



Perception of Psychosocial Factors of Classroom Environment and Academic Achievement in Mathematics among Students in Jalingo, Nigeria: Implications for Counselling

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Abstract

The study examined the Relationship between Psychosocial Factors of Classroom Environment and Academic Achievement in Mathematics among Secondary School Students in Jalingo Education Zone of Taraba State Nigeria. To guide the study, the researchers formulated one research question and one hypothesis. A descriptive survey research design was adopted. The target population of 4,144 JSS II students from fifty (50) public secondary schools in the Jalingo Education Zone was used. A sample of 436 JSS II students was selected using a simple random sampling technique (hat and draw) without replacement. Two instruments were used to collect data: Mathematics classroom environment scale Questionnaire (MCESQ) and first-term Junior secondary class two (JSS II) Mathematics Internal Examination Results of 2019/2020 academic session. Cronbach Alpha coefficient of the split-half method was used to ascertain the reliability of the instrument. ($r = 0.80$ and 0.86 , $p < .001$). A two-tailed test and ANOVA were used to answer the research question and hypothesis, respectively. The result indicated there was a relationship between students' perception of the psychosocial classroom environment and academic achievement in mathematics. Counselling implications is that psychosocial factors of the classroom environment of mathematics class should be implemented in terms of high-quality teachers, friendly interaction in class and meaningful grading of learning materials.

Keywords: Academic Achievement, Classroom Environment, Mathematics, Perception, Psychosocial Factors, Relationship and Students'.

Introduction

In learning environments, students' psychological satisfaction and motivation have received attention from educators for years. The pressure that school administrators and educators experienced to achieve higher achievement in standardized tests has led schools to be more concerned about identifying and applying cognitive strategies that improve students' cognitive capacities and academic success (Agüero & Beleche, 2013). Therefore, schools

have often overlooked the necessity of satisfying students' psychosocial needs. Research shows that the contextual characteristics and, especially, the psychosocial and motivational climate of classrooms influence students' learning behaviours, goal orientations, self-beliefs, attributions, strategy use, academic and social motivation, emotional functioning and academic achievement in various academic fields throughout different developmental levels (Gönül 2015). More attention, therefore, needs to be paid to psychosocial, emotional, and motivational

factors in learning environments. Researches have shown that students' behaviour, especially concerning the sciences, generally and mathematics in particular, is greatly influenced by certain psychological or non-cognitive factors.

According to Oyenuga and Lopez (2012), the psychosocial factor is referred to the psychological and social factors that may or mar the study of a subject or course. The school, home background, and student interest stand out as strong variables in explaining variation in the teaching and learning of Mathematics. Again, it could not be established that differences among school related arrangements bear any direct simple universal relationship to teaching and learning of Mathematics performance especially when the home and interest factors are held constant. Consequently, it should be noted that most students get a lot out of school, the highest variations in the teaching and learning of Mathematics is observed around that basic levels may be attributed more to home and interest than to school differences. Cultural and psychosocial learning theories have not been used to explain the factors affecting the performance of students in the teaching and learning of Mathematics. This is because no literature has been established in this area of study. However, in order to promote effective teaching and learning of Mathematics, the psychosocial factors of classroom environment (students' involvement, student-student interaction, teacher- student interaction, satisfaction, task orientation, competition, order and organization, teacher control and innovation) are pertinent factors that must be considered. According Oyenuga as cited in Oyenuga and Lopez (2012) Poor teaching and learning in secondary schools attributed is to inadequate material and infrastructural resources which are below expectation with some schools having few classroom accommodations without windows, poor spacing and crowded seats. Okonkwo (2010) attributed the students' poor academic

performance to indiscipline in schools and low level of educational standard. From the above, it is pertinent to say that the school is a psychosocial factor that may affect the teaching and learning of Mathematics in Nigeria secondary schools. Peter (2014), argued that Students' perception of their physics classroom psychosocial environment to some extent influenced their achievement in physics, that there exist a medium direct positive relationship between students' perception of psychosocial factors of classroom environment and their academic achievement and that there was a significant relationship between students' perception of their psychosocial factors of classroom environment and academic achievement in mathematics. factor in the teaching and learning which can also make or mar students' performance, According to Afari (2013), students spend up to 20,000 hours at educational institutions by the time they finish university therefore, students' observations of and reactions to, their experiences in school – specifically their learning environments – are of significance.

The term learning environment refers to the social, physical, psychological and pedagogical context in which learning occurs and which affects student achievement and attitudes (Fraser 2012). According to the notion of a learning environment existed as early as 1936 when Lewin proposed that both the environment and its interaction with personal characteristics of the individual are potent determinants of human behaviour. To this end, he developed the formula $B = f(P, E)$ in which behaviour (B) is a result of the interaction between the person (P) and environmental factors (E). Murray as cited in Afari (2013) identified that Lewin's formula did not take into account the personal needs of an individual. To address this shortcoming he proposed a needs-press model in which an individual's behaviour is affected internally by characteristics of personality (needs) and

externally by the environment itself (press). Results of studies conducted over the past 40 years have provided convincing evidence that the quality of the classroom environment in schools is a significant determinant of student learning (Fraser 2012). That is, students are likely to learn better when they perceive their classroom environment positively (Aldridge, 2012). Many of these studies have controlled for background variables with students' perceptions of the classroom environment accounting for appreciable amounts of variance in learning outcomes, often beyond that attributable to background student characteristics (Dorman & Fraser as cited in Afari 2013). The problem of underachievement in mathematics among students, despite the fact that it is one of the core subjects recommended in the National Policy on Education has been a growing cause of concern amongst parents, teachers, researchers and the entire society (Umoinyang as cited in Eduwem, Umoinyang & Otu (2017)

Statement of Problem

Academic achievement is affected either by social, psychological, economic, environmental and personal factors in which the factors have a powerful influence on academic achievement of students' as either positive or negative, but they vary from one society to another. Hence, the present study examined the factors on junior secondary schools in Jalingo Education Zone of Taraba State, Nigeria in order to bridge the gap in the existing literature particularly in Nigerian context and world at large considering the fact that the factors vary from one institution to another.

Also, most of the studies carried out to investigate the reasons for students poor achievement generally with the view to remedy the situation were done focusing on methods of teaching, availability of laboratory material, and personnel, availability of qualified Mathematics teachers,

availability of resource materials teaching and classroom environmental factors are already obsolete as they were carried out in the 1980s and 1990s. Those done in relation to classroom environmental factors are scanty and not recent and mostly related to biology, chemistry, physics and integrated science. None was carried out to investigate the relationship between psychosocial factors of classroom environment on students' achievement in Mathematics. The lack of study carried out on the influence of psychosocial factors of classroom environment on students' achievement in Mathematics in Jalingo Education Zone of Taraba State, Nigeria, necessitated this study. The purpose of the study is therefore to investigate the relationship between students' perception of psychosocial factors of classroom environment and their achievement in Mathematics in junior secondary schools in Jalingo Education Zone of Taraba State, Nigeria.

Research Questions

What is the relationship between students' perception of psychosocial factors of classroom environment and their achievement in Mathematics in junior secondary schools in Jalingo Education Zone of Taraba State, Nigeria?

Hypothesis

There is no significant relationship between the student's mean perception scores of classroom psychosocial environment and their achievement in Mathematics in junior secondary schools in Jalingo Education Zone of Taraba State, Nigeria.

Research Methodology

The study adopted descriptive research design of ex-post-facto. The target population of the study comprised of four thousand one hundred and forty-four (4,144) JSS II students in junior secondary schools of Jalingo Education Zone, Taraba State, Nigeria. There are fifty (50) public

secondary schools in the zone. Simple random sampling (hat and draw) without replacement was used in selecting the sample of 450 students for the study. The instruments used in the collection of data for the study were of 2 types. The Mathematics classroom environment scale Questionnaire (MCESQ) and Cumulative Assessment Record Performance (CARP). The Mathematics classroom Environment scale Questionnaire (MCESQ), is an adaptation of classroom Environment scale (CES) as developed by Rudolf moos at Stanford University (Fisher and Fraser, and Moos and Trickett, Trickett and moos as cited in Peter 2014). The performance scores of the students were obtained from the first term junior secondary class two (JSS II) Mathematics Internal Examination Results of 2019/2020 academic session. These scores were used to match the student's

perception scores. The instruments were validated by experts in the faculty of Education, Taraba State University. The reliability study of the scale was calculated and yielded 0.80 Cronbach Alpha coefficient. Split-half scores showed that there was a high level of positive and meaningful relation between the first and second applications of the scale ($r= 0.86, p<.001$). Mean and standard deviation was used to answer the research question.

Results

Research Question

Table 1: Relationship between student's mean perception scores of classroom psychosocial environment and their achievement in Mathematics in junior secondary schools in Jalingo Education Zone of Taraba State, Nigeria

Correlations

	Total Respose to Items 1-47	Gender
Total Response to Items 1-47	Pearson Correlation	1
	Sig. (2-tailed)	-.095*
	N	.048
Gender	Pearson Correlation	1
	Sig. (2-tailed)	-.095*
	N	.048
	N	436

Source: Researchers' Field data 2020 * Correlation is significant at the 0.05 level (2-tailed)

As indicted in Table 1 above, the research question what is the relationship between students' perception of psychosocial factors of classroom environment and their achievement in Mathematics in junior secondary schools in Jalingo. The correlation coefficient at 5% level of significance was ($r= 148, N=436$ and $P=0.002$) indicating the existence of positive weak relationship between gender as a psychosocial factor of student's classroom environment and

student achievement in mathematics in junior secondary school. (See Table 1).

H_0 : There is no significant relationship between the students mean perception scores of classroom psychosocial environment and their achievement in mathematics in junior secondary school in Jalingo Education Zone.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.148 ^a	.022	.020	1.037	1.353

a. Predictors: (Constant), Maths Average Score

b. Dependent Variable: Total Response to Items 1-47

Table 3: ANOVA on students mean perception scores of classroom psychosocial environment and their achievement in mathematics

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.476	1	10.476	9.737	.002 ^b
	Residual	466.946	434	1.076		
	Total	477.422	435			

a. Dependent Variable: Total Response to Items 1-47

b. Predictors: (Constant), Maths Average Score

Table 2 & 3 provides results for research hypothesis testing, on whether there is no significant relationship between the students mean perception scores of classroom

psychosocial environment and their achievement in mathematics in junior secondary school in Jalingo Education Zone.

Table 4: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error				Lower Bound	Upper Bound
		1	(Constant)	2.535	.097		26.258	.000
	Maths Avg.Score	.123	.039	.148	3.120	.002	.045	.200

a. Dependent Variable: Total Response to Items 1-47

Table 2-4 provides results for the first research hypothesis testing, on whether there is no significant relationship between the students mean perception scores of classroom psychosocial environment and their achievement in mathematics in junior secondary school in Jalingo Education Zone. Table 6 provides the R and R². The R value represent the simple correlation and is 0.148 (the R column) which indicates a low degree of variation in the dependent variable students' achievement in mathematics which can be explain by the independent variable classroom psychosocial environment in this case 14.8% can be explain as

very low Table 7 shows that the model predict the dependent variable significantly well it indicates the significant of the regression model that run here D1 (1,434), F = 9.737, P < 002 which is less than 0.05 and indicates that, overall the regression model statistically significantly predicts the outcome variable that is it is a good fit for the data. Table 8 provides the necessary information to predict Students Mathematics achievement (SMA) from mean score of psychosocial classroom environment and determine whether (PSCE) contribute statistically significantly to the model at PSCE = 26.258 + 3.120. On the basis of these results, the null

hypothesis (H_0) was rejected and the alternative hypotheses (H_1) accepted. Indicating that there is significant relationship between the students mean perception scores of classroom psychosocial social environment and their achievement in mathematics in junior secondary school in Jalingo Education Zone.

Discussion of Findings

As shown in the result section, students' perception of their Mathematics classroom psychosocial environment to some extent influence their achievement in Mathematics since the mean score of students' performances was 56.55. The present findings is in line with the Peter (2014), who found out that students' perception of their physics classroom psychosocial environment to some extent influence their achievement in physics. The present study also indicated that there is significant relationship between the students mean perception scores of classroom psychosocial social environment and their achievement in mathematics in junior secondary school in Jalingo Education Zone. The study is supported by the findings of Uroko (2017) results revealed that, a positive and significant relationship exists between psychosocial factors of the classroom environment and achievement of women in mathematics for change in Abia State. This result agrees there is no significant relationship between the students mean perception scores of classroom psychosocial environment and achievement in mathematics in Junior secondary school in Jalingo Education Zone. The study findings also showed that there is no significant relationship between the students mean perception scores of classroom psychosocial environment and achievement in mathematics based on gender in Junior secondary school in Jalingo Education Zone. This result does not confirm with the work of Uroko (2017), it was found that there is also gender is not a significant factor in relationship between

perception of the psychosocial factors of classroom environment and achievement of women in mathematics for change in Abia State.

Conclusions

The following conclusions were made based on the result of the analyzed data:

1. There was a high perception of psychosocial environmental factors by the students which contributed to their achievement in Mathematics.
2. There was a direct positive relationship between the psychosocial classroom environment factors and students' achievement in Mathematics.
3. Perception of psychosocial classroom environment is a predictor of achievement among others in Mathematics in Jalingo Education Zone of Taraba State.
4. The relationship between students' perception of psychosocial classroom environment is high and therefore significant.
5. Although some of the student's perception of psychosocial classroom scale were moderately high, yet they have a direct positive effect on achievement. Therefore, the poor achievement of students in Mathematics in Jalingo Education Zone of Taraba State may be due to psychosocial factors of the classroom environment.

Implications for Counselling

Based on the findings, the counselling implications for the study is that:

1. Psychosocial factors of classroom environment of mathematics class should be implemented in terms of high-quality teachers, friendly interaction in class and meaningful grading of learning materials
2. Teachers, parents, counsellors as well as the school authorities should be made to aware of

the existing relationship between psychosocial factors and academic achievement. This would enable them provide a better, useful and relevant educational, vocational, personal and social services that will enable students, teachers and parents and the school authorities recognize and appreciate the presence of individual differences, among students and how best to reinforce them in every situation

3. The teachers should be monitored so as to be regular in class to deliver their teaching and the students should be monitored in class as well to avoid truancy.
4. Qualified Mathematics teachers should be employed.
5. More periods should be allocated to Mathematics

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