
**RELATIONSHIP AMONG SENIOR SECONDARY SCHOOL
STUDENTS' ACADEMIC SELF-EFFICACY BELIEF, TASK
PERSISTENCE AND ACADEMIC ACHIEVEMENT IN
MATHEMATICS IN BENUE STATE, NIGERIA.**

***Ameh Friday Attai, Mamman Hanatu Ajanigo, Dr, terna Alexandra kyarve**

Department of guidance and counseling, Joseph Sarwuan Tarka University Makurdi.

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***Corresponding Author: Ameh Friday Attai**

Department of guidance and counseling, Joseph Sarwuan Tarka University Makurdi.

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ABSTRACT

The study investigated the relationship among senior secondary school students' academic self-efficacy belief, task persistence and achievement in Mathematics in Benue State. Two research questions and two null hypotheses directed the study respectively. A correlation survey research design was adapted for the study. 252 secondary schools in Benue state and student sample size of 1286 participated in the study. Questionnaires titled academic Self-efficacy Belief Rating scale for students (SEBRs) and Task Persistence Rating Scale for students (TAPRS) and an Achievement test instruments titled Students Achievement Test in Mathematics (SATM) were used to determine secondary school students' academic self-efficacy belief, task persistence and achievement in Mathematics. Pearson Product Moment Correlation Coefficient was used to answer research questions while the hypotheses were tested using Multiple Regression Analysis at 0.05 level of significance. The results indicated that there was a high positive relationship among academic self-efficacy belief, task persistence and students' academic achievement in Mathematics. Also, the study reveals a significant relationship between academic self-efficacy belief and secondary school students' Task persistence in Mathematics, academic self-efficacy belief and task persistence of secondary school students in Mathematics and among all variable of the study. The study concluded that there is high positive relationship among senior secondary school students' academic self- efficacy belief, task persistence and achievement in Mathematics in Benue state. Recommendations made were that: teachers and counsellors should assess the existing levels of students' self-efficacy belief in Mathematics at classroom level so that appropriate

measures can be taken to help raise students' self-efficacy belief levels. The following suggestions were made for further studies that a similar study should be carried out in other parts of the country, other subject areas and that similar study should be conducted using junior secondary school students.

KEYWORDS: Academic self-efficacy, Task persistence, Achievement, Location, Gender.

INTRODUCTION

Background of the Study

The yearning of parents that their children ascends the ladder of academic achievement at a high level as possible have put a lot of pressure on the educational system, students, teachers and schools. Because of this, the educational system is becoming more and more competitive resulting to achievement becoming an essential factor for personal progress in the society. Students' achievement in Mathematics is one of the top priorities for schools since Mathematics is a subject that is recognized as the mother of all learning from which other subjects derive their concepts in both arts and sciences at the secondary school levels.

Agwagah in Ameh (2017) revealed that Mathematics is the pivot on which other sciences revolve and serves as a means of sharpening man's reasoning ability and developing his personality. No wonder a credit pass in Mathematics in the Senior Secondary Certificate Examination (SSCE) is a prerequisite for admission into higher institutions in Nigeria. Notwithstanding, the role of Mathematics as the pivot on which other subjects revolve and its being a prerequisite for admission into higher institutions in Nigeria, most people look at Mathematics or teachers of Mathematics as monster. Many questions come to mind when the issue of Mathematics is raised. This may have some impact in one way or the other on students' academic achievement in Mathematics. As the achievement of Mathematics students can seriously be hampered by their being worried and insecure toward mathematics (Bulala, 2023).

Academic achievement here refers to a student's academic performance in Mathematics. Alves (2022) viewed academic achievement as a student's academic performance. Students' achievement in Mathematics is how well a student does in accomplishing mathematical tasks and studies; a process where students' successes in Mathematics are measured to determine how they stand in relation to others (Adeyemi 2013)

Students' achievement in Mathematics at the secondary school has been persistently poor (Ugwu, 2013). Ugwu (2013) revealed that the achievement of Nigerian students in secondary

school Mathematics is far below average and the problem is persisting. The achievement of students in Mathematics may be connected to many factors such as self-efficacy belief, task persistence among others. Individuals' beliefs (students' self-efficacy belief) about their ability in Mathematics and their persistence when faced with obstacles in pursuit of desired achievement in Mathematics could be some of the reasons for poor academic achievement (Abubakar & Eze (2010)

The construct self-efficacy belief signifies a person's beliefs, concerning ones' ability to successfully perform a given task or behaviour. Self-efficacy belief is the belief about ability to function and accomplish specific tasks without assistance from others, to make decisions and believe in them, in others words, it is the confidence to achieve goals through personal efforts, persistence in the face of challenges and coming out with original solutions (Bezuidenhout, 2011). Self-efficacy belief is what an individual believes he or she can accomplish using his or her skills under certain circumstances (Yang & Lu, 2007). Furthermore, to these authors, self-efficacy belief is a major determinant of the choices that individuals make, the effort they expend, the perseverance they exert in the face of difficulties, which in turn may determine their achievement. Self-efficacy belief is defined as the conviction that one can successfully execute the behaviour required to produce an outcome. Academic self-efficacy belief refers to an individual's belief (conviction) that he/she can successfully achieve a designated level on an academic task or attain a specific academic goal. It is a key factor to learners' achievement because self-efficacy belief may encourages learners' persistence in whatever they desire.

Task persistence is defined as continuing with a task despite obstacles or difficulty. Task persistence is of particular interest and importance because persistence has been predictive of many academic and employment outcomes, including educational attainment, income, and occupational level (Andersson & Bergman, 2011). The relationship between task persistence and academic achievement has been repeatedly revealed (Boe, May, & Boruch, 2002; McClelland, Acock, Piccinin, Rhea, & Stallings, 2012).

Statement of the Problem

Mathematics is required by Nations as a tool to develop scientifically and technologically to meet with the global trend. There is no development in the field of Sciences, Technology, Engineering and Economics among others without a relative development in Mathematics. It is on this note that Nigerian educational system in the National Policy on Education NPE (2004) made Mathematics compulsory at both primary and secondary schools levels. A credit

pass in Mathematics at the senior secondary certificate examination (SSCE) is a prerequisite for admission into higher institutions in Nigeria. Despite the position of National Policy on Education, students' achievement in Mathematics is still revealed as not encouraging.

This persisting students' poor achievement in Mathematics may be as a result of issues like method of presentation of Mathematics by teachers, seniors, friends among others which most times give rise to misconception, fear, phobia and "I can't do it syndrome". This syndrome has exerted a great impact on students' self-efficacy belief and has bedeviled students' zeal to continue remaining with a Mathematics task notwithstanding weaknesses met in performing such task. To worsen this situation, other factors like location, gender among others also has roles to play in students' misconception, fear, phobia and I can't do it syndrome in Mathematics. Students in rural areas are not privileged as their counterpart in urban areas where better quality of education, availability of the information from various sources such as mass media, electronic media, families and peers groups are available which may subdue this misconception, fear, phobia and I can't do it syndrome in Mathematics that has affected students self-efficacy belief, persistence and achievement in Mathematics. Also, since Mathematics and other related science subject have been considered men domain, female students have given up in their belief that they can pass it.

This makes it paramount to continually seek for strategies to assume the ideal situation that students should devote time to study, have confident in themselves, belief in what they are doing to achieve academically particularly in Mathematics. Hence the problem of this study is stated as a question thus to what extent is the relationship among senior secondary school students' academic self-efficacy belief, task persistence and achievement in Mathematics in Benue State?

Objectives of the Study

The main purpose of this study is to investigate the relationship among senior secondary school students' academic self-efficacy belief, task persistence and achievement in Mathematics. Specifically, the study seeks to determine the:

1. Relationship between academic self-efficacy belief and task persistence;
2. Relationship among academic self-efficacy belief, task persistence and senior secondary school students' achievement in Mathematics;

Research Questions

The following research questions were posed to guide the study.

1. To what extent does academic self-efficacy belief relate to task persistence among senior secondary school students in Benue State?
2. To what extent is the relationship among academic self-efficacy belief, task persistence and senior secondary school students' achievement in Mathematics in Benue State?

Hypotheses

The following null hypotheses were formulated to direct the study and will be tested at 0.05 level of significance.

1. There is no significant relationship between academic self-efficacy belief and task persistence of senior secondary school students in Benue State;
2. There is no significant relationship among academic self-efficacy belief, task persistence and senior secondary school students' achievement in Mathematics in Benue State.

Method

The study adopted correlation survey research design. 18,855 Senior Secondary Two (SS 2) students from 681 Secondary Schools in Benue State made up the population, while 252 schools were sampled using multi-stage sampling techniques. Sample size of 1286 senior secondary two (SS 2) students were drawn using Taro Yamen formulae. Three Instruments were used for data collection for this study. Two sets of questionnaire titled "Self -Efficacy Belief Rating Scale for Students (SEBRS) and Task Persistence Rating Scale for Students (TAPRS)" and an Achievement test instrument titled "Students Achievement Test in Mathematics (SATM)". The reliability coefficients obtained for the research instruments are 0.85 for the Self-Efficacy Belief Rating Scale for Students (SEBRS) and 0.87 for the Task Persistence Rating Scale for Students (TAPRS) and 0.81 for the Students Achievement Test in Mathematics (SATM). Research questions were answered using Pearson Product Moment Correlation Coefficient while Multiple Regression Analysis was used to test the two null hypotheses at 0.05 level of significance.

RESULTS

Table 1. Answer to research question 1

Table 1: Pearson’s Product Moment Correlation Analysis of Academic Self-efficacy Belief and Task Persistence.

Variable	\bar{x}	SD	N	r	R ²
Academic Self Efficacy	2.67	0.19	1,286	0.78	0.61
Task Persistence	2.65	0.22			

\bar{x} = Mean, SD = Standard Deviation, N = Number of students,
R² = coefficient of determination

Table 2: Answer to research question 2

Table 2: Pearson’s Product Moment Correlation Analysis of Academic Self-efficacy Belief, Task Persistence and Academic Achievement.

Variable	\bar{x}	SD	N	r	R ²
Academic Self-Efficacy	2.67	0.19	1286	0.53	0.27
Task Persistence	2.65	0.22			
Academic Achievement	31.68	0.38			

Predictors: (self-efficacy belief and task persistence)

Table 3: Table 3 was used to test hypotheses 1

Table 3: Regression Analysis of Self-efficacy Belief and Task Persistence.

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	39.930	1	39.930	2061.472	0.00
1 Residual	24.987	1284	0.019		
Total	64.917	1285			

α = 0.05, Df = Degree of freedom, F= F-ratio

Table 4: Table 4 was used to test hypothesis 2

Table 4: Regression Analysis of Academic Self-efficacy Belief, Task Persistence and Secondary School Students’ Achievement in Mathematics.

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	53.196	2	26.598	246.695	0.00
1 Residual	138.976	1283	0.108		
Total	192.172	1285			

α = 0.05, Df = Degree of freedom, F= F-ratio

FINDINGS:

Result in Table 1 shows the relationship between students’ academic self-efficacy belief and task persistence. Results show that the mean and standard deviation of scores of academic

self-efficacy belief are 2.67 and 0.19 respectively while students' task persistence scores have the mean and standard deviation of 2.65 and 0.22 respectively. Also, the correlation between academic self-efficacy belief and task persistence was 0.78. The coefficient of determination (0.61) also known as the predictive value means that 61% of academic self-efficacy belief accounted for task persistence. The findings indicated that there is a high positive relationship between academic self-efficacy belief and task persistence.

The test of hypothesis 1 affirmed this in Table 3. Table 3 shows that an F-ratio of 2061.472 with a degree of freedom of 1285 and an associated exact probability value of 0.00 were obtained. The probability value of 0.00 is less than 0.05 level of significance set as bench mark for testing the hypothesis ($P < 0.05$) and it was found to be significant. This implies that there is a significant relationship between academic self-efficacy belief and task persistence of secondary school students in Benue State. The finding is in agreement with the view of Murray (2013) who ascertained that the more self-efficacy belief persons possess the more likely they are to persist (task persistence) at an activity even in the face of adversity.

Table 2 shows the relationship among students' academic self-efficacy belief, task persistence and academic achievement in Mathematics. The result shows that the mean and standard deviation scores for academic self-efficacy belief, task persistence and academic achievement are 2.67 and 0.19; 2.65 and 0.22; and 31.68 and 0.38 respectively. Also, the correlation among academic self-efficacy belief, task persistence and academic achievement was 0.53. The coefficient of determination associated with the correlation coefficient of 0.53 is 0.27. The coefficient of determination of 0.27 indicates that 27% of students' academic achievement in Mathematics is jointly predicted by or is attributed to academic self-efficacy belief and task persistence. This is an indication that 73% of variation in students' academic achievement in Mathematics is attributed to other factors other than academic self-efficacy belief and task persistence. The findings indicate that there is a high positive relationship among academic self-efficacy belief, task persistence and academic achievement in Mathematics.

The test of hypothesis two affirmed this in Table 4. Table 4 shows that that an F ratio of 246.695 with a degree of freedom of 1285 and an associated exact probability value of 0.00 were obtained. The probability value of 0.00 is less than 0.05 level of significance set as bench mark for testing the hypothesis ($P < 0.05$) and it was found to be significant. This implies that there is a significant relationship among academic self-efficacy belief, task persistence and secondary school students' achievement in Mathematics in Benue State. This result agreed with the findings of Zinta (2006) who found that the students self-efficacy

belief, task persistence enhance them to significantly achieve in their academic work.

CONCLUSION:

Based on the findings of this study, it was concluded that there is a high positive relationship among academic self-efficacy belief, task persistence and students' academic achievement in Mathematics. Finally, the study reveals a significant relationship between; academic self-efficacy belief and secondary school students' achievement in Mathematics, task persistence and secondary school students' achievement in Mathematics, academic self-efficacy belief and task persistence of secondary school students in Mathematics and among all variables of the study.

Recommendation

Based on the findings of this study the following recommendations were made:

Teachers and counsellors should assess the existing levels of students' self-efficacy belief, task persistence in Mathematics at classroom level so that appropriate measures can be taken to help raise students' self-efficacy belief levels

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