

# Achievement Motivation as A Predictor of Academic Achievement of Senior Secondary School Students in Mathematic

Usman Bayo Zambuk

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## ABSTRACT

This study examined the achievement motivation as predictor of academic achievement among Senior Secondary School students in Gombe State. The study sample consisted of 698 students who were randomly sampled from the population of 27,937 students in public secondary school students in Gombe State. The sample size of this study is 2.5% of the entire population of 27,937 which is 698. The sample was drawn from the population using the multistage sampling technique. This involves selection of sample in stages. There are eleven Local Government Areas in Gombe State, divided into three (3) senatorial districts. Gombe Central (2 local Government Areas); Gombe North (5 Local Government Areas); Gombe South (4 Local Government Areas). Both the independent and dependent variables were measured with relevant standardized instruments. To guide the study, three (3) research questions and two hypotheses were raised. Data collected were analyzed using Pearson r correlation coefficient and Stepwise multiple regression statistical techniques. The results showed that achievement motivation predicted students' academic achievement in mathematic. On the basis of the findings, it was recommended that achievement motivation should be enhanced using appropriate counseling strategies.

**KEYWORDS:** Achievement, Motivation, senior secondary, student, mathematics.

## I. INTRODUCTION

According to Meece (1997), "The goal of any educational program must be to create a learning environment that supports or elicits students' intrinsic interest in learning." Many would argue that learning equates to academic success. However, according to a systematic review by York, Gibson, and Rankin (2015), academic success is defined in the literature by six primary facets: academic achievement, satisfaction,

attainment of learning, persistence, career success, and the acquisition of skills and competencies.

The concept achievement has several references, which could denote activity and mastery that makes an impact on the environment and competing against some standard of excellence. The under achieving student is one whose actual attainment as indicated by his scholastic attainment in school, does not measure up to his potential academic achievement as indicated by his abilities Marsh et al. (2007). Marsh et al. (2007) also defined over achievers as students whose school attainment is in excess of expectations formed on the basis of their activities. The concepts of over and under achievement suggest that there are variables in addition to ability which have positive effects on the performance of the learner and consequently, there could be no perfect positive correlation between intelligence and attainment.

Academic achievement itself is the amount of knowledge derived from learning by the learner. The learner gains knowledge from instructions he or she receives at school which is organized around a set of core activities in which a teacher assigns tasks to students and evaluates and compares the quality of their work. The school thus provides a wide variety of achievement experiences than does the family (Tucker et al., 2002). These variables are therefore important to educational researchers and other related disciplines. Currently, the focus of this study is on each student's sense of self as a major component of academic achievement. According to Akomolafe (2010), academic achievement is based on several factors, such as the student's attitude, interest, personal characteristics, motivation and social class which in addition to learning are known to influence their academic achievement. The attitude that is often used in conjunction with academic achievement is achievement motivation.

Motivation is a widely researched topic in both the fields of psychology and education. Achievement motivation can best be understood by examining the meanings of “achievement” and “motivation” separately. Achievement typically stress the importance of accomplishment and attainment with effort involved (Okotie and Florence, 2019). Achievement motivation is defined as the need to perform well or the striving for success and evidence by persistence and effort in the face of difficulties, achievement motivation is regarded as a central human motivation. Achievement Motivation in the school context can be defined as a driving force that accounts for students’ behaviour in achievement situations. It determines cognitive, emotional, and behavioral aspects of students’ attachment and contribution to the process of education in the educational subsector (Tucker et al., 2002).

Motivation is generally regarded as the drive to achieve targets and the process to maintain the drive. Motivation provides an important foundation to complete cognitive behaviour, such as planning, organization, decision-making, learning, and assessments. Tucker et al. (2002) defined achievement motivation as task-oriented behavior. Academic achievements of individuals are often compared against standards or with others for assessments. The differing perspectives of scholars result in various definitions of achievement motivation. Denhardt et al. (2008) argued that motivation is not directly observable. Motivation is an internal state that causes people to behave in a particular way to accomplish particular goals and purposes. Motivation is not directly controllable: motivation is not something that people do to others and motivation occurs within people’s minds and hearts. Motivation is not the same as satisfaction: satisfaction is past oriented, whereas motivation is future oriented (Denhardt et al., 2008). Muola (2010) defined achievement motivation as the drive to work with diligence and vitality, to constantly steer toward targets, to obtain dominance in challenging a difficult tasks and create sense of achievement as a result.

The poor academic achievement of senior secondary school students within Nigeria educational system especially in mathematics has been attributed to a number of factors including individual, family, community, cultural, and societal factors (Federal Ministry of Education, 2016). Despite the fact these factors have been researched into and efforts made to arrest the situation, it has not experienced a positive change

and this has become a great concern. Suffice to say that in Nigeria, few researches have been carried out on this subject matter. This is an important gap which this study intends to fill. The aim of the study, therefore, is to find out whether achievement motivation predicts academic achievement of Senior Secondary School Students in Mathematics.

### **Purpose of the Study**

The purpose of this study is to explore the predictive ability of achievement motivation and academic achievement of Senior Secondary School Students in Gombe State.

### **Research Questions**

The following research questions guided the study:

- 1 What is the level of achievement motivation among Senior Secondary School Students in Mathematics in Gombe State?
- 2 What is the level of academic achievement in Mathematics among Senior Secondary School Students Gombe State?
- 3 Does relationship exist between achievement motivation and academic achievement of Senior Secondary Schools’ Students’ in Mathematics in Gombe State?

### **Hypotheses**

The following null hypotheses were tested in this study:

**H<sub>01</sub>:** There is no significant relationship between achievement motivation and academic achievement in Mathematics among Senior Secondary School Students in Gombe State.

**H<sub>02</sub>:** There is significant relationship between achievement motivation and academic achievement in Mathematics among Senior Secondary School Students in Gombe State.

### **Significance of the Study**

This study seeks to find out whether achievement motivation correlates with academic achievement of Senior Secondary School Students in Gombe State. The results will therefore be useful and beneficial to stakeholders in educational sectors, namely students, parents, teachers, principals and policy makers.

## **II. LITERATURE REVIEW**

In Nigeria, the importance attached to academic success in secondary school education can be seen in the anxiety of educators, teachers and parents over the achievement of students in external examinations such as the Senior Secondary School Certificate Examination (SSSCE). This is why the Federal Government of

Nigeria places high premium on the Secondary level of education, which is evident in the establishment of National Examination Council (NECO) to conduct Senior Secondary School Certificate Examination (SSSCE) along the West African Examination Council (WAEC) for senior secondary school students in Nigeria. The same emphasis on education has led to the adoption of education as “an instrument par excellence” for effecting national development (Federal Government of Nigeria) (FGN, 2004).

In view of the high premium placed on educational attainment by government, teachers, parents and students, underachievement or poor achievement in examination is a very thorny issue that has attracted the attention of researchers and psychologists alike. The aim of psychologists and educators in this regard has been to determine variables (both internal and external to the students) which are related to their educational achievements. In Nigeria, some external variables such as overcrowded classroom, inadequate facilities, unmotivated teachers, poor family background etc have been identified as being negatively related to academic achievement of students (Okotie and Florence, 2019).

### **Motivation**

Psychologists believe that motivation is a necessary ingredient for learning. Satisfactory school learning is unlikely to take place in absence of sufficient motivation to learn (Fontana, 1981). Denhardt et al. (2008) defined motivation as “what causes people to behave as they do” Lawler (1994) said “motivation is goal directed”. Motivation outlines the achievement and pursuit of goals (Denhardt et al., 2008). Pettinger (1996) defined motivation as environmentally dependent. Campbell & Pritchard (1976) defined motivation as being the set of psychological processes that cause the initiation, direction, intensity, and persistence of behavior. Denhardt et al. (2008) outlined motivation is not: directly observable, the same as satisfaction, always conscious, and directly controllable.

### **Intrinsic, Extrinsic Motivation and Amotivation**

The Self-determination theory distinguishes between different types of motivation on the different reasons or goals that give rise to an action. The Self-determination theory distinguishes between three types of motivation, which are intrinsic motivation, extrinsic motivation and amotivation (Ryan and Deci, 2000).

### **Intrinsic Motivation**

Intrinsic motivation, occurs when the activity is done out of the free choice of the individual (Ryan and Deci, 2000). Intrinsically motivated behaviours are seen when there is no other apparent reward except the activity itself (Deci and Ryan, 1985). Malone & Lepper (1987) defined intrinsic motivation as what people will do without external inducement. Fincham & Cain (1986) viewed intrinsic motivation as patterns that have been associated with high perceived ability and control, realistic task analysis and planning and the belief that effort increases one’s ability and control.

### **Extrinsic Motivation**

According to Ryan & Deci (2000), extrinsic motivation is a construct that is relevant whenever an activity is done in order to attain some reward. Extrinsically motivated behaviours are those where the controlling mechanism is easily seen (Deci and Ryan, 1985). An extrinsic orientation toward learning is characterized by a concern with external reasons for working, such as the judgment of others regarding one’s performance, grades, or some anticipated reward (Goldberg, 1994).

### **Amotivation**

In the Self-determination Theory, the researchers proposed motivation as one of the classification of motivation. A person is amotivated, when his/her behavior lacks intentionality. Amotivation exists in many high school students and such students are not motivated in anyway (Ryan and Deci, 2000).

### **Achievement Motivation and Academic Achievement**

In a research comprising several field studies and laboratory experiments, Boggiano et al. (1992) revealed that achievement motivation positively influenced academic performance. It was found that motivational orientation predicted children’s standardized achievement scores (Boggiano et al., 1992). Children with an intrinsic motivation orientation had higher reading and math scores and higher overall achievement scores compared to their extrinsic counterparts (Boggiano et al., 1992). There is a significant correlation between academic achievement and motivation (Sikhwari, 2014) and motivation has impact on academic achievement of secondary school students in mathematics with respect to gender (Tella, 2007). Highly motivated students performed better academically than lowly

motivated students Tella (2007) and females are highly motivated compared to their male counterparts (Sikhwari, 2014). Surprisingly, a research conducted by Niebuhr (1995) to examine relationships between several variables and students' academic achievement, found no significant effect on the relationship with academic achievement. Niebuhr (1995), suggested that the elements of both school climate and family environment have a stronger direct impact on academic achievement.

### III. METHODOLOGY

#### Research Design

The method adopted for the study is the correlation research design.

#### Population

The total population of these students is 27,937. Only the state schools were chosen to make for homogeneity.

#### Sample Size

The sample size of this study is 2.5% of the entire population of 27,937 which is 698 Students.

#### Sample and Sampling Procedures

The sample was drawn from the population using the multi-stage sampling technique. Stage 1: Two Local Government Areas were chosen from each of the three Senatorial Districts, by using simple random sampling technique, which gave a total of six (6) Local Government Areas. Stage 2: Out of these six local government areas, two schools were selected using the simple random sampling technique. This gave a total number of twelve (12) schools. Stage 3: From the selected schools, 698 students' were proportionally sampled.

#### Research Instrument

The researcher adopted questionnaire as an instrument for the study. Students responded to Likert scale type of items, where students were rated from "strongly disagree" to "strongly agree". The questionnaire which consisted of closed-ended questions where options were fixed at the end of each question for respondents to tick the one nearest to their views. The questionnaire comprise of Fifteen (15) questions.

### IV. RESULTS

**RESEARCH QUESTION 1:** What is the level of achievement motivation in Mathematics among Senior Secondary School Students in Gombe State?

**Table 1. Achievement Motivation of Senior Secondary School Students in Mathematics.**

|  | Male |      | Female |      | Total |      |
|--|------|------|--------|------|-------|------|
|  | Mean | SD   | Mean   | SD   | Mean  | SD   |
| Even when I feel that my lessons are difficult, I still try to do them.                  | 3.96 | 1.24 | 3.99   | 1.15 | 3.95  | 1.20 |
| I work hard in class so that I can know more than other students about a subject.        | 3.77 | 1.20 | 3.89   | 1.12 | 3.83  | 1.16 |
| Getting my SSCE means I will be able to achieve my future goals.                         | 3.77 | 1.24 | 3.82   | 1.23 | 3.79  | 1.24 |
| I like to complete every assignment given to me and do it well.                          | 3.73 | 1.18 | 3.81   | 1.12 | 3.78  | 1.15 |
| I am incited with good comments by my teacher.   | 3.69 | 1.16 | 3.78   | 1.18 | 3.75  | 1.17 |
| I want very much to prove to my parents and teachers that I am good academically.        | 3.53 | 1.25 | 3.62   | 1.22 | 3.61  | 1.24 |
| I Usually keep on working at a problem until I am sure I can solve it.                   | 3.42 | 1.21 | 3.59   | 1.16 | 3.50  | 1.19 |
| I like opportunities to compete with others for academic prize of honor.                 | 3.47 | 1.25 | 3.50   | 1.32 | 3.49  | 1.28 |
| Even though an assignment is dull, I stick to it until it is completed.                  | 3.38 | 1.21 | 3.38   | 1.26 | 3.38  | 1.24 |
| After classes I make it a definite point to look up things that were not clear in class. | 3.24 | 1.22 | 3.33   | 1.24 | 3.28  | 1.23 |

|  |             |      |             |      |             |      |
|--|-------------|------|-------------|------|-------------|------|
| I have several times stopped doing a task because I thought I do not have the ability to do it well. | 3.34        | 1.25 | 3.13        | 1.13 | 3.24        | 1.28 |
| If I have difficulty with my work, I try to discuss the trouble with my teachers.                    | 3.01        | 1.32 | 3.16        | 1.30 | 3.09        | 1.31 |
| I would rather avoid academic problems at which I have once failed than try it again.                | 2.91        | 1.35 | 3.08        | 1.35 | 3.00        | 1.35 |
| I do less work on a problem when it looks as if I don't know the answer.                             | 2.86        | 1.26 | 2.81        | 1.25 | 2.83        | 1.26 |
| I tend to become easily discouraged when I do not succeed in my academic work.                       | 2.73        | 1.43 | 2.79        | 1.40 | 2.76        | 1.41 |
| <b>Average</b>   | <b>3.38</b> |      | <b>3.44</b> |      | <b>3.41</b> |      |

Agreed (mean >3.00)

Table 5 shows the students' achievement motivation. The pooled mean values indicate that the students agreed to several of the statements in the table regarding their achievement motivation, since most of the mean scores are greater than 3.00. The statements with high level of agreement among the students' are the fact that "even when I feel that my lessons are difficult, I still try to do them" (mean = 3.99); "I work hard in class so that I can know more than other students about a subject" (mean = 3.83); "getting my sssce means I will be able to achieve my future goals (mean = 3,84); "I

like to complete every assignment given to me and do it well" (mean = 3.78); "I am incited with good comments by my teacher" (mean = 3.73). However the statement with low level of agreement is "I tend to become easily discouraged when I do not succeed in my academic work (mean = 2.76).

**RESEARCH QUESTION 2:** What is the level of academic achievement (performance) in Mathematics in mathematics among Senior Secondary School Students in GombeState?

**Table 2. Level of Academic Achievement in Mathematics among Senior Secondary School Students in Bauchi State.**

| Score (%)    | Male |      |      | Female |      |      | Total |      |      |
|--------------|------|------|------|--------|------|------|-------|------|------|
|              | Freq | %    | Mean | Freq   | %    | Mean | Freq  | %    | Mean |
| <= 39        | 34   | 10.1 |      | 21     | 6.1  |      | 55    | 8.1  |      |
| 40 – 49      | 100  | 29.6 |      | 117    | 33.9 |      | 217   | 31.8 |      |
| 50 – 59      | 138  | 40.8 |      | 134    | 38.8 |      | 272   | 39.8 |      |
| 60 – 69      | 58   | 17.2 |      | 64     | 18.6 |      | 122   | 17.9 |      |
| 70+          | 8    | 2.4  |      | 9      | 2.6  |      | 17    | 2.5  |      |
| <b>Total</b> | 338  | 100  |      | 345    | 100  |      | 683   | 100  |      |
| <b>Mean</b>  |      |      | 51.3 |        |      | 52.3 |       |      | 51.8 |

The pooled result of Table 6 shows that the academic achievement of students are 50-59% (39.8%), followed by 40-49% (31.8%). The average score of the students in mathematics is 51.8%, while that of the male and female students are 51.3% and 52.3% respectively.

**RESEARCH QUESTION 3:** Does relationship exist between achievement motivation and academic achievement of Senior Secondary Schools' Students' in Mathematics in GombeState?

**TEST OF HYPOTHESIS**

**H<sub>0</sub>:** There is no significant relationship between achievement motivation and academic achievement in Mathematics among Senior Secondary School Students in GombeState.

**H<sub>1</sub>:** There is significant relationship between achievement motivation and academic achievement in Mathematics among Senior Secondary School Students in Gombe State.



**Table 3. Pearson product moment correlation analysis of relationship between achievement motivation and academic achievement in Mathematics.**

|                                 | Mathematics Test            | Score          |                   |
|---------------------------------|-----------------------------|----------------|-------------------|
| Independent Variable            | Correlation coefficient (r) | r <sup>2</sup> | Probability level |
| Students Achievement Motivation | 0.713                       | 0.508          | 0.05              |

Correlation is significant at the 0.05 level ( $p < 0.05$ )

Correlation analysis was used to analyze the relationship between achievement motivation and their academic achievement in mathematics. The results presented in Table 8 shows that the correlation coefficient is 0.713, which is very high and significant at the 5% probability level. The coefficient of determination, ( $r^2$ ) is 0.508. The null hypothesis is rejected. It means that there is significant relationship between achievement motivation and academic achievement in mathematics.

## V. CONCLUSION

It was discovered from the study that achievement motivation significantly predicts academic achievement of senior secondary school students. From the result, it is observed that achievement motivation proved to have a stronger relationship of students' academic achievement in mathematics. It was also seen that students' achievement motivation displayed significantly more perseverance and effort, achievement drive, as well as reported better social and motivational relationship with academic achievement in mathematics.

## VI. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are hereby made: Students should be encouraged to build positive achievement motivation this will enhance their academic achievement. Teachers should encourage students to recognize their achievement motivation, this will enhance and improve their performance and it will give them the opportunity to compare their standard of performance with others. Principals should encourage and motivate teachers by organizing seminars, staff development and co-operation, the time and the necessary support to teachers and counselors to enable them help students improve on their academic achievement. The policy makers and educational planners are encourage to develop and implement policies and strategies that would help in alleviating problems of students thereby fostering the academic success

of students. The government and the Ministry of Education are encouraged to provide the needed facilities for schools to enhance a good and adequate environment of learning.

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