); higher scores indicate greater motivation. While Student Mathematics achievement scores were collected from the cumulative exam folders via the Academic Proforma.

The three instruments of Achievement Belief, Creativity Inventory and Academic Motivation were validated by three experts, two from Department of Science Education and one from Department of Educational Foundation all from Nnamdi Azikiwe University, Awka. While Student Academic Achievement was a standard instrument. Most times need no validation. Achievement Belief scale, Creativity Inventory and Academic Motivation generated .73, .73 and .71 consistency values after trial testing the instruments in another area that is not the place of the study using Cronbach alpha. While General mental ability test generated .72 using KR 20

Data generated from the study was analysed using r and R^2 to answer research questions while regression ANOVA was used to test the hypotheses. In interpreting the correlation coefficients, the rule posited by Nworgu (2015) about the interpretation was adopted for the interpretation of the study using the range of scores as thus: ±0.80 to ± 1.00 was assigned to high positive or negative predictive value, ±0.31 to ± 0.79 was assigned to moderate positive or negative predictive value, ±0.00 to ± 0.30 was assigned to low positive or negative predictive value. In interpreting the null hypotheses, the decision rule is that when P-value is less than or equal to 0.05 ($P \leq 0.05$) the null hypotheses was rejected. On the other hand, when P-value is greater than the alpha level 0.05 ($P \geq 0.05$), the null hypotheses was not rejected.

Results

Research Question 1: What is the predictive value of achievement beliefs on academic achievement of senior secondary school students in Mathematics in Anambra State?

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Table 1: Regression analysis of the Prediction of Students' Achievement score in Mathematics by Achievement Beliefs

Model	r	R^2	Adjusted R^2	Unstandardized coefficients (B)	Std. Error
Constant Achievement Belief	.310[a]	.096	.095	13.922 .580	5.027

a. Predictors: (Constant), Achievement Beliefs

Table 1 shows that the predictive value of achievement beliefs on academic achievement of senior secondary school students in Mathematics is 0.310 indicating a moderate positive value. The table also show that R-Square value of .310 indicates that 9.6 percent of the variance in academic achievement scores in Mathematics is predicted by achievement beliefs. The unstandardized coefficient *B* of .580 shows that a unit rise in achievement beliefs increases academic achievement score in Mathematics by .580.

Hypothesis 2: Achievement beliefs is not a significant predictor of academic achievement of senior secondary school students in Mathematics in Anambra State.

Table 2: ANOVA Regression analysis of the Prediction of Achievement score by Students' Achievement beliefs

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1872.205	1	1872.205	74.089	.000[b]
	Residual	17638.229	698	25.270		
	Total	19510.434	699			

a. Dependent Variable: ASM

b. Predictors: (Constant), Achievement Beliefs

Table 2 shows that achievement beliefs is a significant predictor of achievement scores in Mathematics, $F(1, 698) = 74.089$, $p < 0.05$. The null hypothesis is therefore rejected meaning that achievement beliefs is a significant predictor of students' achievement scores in Mathematics. Since achievement is a significant predictor of achievement scores in Mathematics, the regression model ($Y = a + bX$) for the prediction of achievement score in Mathematics as derived from Table 20, where constant = 13.922 and b value = .580 is: ASM = 13.922 + .580 (AB) Where, ASM = Achievement score in Mathematics and AB = Achievement Beliefs

Research Question 2: What is the predictive value of creativity on academic achievement of senior secondary school students in Mathematics in Anambra State?

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Table 3: Regression analysis of the Prediction of Students' Achievement score in Mathematics by Creativity

Model	R	R^2	Adjusted R^2	Unstandardized coefficients (B)	Std. Error
Constant				23.950	
Creativity	.172 [a]	.030	.028	.311	5.208

a. Predictors: (Constant), Creativity

Table 2 shows that the predictive value of creativity on academic achievement of senior secondary school students in Mathematics is 0.172 indicating a low positive predictive value. The table also shows R-Square value of 0.030 which indicates that 3 percent of the variance in Achievement score in Mathematics is predicted by creativity. The unstandardized coefficient *B* of 0.311 shows that a unit rise in creativity increases academic achievement score in Mathematics by 0.311.

Hypothesis 2: Creativity is not a significant predictor on academic achievement of senior secondary school students in Mathematics in Anambra State.

Table 4: ANOVA Regression analysis of the Prediction of Achievement scores by Students' Creativity

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	579.291	1	579.291	21.359	.000[b]
	Residual	18931.143	698	27.122		
	Total	19570.434	699			

a. Dependent Variable: Achievement score in Mathematics
b. Predictors: (Constant), Creativity

Table 2 shows that creativity is a significant predictor of achievement scores in Mathematics, $F(1, 698) = 21.359$, $p < 0.05$. The null hypothesis is therefore rejected meaning that creativity is a significant predictor of students' achievement scores in Mathematics. Since creativity is a significant predictor of achievement scores in Mathematics, the regression model ($Y = a + bX$) for the prediction of achievement score in Mathematics as derived from Table 5, where constant = 23.950 and b value = 0.311 is: ASM = 23.950 + 0.311(ACS) Where, ASB = Achievement score in Mathematics and C = Creativity.

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Research Question 3: What is the predictive value of academic motivation on academic achievement of senior secondary school students in Mathematics in Anambra State?

Table 5: Regression analysis of the Prediction of Students' Achievement score in Mathematics by academic motivation

Model	R	R^2	Adjusted R^2	Unstandardized coefficients (B)	Std. Error
Constant				26.964	
Academic Motivation	.223 [a]	.050	.048	.503	5.154

a. Predictors: (Constant), academic motivation

Table 5 shows that the predictive value of academic motivation on academic achievement of senior secondary school students in Mathematics is 0.223 indicating low positive predictive value. Also from table 13, R-Square value of .050 indicates that five percent of the variance in Academic Achievement scores is predicted by academic motivation. The unstandardized coefficient *B* of .503 shows that a unit rise in academic motivation increases academic achievement score in Mathematics by .503.

Hypothesis 3: Academic motivation is not a significant predictor of academic achievement of senior secondary school students in Mathematics in Anambra State.

Table 6: ANOVA Regression analysis of the Prediction of of Achievement score by Students' Academic Motivation

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	966.803	1	966.803	36.391	.000[b]
	Residual	18543.632	698	26.567		
	Total	19510.434	699			

a. Dependent Variable: Achievement Scores
b. Predictors: (Constant), academic motivation

Table 6 shows that academic motivation is a significant predictor of achievement scores in Mathematics, $F(2, 698) = 36.391$, $p < 0.05$. The null hypothesis was therefore rejected meaning that academic motivation is a significant predictor of students' achievement scores in Mathematics. Since academic motivation is a significant predictor of achievement scores in Mathematics, the regression model ($Y = a + bX$) for the prediction of achievement score in Mathematics as derived from Table 13, where constant = 26.964 and b value = .503 is: ASM =

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26.964 + .503 (AM) Where, ASM = Achievement score in Mathematics and AM = Academic Motivation

Research Question 4: Achievement beliefs, creativity and academic motivation do not jointly predict Mathematics achievement scores of secondary school students in Anambra State.

Table 7: Joint Prediction of Students' score in Mathematics by achievement beliefs, creativity and academic motivation in Anambra State

Model		Unstandardized Coefficients		Stand. Coefficients		
		B	Std. Error	Beta	t	Sig.
R=.361	(Constant)	17.870	1.775		10.066	.000
R^2 =.131	Motivation	.446	.101	.198	4.412	.000
Adjust R^2	Creativity	.175	.038	.183	4.584	.000
=.127	Belief	.437	.075	.233	5.801	.000
Std. Error=4.937						

a. Dependent Variable: ASM
Predictors: (Constant), creativity, academic motivation, achievement beliefs

Table 7 shows that the R-Square value of .131 indicates that 13.1 percent of the variance in achievement scores in Mathematics is predicted by creativity, academic motivation, achievement belief combined. The unstandardized coefficient *B* of .175 shows that a unit rise in creativity increases achievement scores in Mathematics by .175. Similarly, when academic motivation increases by a unit, achievement scores in mathematics increases by .446. While achievement beliefs increases by a unit, achievement scores in mathematics increases by .437. Thus, the order of relative contribution to achievement scores in Mathematics is from the highest to lowest by each variable is; academic motivation, followed by achievement beliefs and creativity.

Hypothesis 4: Achievement beliefs, creativity and academic motivation are not significant predictors of achievement in Mathematics of secondary school students in Anambra State.

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Table 8: ANOVA Regression analysis of the Prediction of Achievement score by Students' achievement beliefs, creativity and academic motivation

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2547.246	3	849.082	34.838	.000[b]
	Residual	16963.189	696	24.372		
	Total	19510.434	699			

a. Dependent Variable: ASM

b. Predictors: (Constant), Belief, creativity, motivation

In order to test hypothesis 4, multiple regression analysis was used. The result in Table 8 shows that the obtained F-value is F(3, 696) = 34.838, with an associated probability value of .000. This probability value of .000 is compared with 0.05 and it is found to be significant. The null hypothesis is therefore rejected and inference drawn is that, combined creativity, academic motivation, and achievement beliefs significantly predict achievement in mathematics of secondary school students in Anambra State. However, since the joint prediction of all the independent variables on achievement in mathematics is significant, the regression model (Y= a + bX1 +cX2 + dX3) for the prediction of mental ability scores can be derived from Table 25 is: ASM = 17.870 + .175 (C) + .446 (AM) + .437 (AB). Where, ASM = Achievement scores in Mathematics, C= creativity, AM= Academic Motivation and AB = Achievement Beliefs.

Discussion

The discussion of the findings was done in line with the research questions and hypotheses that guided the study:

Predictive value of achievement beliefs on academic achievement of senior secondary school students in Mathematics

The study found that achievement beliefs significantly predicted students' achievement scores in Mathematics. The model yielded a correlation coefficient of R = .310, indicating a positive relationship between students' achievement beliefs and their mathematics achievement. The coefficient of determination (R^2 = .096) implies that achievement beliefs account for 9.6% of the total variance in students' achievement scores. Although this percentage may appear

modest, it is statistically meaningful, suggesting that students' beliefs about their ability to succeed in mathematics play an important role in their academic performance.

The unstandardized coefficient further indicated that a one-unit increase in students' achievement beliefs is associated with an increase in mathematics achievement scores. The positive direction of the coefficient suggests that students who hold strong, positive achievement beliefs such as confidence in their mathematical ability, persistence and self-efficacy tend to perform better in mathematics compared to those with weaker or negative beliefs. This finding aligns with Bandura's (1997) self-efficacy theory, which emphasizes that individuals' beliefs in their capabilities influence their motivation, effort and resilience when faced with challenging tasks. Students with high achievement beliefs are more likely to approach difficult mathematics problems with persistence and confidence, which enhances understanding and performance. Similarly, Osadelor (202) held that growth mindset theory supports this result, suggesting that students who believe their abilities can improve through effort and strategy tend to achieve higher academic outcomes. The findings corroborated the findings of Pajares and Graham (2021) who reported that students' positive achievement beliefs significantly influenced their mathematics achievement through improved goal orientation and task engagement. Likewise, Schunk and DiBenedetto (2020) found that learners with high self-beliefs set challenging goals, employ effective learning strategies and perform better academically.

Predictive value of creativity on academic achievement of senior secondary school students in Mathematics

The study found that creativity is a significant predictor of students' achievement scores. The multiple correlation coefficient shows a positive relationship between creativity and achievement, though relatively weak in magnitude. The coefficient of determination indicated that creativity accounted for approximately 3% of the variance in students' achievement scores, suggesting that while creativity contributed to performance, other factors may also strongly influence academic outcomes. The positive regression coefficient suggests that higher levels of creativity among students are associated with higher achievement scores. This means that students who demonstrate creative thinking such as the ability to generate diverse ideas, apply novel approaches to problem-solving and think beyond conventional boundaries tend to perform

slightly better in academic tasks. However, the small value of R^2 indicated that while creativity contributed positively, it is not the major determinant of achievement. Other variables such as motivation, study habits, intelligence and environmental factors may have a stronger impact on students' performance.

The finding that creativity positively influenced academic achievement aligns with the results of several previous studies. Osadelor (2022) emphasized that creativity enhanced students' ability to think divergently, which supports problem-solving and conceptual understanding both critical for academic success. Similarly, Uduala (2021) asserted that creative students often perform better because they are able to approach learning tasks with flexibility and innovation.

However, the weak predictive power of creativity in this study aligns with findings by Erhuvwu and Adeyemi (2019), who argued that creativity's effect on achievement is often domain-specific and may not strongly predict success in structured, rule-based subjects such as mathematics or sciences. This suggests that while creativity may facilitate learning, its direct effect on measurable academic outcomes is limited when compared to other cognitive and motivational factors.

Predictive value of academic motivation on academic achievement of senior secondary school students in Mathematics

The study findings clearly showed that academic motivation was a significant and positive predictor of achievement scores. This means that students who possess higher levels of motivation whether intrinsic or extrinsic are more likely to achieve better academic outcomes than those who are less motivated. The result supports the Self-Determination Theory (Okonkwo, 2024), which posits that motivation drives effort, persistence and engagement in learning tasks, ultimately leading to higher achievement.

Although the explained variance was modest, it is important in educational research contexts, where psychological factors often account for small but meaningful portions of variance in performance due to the complexity of human behaviour (Okonkwo, 2024). This suggests that while academic motivation is crucial, it likely interacts with other variables such as learning

strategies, instructional methods and socio-environmental factors to influence achievement. The significance of academic motivation further reinforces the conclusion that the regression model provides a statistically reliable prediction of academic achievement from motivation. The small standard error also indicates consistency in the estimated coefficients.

Conclusions

The study finds that achievement beliefs, creativity, and academic motivation are meaningful predictors of mathematics achievement among senior secondary students. Students who exhibit strong creative thinking, high motivation for learning, and positive beliefs about their abilities tend to achieve more academically. This suggests that intellectual ability alone does not determine success; psychological and affective factors also play a crucial role. Consequently, efforts to boost creativity, motivation, and self-belief are essential for improving mathematical understanding and overall academic performance.

Recommendations

1. Creative Mathematics instruction enhances engagement through interactive activities that transform learners from passive to active participants.
2. Schools and policymakers should implement motivational programs such as reward systems, academic clubs, and peer mentoring to sustain interest in Mathematics.
3. Guidance counselors should offer workshops to build positive achievement beliefs, resilience, and self-efficacy; parents should reinforce effort and provide emotional support and academic backing at home.

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