

The Analysis of Relationship between Co-Curricular Activities (Leadership Role) and Student'S Achievements in Senior Secondary School Mathematics in Southern Part of Taraba State-Nigeria.

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Abstract:

This study examined the analysis of the relationship between co-curricular Activities (leadership role) and Students achievement in senior secondary school Mathematics in the Southern part of Taraba state in North-East zone of Nigeria. The study adopted simple survey design. A review of related literature to the study was carried out. Data collected and collated were based on a set of Scales in the Questionnaire Mathematics-Leadership role- Related Scales (MLRS) consisting of ten (10) items and was administered to eighteen (18) public schools across the zone; three from each LGA with sample size of 590 students. These instruments were validated and found to be reliable at 0.79 and 0.81 respectively. One hypothesis were generated and tested at 0.05 significant level and Data were analyst using Spearman rank correlation Statistical Method through SPSS statistical Software computer package. The Null hypothesis was rejected and the alternative upheld. Findings revealed that there is significant relationship between co-curricular activities (leadership role) and Students Achievement in senior secondary school Mathematics. Hence from the findings made, the researcher drew conclusion and made useful recommendations which he hope if adhere to, will help to stimulate and enhance achievement in senior secondary schools mathematics.

Keywords: Questionnaire, Student's Achievements, leadership roles, Spearman rank correlation, SPSS.

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I. Introduction

Over many decades, the use of mathematical techniques has been gaining a lot of grand in social and biological science and as well as in the field of commerce and management. In fact the exactness and precision of mathematical language, methods and concepts have made it possible to explore large areas of research in these subjects which remained hidden so far from the keen eyes of the researchers. Relentless time, one could say that mathematics is probably the most convenient shoulder to lean on for not just pure sciences but also subjects like commerce and economics. However, because of it's important to the society, there is need to break a new ground to fashion out which ways the subject could be well understood by the students to maximize their performances. Nevertheless, It is observed in decade(s) that secondary school student's achievement have been very low in their final examinations and class activities in the subject. The low achievement may not only be as a result of any changes in content of mathematics, but also by pre-disposition of the students to participate actively in co-curricular activities like games, leadership in school and social clubs which are related to mathematics concepts. Therefore the role of mathematics cannot be over-emphasized in life-like activities. There have been a number of changes in the nature of mathematics education in our secondary schools, resulting mainly from the introduction of new mathematics curriculum and curriculum projects. Nevertheless, Ntun (2006) opined that, student's involvement in sports and leadership roles in secondary schools were motivated to maintain their exalted positions and hence, strive to achieve high academic standard. Their involvement in out of class activities notwithstanding, they tend to perform higher academically to impress their subject teachers and the school authorities. Effiong, M. E. (2004) argued that prefects faced with time constraints and thus, intensify every effort to make up extra time for their studies, hence a reinforcing stimulus. In the same view, Ogbiji (2004) shows from Maslow's hierarchy of needs that, time available to non-prefects turns out to be a motivator and process to their seriousness in class activities but a motivator to prefects who have little or no time to attend to mathematics classroom activities.

However, if school is a preparatory ground for life outside school, the school world ought to be as much like the non-school world as possible. Mathematics should be seen as having direct and necessary

applications to everyday life. Thus, failure in mathematics may then be seen as a general failure in life. If this position holds, then the task for mathematics educators is to ensure that all avenues of encouraging success in mathematics are exploited.

In this study, we investigated the relationship of some co-curricular activities and students' achievement in mathematics. The background of the study include the three domain of learning. Having bearing on cognitive, affective and psychomotor.

Problem Statement/Justification:

In view of the fact that many activities are responsible for the students' low achievement in mathematics, it is imperative for one to find out the relationship existing between some co-curricular activities and achievement of the students in mathematics. The activities under consideration are those mathematics related games like sport, leadership roles and social clubs which are also term co-curricular activities in the formal school system but the point of emphasis is leadership roles for consideration of this study. Slow learning, low enrolment, dropouts and poor attention span a poor performances in SSCE are the focus of the problems for this study. The problems listed above motivate the researcher's decision to investigating if the predominant problems could be attributed to lack of participation in co-curricular activities (leadership roles) by students in senior secondary school.

Objective of the Study:

The study seeks to determine if leadership roles relates significantly to students' achievement in senior secondary school mathematics.

Significance of the Study:

The study is mainly focused on co-curricular activities in relation to student's achievement in senior secondary school mathematics. It is hoped that, the study would help the educators, government, industries, and curriculum planners toward holistic realization of the student's potentialities in school. They will understand how these leadership roles can be combined with mathematics learning for optimum achievement. Parents will use the knowledge of the results to involve and advise their children and wards at home in terms of scheduling engagement and responsibilities for them. Mathematics teachers and counselors would also be assisted by the outcome of this study to sequence academic activities and leisure for the attainment of the school goals.

Research question:

To what extent does leadership roles relates to student's achievement in senior secondary school Mathematics?

Research hypothesis:

In order to achieve the purpose of this study, this hypotheses is formulated to guide the researcher. There is no significant relationship between leadership roles and students achievement in senior secondary school mathematics.

Scope of the study:

This study is however delimited to public senior secondary students (SS2) in southern part of Taraba state which consist of six (6) local Government Areas in North-Eastern part of Nigeria.

Review of related literature:

The reviews of related literature focus on the following sub-headings:

- (i) Objectives of senior secondary school general mathematics.
- (ii) Taxonomy of educational objectives
- (iii) Co-curricular activities in senior secondary school and students' academic achievement in mathematics.
- (iv) Students' perception of mathematics and academic achievement.
- (v) Empirical studies and trends on student's achievement in senior secondary school mathematics.
- (vi) Studies on leadership role and students achievement in mathematics

Objectives of senior secondary school general mathematics:-

Apart from the general aim of secondary school education in Nigeria which is geared towards education preparing individuals for useful living in the society and higher education as important in:

- (i) Providing trained manpower at sub professional level in applied sciences, technology and commerce;
- (ii) Inspiring students' with a desire for self-improvement and academic excellence;
- (iii) Providing technical knowledge and vocational skills necessary for agricultural, industrial, commercial, and economic development.

The federal republic of Nigeria (FRN) (2006) specified the objectives of the senior secondary school general mathematics curriculum to include the test of the following:

- (i) Habit of effective and reflective thinking;
- (ii) Communication through symbols, expression and graph;
- (iii) The ability to distinguish between relevant data;
- (iv) Computational skills;
- (v) The ability to recognize word problems and translate them into mathematics expressions before solving them with related mathematics knowledge;
- (vi) The ability to be accurate to a degree relevant to the problem at hand;
- (vii) Precise, logical and abstract thinking.

Taxonomy of educational objective:

According to Bloom (1956) in Esu, Eukoha and Umoren (2006), the major categories in educational objectives is the Taxonomy of abilities and skills that can be ranked from simple to complex beginning from memory, comprehension, application, analysis, synthesis and Evaluation. These stages are developmental because it is only what one understands, that he can apply.

Cognitive objectives are those objectives, which emphasize remembering or reproducing something, which has previously been learnt. They also include objectives which have involve the solution of some intellectual problems for which the individual has determined the essential problems and recorded the materials or combined it with some ideas, methods and strategies.

According to Krathwohl (1964) in Esu, Eukoha and Umoren (2006), the major categories in the affective domain of the taxonomy of educational objective includes receiving, responding, value, organization and the characterization by a value or value complex. The affective domain includes the objectives which emphasize tone, emotion, or a degree of acceptance or rejection. They vary from simple attention to selected phenomena to complex, but internally consistent qualities of characters and conscience.

A large number of such objectives in our educational literature are expressed as interest, attitude, appreciation, values, emotional sets and biases.

Sampson (1966) in Esu, Eukoha and Umoren (2006) opined that, the major categories in the psychomotor domain of the taxonomy of educational objectives include the following: perception, set, guided responses, mechanism, complex overt responses and origination.

The psychomotor domain expresses objectives which emphasize muscular and motor skills, some manipulations of objects or some acts that requires neuromuscular co-ordination.

Such objectives when found on our educational literature are related, to handwritings speech, physical education as well as trade and technical courses.

Values of Taxonomy of Educational objective:

- (i) It makes for a tightening of the languages of educational objectives such that, the objectives give direction to the learning process and determine the evidence to be used in appraising the effect of the learning experience.
- (ii) It enables authors of educational objectives to know exactly what they mean and the learners to equally have a clear view of what is intended.
- (iii) It provides a convenient system of describing and comparing test items, examination technique and evaluation instruments.
- (iv) It makes possible for the compression and studying of educational problems as well as serve as a tool clarifying and organizing educational research results:
- (v) It envision the possibility that we select the principle of classifying educational outcome which will reveal a real order amongst those outcomes.

Secondary school students' perception of mathematics and academic achievement:

Perception according to Monbipon (1986) refers to an innate feeling which leads to the development of attitude. He asserts that, attitude formation is built on already existing perception about a person, a thing or an event.

Relating perception to learning of mathematics, Monbipon (1986) in Fredrick (1980), asserts that students perceived mathematics from several influences, He pointed that students' perception of mathematics could be based on experience, age, other student perception, societal perception and surrounding learning circumstances.

Monbipon (1986) in Fredrick (1980), assert that perception based on experience occur in an instance where a students after being taught mathematics using the available resources and skills could not still understand mathematics. He asserts that is generally not out of place for such a students to come to a conclusion

that mathematics is difficult. He asserts also that they cannot understand mathematics no matter how much they try.

Itah (1991) opines that perception is an inner feeling drawn after an experience through the senses. He asserts that we perceive by touching, seeing, smelling. he posits that most school children live on assumption that certain subjects are difficult, but the number of students who really perceives the school subject and concludes on its difficulty, is the number of students who took time to time to encounter the subject through experiences. He contends that perception instigates other innate feelings and hence becomes motivator. He maintains that a positive perception generates interest and inculcates positive attitude in students while a negative perception generates stress, fatigue and discourages participation. He also asserted that for which most school children perform poorly in mathematics is because their perception of mathematics is poor and built upon fear of event encountering the subject to see its level of difficulty.

Falowiyo (1989) contends that most students' perception of mathematics is determined by students' experience from school variables. Notably among these variables is the teacher factor. He maintained that an unqualified mathematics teacher with poor teaching methods will tend to make students have negative perception of mathematics.

In study with 250 students in Oyo State, he found that interest and perception has a direct relationship. He maintained that the level of interest a school child has on a school subject or a classroom activity depends on his/her perception of that subject or class activity.

Jackson (1984) posits that meaningful learning is determined by the level of readiness of the learner. He opined that students' readiness must be in line with physical and psychological readiness. He contends that a child seated quietly in a class could be seen to be physically ready to learn but his psychological readiness depends on his anticipation and emotion at that point in time. He maintained that student's perception outweighed other psychological factors like emotion fear. He asserts that this position was taken based on his findings that perception makes students to draw certain conclusion about a school subject and that when it is done, it becomes difficult for the child to depart from such conclusion.

Briefly this study seems to be holistic in package given that it examines the relationship between co-curricular activities and student's achievement in secondary school mathematics Considering the three domain of educational objective and related classification or taxonomy such as: Bloom's (1956) taxonomy of cognitive objectives domain relates to the achievement variable of this study: Krathnohi's (1964) taxonomy of affective behavior relates to the leadership variable while Sampson's (1966) taxonomy of psychomotor domain relates to the sports variable of the study. The specified objectives of each taxonomy are loosely anchored to the objectives of this study.

Co-curricular activities in secondary school and student's achievement in mathematics:

Nzewi (2004) described co-curricular activities as school- related activities that students undertake out of the classroom such as sports, social clubs and leadership positions. He asserts that co-curricular activities as the name implies involve additional skills approved to be learnt in school which are not included in the school curriculum.

Ali (1998) opines that co-curricular activities are educational activities in the school time table but not in the curriculum which inculcates in the learner certain desirable skills and attitude necessary for meaningful learning.

Falawiyo (1989) asserted that co-curricular activities are all additional school programs and activities but are included to reinforce classroom activities. He opines that educational objectives as contained in the National policy on Education (NPE) Embraces an overall development of an individual in a formal institution of learning. This objective he posits cannot be achieved with cognitive activities in the classroom alone but also with affective and psychomotor activities both outside and inside the classroom.

Ese (1983) relates co-curricular activities and student's achievement in mathematics by asserting that, since mathematics is a mentally-tasking subject, students who excel in physical-tasking skill like sport stand the chance of acquiring enduring skill and attitude capable of retaining their interest when faced with tasking mathematical problems. Ese asserts that sports gives students the will power which enhances goal achievement. This he contended, was attribute needed in a mathematics class. In the same vein Obo, (2001) asserted that sports generates and reinforces educational success and goals by exposing students to a network of social relations. He also opined that sport facilitates the achievement of such goals by students acquiring the kind of skills, knowledge with personal skills, self-confidence and endurance which do not only engender compliance, but also equip them with personal characteristics needed to translate goals into concrete actions.

Reliberg, Miner and Zigert (1968:1971) in Agbor (1991) found that the association between students' participation in co-curricular activities and mathematics achievement was positive. It is asserted that students, who participate in rigorous sports, develop the determination necessary for goal achievement. This assertion as related to mathematics class entails that, those who participate in sports can easily withstand the rigors involved in mathematic problems.

Brickling (1954) in Agbor (1991) posits that athletes were universally valued world-wide because of the calculative skills in athletic and the will-power they develop in their sporting activities. He asserts that a child who develops athletic skills is likely to withstand mathematical problems.

In a similar study, Hank and Eckland (1976) discover that secondary school students, like every other individual, dislike the stress. The involvement in mathematics logical reasoning dissuades many students' and hence, they achieve poorly in mathematics. He however opines that the affective and psychomotor skills acquired in sports if well applied to the problem solving situation of a mathematics class or in learning mathematics, students, stand a chance of achieving maximum result in mathematics. He further posits that sports leads to higher mathematics. He further posits that sports leads to higher mathematics achievement in students.

These assertions were however faulted by Reliberg. (1969) in Ese (1991). Reliberg opines that the idea leading to the assertion that sports/leadership roles compliments mathematics achievement is not true. That was because his study showed a very weak correlation between sports and academic achievement in mathematics. He pointed out that sports cannot play complementary role in mathematics achievement. Similarly, Spady (1970) in Ese (1991) states that athletic as well other leaders tend to channel their efforts to the fame of their chosen sports/positions. The fun and pleasure attributable to sports cannot be said to motivate achievement in sports is different from motivates to mathematics achievement; hence, there is no direct relationship between mathematics achievement and sports.

Empirical studies and trends in co-curricular activities and students, achievement in senior secondary school mathematics.

Studies on leadership role and students achievement in mathematics:

Sarason (1975) in Ntun (2006) observed that co-curricular activities in secondary schools doesn't just involve students participation in sports but also the involvement in other activities like exalted leadership position among students like prefects.

Ojeme and Uti (2003) assert that student's involvement in leadership positions like prefect-ship exposes the students to the act governance and leadership. This they applauded as part of the overall desirable child development as enshrined in the NPE (2006). They opine however that most adolescents given such positions in secondary school such opportunities to stay out of class hence, their achievement academically are poor or hampered.

Folawiyo (1989) found out in a study of 50 prefects in Ondo State that the academic achievement of most school prefects fall during their period of perfect-ship compared to the period prior to their being appointed prefects. He attributed certain reasons to this low achievement among which are'' tiredness in class to stress of running around, loss of concentration in class and environmental distractions. He apportioned a greater percentage of the associated problems of prefects to responsibilities they hold.

Omuniyi (1994) opines that prefects in secondary school sacrificed their lesson periods in attempt to make students comply with school regulations. He asserts that while other students (classmates) are in class, prefects by virtue of their position under take most often outside the class and get distracted more often than non-prefect.

In a study on 30 prefects from four secondary school in Cross River State Effiong (2004) found out that most prefects in secondary school perform poorly in mathematics. Mostly this was applicable to prefects in arts and social science classes. He also found a strong correlation between student's achievement in mathematics and their involvement in leadership in secondary schools. He asserts that the more school prefects strive to achieve excellence in their roles as prefects, the more their achievement in mathematics diminishes. This may perhaps arise from the fact that responsibility involving prefect-ship take more time and attention and less time to mathematics class's activities. This view does not receive a general acceptability.

Effiom & Ejue (2002) argued that prefects are faced with time constraints and thus, intensify every effort to make up extra time for studies, hence a reinforcing stimulus. Considering the same view, Ogbiji (2004) shows from Maslows hierarchy of needs that time available to non-prefects turns to be a motivator and process to their seriousness in class activities but a motivator to prefect who have little or no time attend to mathematics classroom activities

Ntun (2006) found out that students involved in sports and leadership positions in secondary schools are motivated to maintain their exalted positions and hence, strive to achieve higher academic standard their involvement in out of class activities notwithstanding, they tend to perform higher academically to impress school authorities and their subject teachers.

II. Material and Methods:

Study Design: The researchers make use of simple survey design and correlational statistics. One set of scale in a Questionnaire Mathematics-leadership roles-related Scale (**MLRS**) was used for data collection. This consist of ten (10) items and it was administered to eighteen (18) public senior secondary schools (SS2), three (3) of

which was selected randomly from each localGovernment area in the southern part of the state. The schools selected for the studywas based on their populations. Thirty students was randomly selected from eachschools out of fifty (50) students per class for the administering of the questionnaire. Makinga total sample size of five hundred and forty (540) students from the overall population size of 900 studentsdistributed across the eighteen schools considered for the study. This instrument wasvalidated and confirm for reliability through split half reliability approach, before was put touse.

Statistical Analysis: Data collected was analyzed through the use of Spearman rank Correlation statisticalmethod to test for the relationship between the dependent and independent variables usingstatistical software SPSS version 20. The level $p < 0.05$ was considered as the cut off value or significance.

Study Duration:May, 2018 to January, 2019.

Description of study area: The area for this research was southern senatorial district of Taraba state of North-east zone of Nigeria which consist of six (6) local Government areas which includes Wukarri, Ibi, Takum, Ussa, Kurmi and Donga. It is bounded by Bali Local government in the Central zone and Ado-kola in the Northern senatorial zone.

III. Results:

Hypothesis Ho

There is no significant relationship between leadership roles and students' achievement in senior secondary school mathematics.

Table 1

		Students' achievements in senior secondary school mathematics
Leadership roles	Rho	0.707
	Sig. (2 tailed)	0.000
	N	590

Source: SPSS version 20 Computation (2018)

In testing this hypothesis, the responses of students in questionnaire item number 11 to 20 were analyzed regarding the relationship between student's leadership roles and their academic achievement. The hypothesis were analyzed using the spearman rank correlation coefficient present in table 1 above.

The relationship that exists between leadership roles and students' achievements in senior secondary school mathematics was explored using Spearman Rank Order Correlation in which the Rho of the model is 0.707 which indicates that there is a strong positive relationship between the variables. The model is however significant at 5% alpha level such that the sig. value is 0.000 hence, the null hypothesis is rejected. It is therefore concluded that there is a significant relationship between leadership roles and students' achievements in senior secondary school mathematics.

This result shows that students that take on leadership roles have a high tendency of having a good performance in senior school mathematics and that students tend to perform less in senior school mathematics if they do not take on leadership roles in their school.

IV. Discussion Of Findings:

From the analysis of results, the study reveals that there is significant relationship between student's participation in leadership roles and their achievement in senior secondary school mathematics.

Form the finding above, the hypothesis stating that there is no significant relationship between leadership roles and student's achievement in senior secondary school mathematics is rejected. The result shows a significant relationship and this indicates in the alternative hypothesis that, there is strong positive relationship between leadership roles and students achievement in senior secondary school mathematics.

According to Ntun (2006) students' involvement in leadership position in senior secondary schools are motivated to maintain their exalted position hence they strive to achieve high academic standard in mathematics. Their involvement in out-of-class activities notwithstanding, they tend to perform better academically to impress school authorities and their subject teachers who enlisted them.

In the same vein, Ogbiji (2004) citing Maslows hierarchy of needs, opines that time available to non-prefects ceases to be a motivator to their seriousness in class activities but a motivator to prefects who have little or no time to attend to classroom activities and mathematics classes.

In addition Effiom and Ejue (2002) argued that prefects because of their insufficiency of time are motivated to adding more effort in their studies in mathematics. Based in this finding, leadership roles in secondary school is a motivator for students' academic achievement in senior secondary II mathematics. In other words, they enhance mathematics achievement.

V. Conclusion:

It was found that, there is significant relationship between students participation in sports in school relate significantly to their achievement in senior secondary school mathematics. These finding are supported by Effiom and Ejue (2002), Ogbiji (2004), Ntun (2006).

It is concluded that for a balanced and holistically developed individuals, the lopsided attention given to cognitive behaviours has distorted attention to be given for the development of effective and psychomotor behaviours. This distortion has led to polarized learning behaviours of students not only in mathematics but also in other school subjects such that devices of examination malpractice have been introduced variously to enable candidates pass examination at all cost. This suggest that out learning environment be diversified and modified so that effort of students are channel into effective and psychomotor activities to ensure students' all round development in their identified endeavours including sport, since students participation in found to enhance their achievement even in mathematics as found by this study.

VI. Recommendations:

Based on the above findings of this study, the researcher made the following recommendations.

1. The school authorities, industrialists, parent's government and private individuals should encourage sporting activities in schools.
2. Curriculum planners should make sports activities in school compulsory at heart, up to senior secondary section.
3. Parents, guardian and school authorities should inculcate in their students values, attitude that will encourage leadership roles in schools and our communities.
4. The school authorities should always assigned responsibilities to students to reawaken their leadership potentials in schools.

Suggestions for further research:

This study has only investigated the relationship between leadership roles as part of co-curricular activities and achievement in senior secondary schools mathematics. Future research work may be carried out to investigate the relationship between co-curricular activities like social clubs in secondary school and achievement in mathematics and other subjects.

Also, a larger sample size may be used to replicate the study.

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