Students' Perception of Teachers' Evaluation Technique and Teacher-Student Relationship and their Academic Achievement in Algebraic Processes in Uyo Education Zone of Akwa Ibom State, Nigeria

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Abstract
This study examined the influence of students' perception of teacher evaluation technique and teacher-student relationship on their academic achievement in Algebraic processes in Uyo Education Zone of Akwa Ibom State, Nigeria. Two hypotheses were formulated to direct the study. Ex-post facto design research was adopted for the study. A total sample of 800 out of 7479 students was selected using stratified and simple random sampling procedure. A questionnaire and academic achievement test in Mathematics were the main instruments used for data collection. The reliability estimate of the instrument was established through Cronbach Alpha method and Kuder – Richardson K-R-20 formula which give the reliability indices ranges from .81 to .82. One Way Analysis of Variance (ANOVA) statistic was adopted to test the two hypotheses at .05 level of significance. The result of the analysis revealed that students' perception of teachers' evaluation technique and teacher-student relationship significantly influence their academic achievement in Algebraic processes. Based on this finding, it was recommended among others, that teachers should improve their evaluation technique and teacher-student relationship through attending conferences, seminars and workshops of stakeholders in education to enhance students' academic achievement in Algebraic Processing.
Keywords: Evaluation technique, teacher-student relationship, students' academic achievement, Algebraic Processes.

Introduction

Algebraic processes are difficult to teach and to learn because it consists of unfamiliar concepts involving complex relations. The highly conceptual nature of algebraic process makes it particularly difficult for students to understand. The strategies commonly used in the classroom have not sufficiently eased the learning process of the subject almost at all levels. Rote learning contributes very little to the knowledge structure of the learner and therefore cannot promote reflective thinking in more critical and abstract manner. The problems of teaching

algebra have existed since the introduction of the subject in the school. Inability of students to acquire this required knowledge in algebra is one of the major problems in studying secondary school Mathematics. Students lack effective method of problem solving in algebraic processes (Biggs, 2017). This has resulted to students showing negative attitude, loss of interest and lack of attention in class during Algebraic processes instructions which lead to students' poor academic performance in Mathematics.

Dauda and Abidin, (2012) observed that students' poor performance over the years in Algebraic processes as a branch of Mathematics has been attributed to evaluation technique and teacher-student relationship which make students become passive and have less interaction with each other in doing mathematical tasks. The traditional approach of teaching and relating with the students largely encourages students to memorize concepts even in the area of problem-solving, explanation of observed phenomena and comprehension (Siemo, 2004). Most students today are not able to; understand key concepts in algebraic processes, demonstrate proficiency in skills such as, problem solving, critical thinking, mastery and grasping of scientific methods and processes and applying knowledge in real life situations (Jones,2012). The problem of poor conceptual understanding seems to be recurring also from the fact that students come to the tertiary level with a weak background in Mathematics. Students struggle to learn Mathematics (Algebraic processes) and often do not achieve success through their learning. This may stem from the fact that, they do not construct appropriate understanding of fundamental Mathematics concepts through their learning strategies and interaction with their teachers. Some teachers are not able to teach algebra to reflect students' life experiences in their environment, most of their lessons always remain at the abstract level and involve meaningless manipulation of numbers, symbols and relation. The need for improved achievement in Mathematics has driven teachers and researchers to seek appropriate evaluative technique and teacher-student relationship. These will allow students to control their learning process as well as develop the required interest in doing Mathematics tasks.

Students perceive teachers' evaluation technique and teacher- student relationship observable teachers' quality or teaching skills which could influence their academic achievement in Algebraic processes and Mathematics in general (Ana & Adina, 2012). These skills/qualities are described as a sequence of teaching/learning modes or skills/relationship designed to promote the attainment of a particular type of objective (Farrell &Farmer, 2013). Effective classroom teaching/learning and teacher-student relationship produce the requisite results (Jones, 2012). There are three types of instructional outcome behaviour namely; cognitive, affective and psychomotor. Cognitive involves thinking, processing, remembering, evaluating and problem-solving, affective

includes values, feelings and attitudes, relationship and psychomotor involves some kind of muscular activity such as walking and, demonstration (Adeyemo, 2017). The success of every educational process both formal and informal depends on teacher effectiveness and teacher quality. Algebra as a branch of Mathematics like many other science subjects requires a lot of skills for effective/successful teaching and teacher-student relationship. Factors perceived by students that may influence their academic achievement in Algebraic processes as identified for this research study include teachers' evaluation technique and teacher –student relationship.

According to Smith (2010), evaluation is the process of gathering and interpreting evidence regarding the problems and progress of students in achieving desirable educational goals. It is an integral and essential aspect of all learning (Smith, 2010). According to Mayer and Ibrahim (2015), education is the planned process of seeking to modify behaviour in directions which are socially desirable. In an attempt to determine the degree to which socially desired behaviour is being achieved, evaluation of the algebraic processes in Mathematics becomes necessary. Evaluation seeks to secure evidence of all significant changes in students and teachers behaviours.

Mahe (2017) carried out a study on teachers' lesson evaluation technique and students' academic achievement in Mathematics in Lagos State. Two (2) research hypotheses were formulated and tested at 0.05 alpha level. The design adopted for the study was the ex-post facto design. A sample of 650 SS 2 students who were selected in public secondary schools. The major instruments used in this study were student questionnaire, teacher questionnaire and Mathematics achievement test. The data collected were subjected to statistical analysis using mean scores and Linear regression analysis. The results obtained, amongst others, revealed that teachers' evaluation lesson strategies significantly influence students' academic achievement in Algebraic processes.

Similarly, Jacob (2012) conducted a study on the relationship between teachers' lesson evaluation technique and student academic achievement in Algebraic expression in Ikom Education Zone of Cross River State. In order to achieve this, four hypotheses were formulated and tested at 0.05 alpha level. The design adopted for the study was the ex-post facto design. The sample for the study consisted of 250 who students were randomly selected from 1210 students in public secondary schools in Ikom Education Zone of Cross River State using stratified and simple random sampling techniques. Two instruments were used, namely; Structured four questionnaire and Mathematics achievement test. The statistical analysis used was Pearson Product Moment correlation coefficient. The results obtained amongst others, revealed that there is a significant influence of teacher' lesson evaluation technique on students' academic achievement in Algebraic processes. Based on this, it was recommended that teachers should

actively monitor students by watching them closely, giving feedback to correct undesirable behaviours and to praise the students for good behaviours.

Students prefer teachers who are warm and friendly (Jones, 2012). In the classroom, the interpersonal relationship between teacher and students is an important element in the students' learning process. According to Ana and Adina (2012), the establishment of common ground between teachers and students is a fundamental component for a good and lasting interpersonal relationship. Teachers should bear in mind that their actions are likely to have a significant influence upon improving or detracting from the quality of their relationship with students which in turn will have a favourable or negative influence on their learning.

Joe (2015) conducted a study on teacher- student interpersonal relationship on students' academic achievement in algebraic processes in public senior secondary schools in Ikot Ekpene Education Zone of Akwa Ibom State. A sample of 180 SS 2 students (93 males and 87 females) were drawn from the population of 6008 in public secondary schools in Ikot Ekpene Education Zone for study. Quasi experimental design was used. Two hypotheses were formulated to guide the study and tested using analysis of covariance (ANCOVA) at 0.05 alpha level. The result shows that there is a significant influence of the teacher-student relationship on academic achievement of students in algebraic processes. In a similar way, Godfrey (2015) conducted a study to examine the relationship between teacher student relationship and students' academic achievement in Mathematics amongst secondary students in Bunguru Educational Zone of Zamfara State. The research design used was ex-post facto. The sample of 300 SS3 students were selected for the study. The instrument used were questionnaire titled teachers' instructional skills and Mathematics Achievement Test. The data were analysed using Pearson Product Moment Correlation Coeffecient. The result of the analysis shows that amongst others, that there is a positive relationship between teacher-student relationship and students' academic achievement in Mathematics.

In the same vein, Patrick (2015) conducted a study on influence of teachers' professional characteristics on students' academic achievement in algebraic processes among secondary school in Ekiti State. A sample of 400 students was randomly selected from public secondary schools. The study applied a causal comparative research design. Two instruments were used. Questionnaire and achievement test in Mathematics. Data was analysed using Chi-square statistical technique. The result shows that there was significant influence of teacher- student relationship on students' academic achievement in Algebraic processes.

Leo and kalu (2016) examined the effect of teacher- student interpersonal relationship on students' academic achievement in Mathematics in public senior

secondary schools in Osun State. A sample of 120 students (63 males and 57 females) was drawn from a population of 4008 senior secondary two students in public secondary schools in Osun State for study. Quasi experimental design was used. One hypothesis was formulated to guide the study and tested using analysis of covariance (ANCOVA) at 0.05 alpha level. The result of the findings shows that there is a significant influence of the teacher-student relationship on academic achievement of students in mathematics which include algebraic processes. Supportive and positive relationships between teachers and students ultimately promote a "sense of school belonging" and encourage students to "participate cooperatively in classroom activities" (Hughes & Chen, 2011, p.278).

Theoretical framework. **Wubbel's theory of teacher interpersonal classroom behaviour (2006)**

Wubbel (2006) developed teacher interpersonal classroom behaviour theory which stated that all human behavior and perceptions are described along two dimensions: agency and communion. The agency dimension describes the degree to which one controls the interaction, exuberates power or behaves independently from the other. The communion dimension describes the level of affiliation or friendliness one shows toward the other person. In Wubbel' teacher interpersonal classroom behaviour theory, the concepts of agency and communion are referred to as meta-concepts that encompass constructs that are used in other theoretical frameworks describing human relationships and teaching skills. The strength of the interpersonal theory lies in the combination of both dimensions which is important in describing teacher–student relationships and evaluation technique given their inherent hierarchical nature.

Wubbbel theory of interpersonal teacher behavior or strategies describes teaching in terms of the relationship between teacher and students, focusing on the interpersonal valence (or standing) ascribed to behavior and evaluation of change in behaviour (Wubbel, 2006).

The implication of the theory to the study is that since teacher evaluation technique and teacher-student relationship are important aspect in the learning environment as it relates to student cognitive and affective outcomes, teachers should be mindful of their classroom interpersonal relationship with students, evaluating technique as this has a way of influencing their academic achievement. It therefore implies that students may achieve better in Algebraic processes/equations if Mathematics teachers exhibit more leadership/ friendly and understanding behaviour (relationship) and the use of good evaluate technique in assessing the student, whereas the reverse may be the case if students perceive Mathematics teachers to exhibit more of uncertain, dissatisfied and admonishing behaviour (relationship).

Statement of hypotheses

The following null hypotheses were formulated to guide the study.

1. There is no significant influence of students' perception of teacher evaluation technique on their academic achievement in Algebraic processes.
2. There is no significant influence of students' perception of teacher-student relationship on their academic achievement in Algebraic processes.

Methodology

The study area was Uyo Education Zone of Akwa Ibom State. The research designed adopted is Ex-post facto design. Ex-post facto research is a method of testing possible antecedents of events that have happened and cannot, therefore, be manipulated. The information collected from the sample through the questionnaire was quantified, analysed and interpreted using appropriate statistical techniques, which allowed for valid generalizations.

The population for the study consisted of all the SS 11 Students in Uyo Education Zone which comprises of Uyo,Itu, Nsit Ubium, Nsit Atai, Ibesikpo Asutan, lbiono Ibom, Etinan, uruan and Nsit Ibom Local Government Area. There are 7479 male and female SS II students in the study area. A multi-stage sampling technique involving stratified and simple random technique was adopted in selecting students for the study. The schools were stratified based on gender and local government area but of a total of 78 public secondary schools, 25 (32%) schools were randomly selected for the study, from each selected schools in each local government area, 11% of the total number of students were selected using proportional random sampling technique giving a total sample of 800 students for the study

Two instrument were used, A structured four point Likert Scale questionnaires title "teachers' instructional strategies" and Mathematics achievement test constructed by the researchers. The questionnaire consisted of two sections (A&B). Section A described the bio data of the respondents while section B dwelt on the main variables which include teacher evaluation technique and teacher- student relationship. Six questions were constructed for each variables. The questionnaire was based on four point Likert scale used in measuring respondent's opinion level of agreement or disagreement, namely; Strongly agreed, Agreed, Disagreed and Strongly disagreed. The instrument was face validated by two experts in measurement and evaluation from the University of Calabar. Correction were pointed out by the expert and adjusted by the researchers and the document was considered valid. The reliability estimate of the questionnaire was established through Cronbach Alpha reliability which give .82 and .81 while students' achievement test in Mathematics was established through Kuder Richardson formula K-R20 which give .75.

Results

The statistics package for social sciences (SPSS) VERSION 22 computer programme was used to analyze the data collected. The data for the hypotheses were analyzed using One Way Analysis of Variance (ANOVA) for the two hypotheses. The result of the analysis is presented in the table 1,2,3&4. The hypotheses were tested at .05 significance level.

Hypothesis one

There is no significant influence of students' perception of teacher lesson evaluation technique on their academic achievement in Algebraic processes.

The independent variable in this hypothesis is perception of teacher lesson evaluation technique (categorized as High, Average and Low), while the dependent variable is students' academic achievement in Algebra. To test this hypothesis, students' perception of teacher evaluation technique were classified into three groups low from 6-11, average from 12-18 and high from 19-24 based on students' score in rating teacher evaluation technique in the research questionnaire. Based on this categorization, one-way analysis of variance (ANOVA) test statistic was employed in testing the hypothesis based on their academic performance in Algebraic processing. The result of the analysis is presented in Table 1.

Table 1

One-way analysis of variance (ANOVA) of influence students' perception of teacher lesson evaluation on their academic achievement in Algebraic processes.

Teachers' evaluation	N	X	SD
Low	182	14.99	6.33
Average	339	18.03	8.11
High	279	15.98	7.20
Total	800	16.60	7.12

Source of variation	SS	df	MS	F-ratio	p-level

Between Group	1,983.10	2	991.55	14.770*
.000				
Within Group	53,501.024	797	67.13	
Total	55,484.124	799		

* Significant at 0.05 level (Critical $F_{2, 797} = 3.00$)

The result of analysis in Table 1(F= 14.770: p=.000) indicated that the null hypothesis was rejected at 0.05 level of significance while the alternate was upheld. This imply that there is a significant influence of students' perception of teacher evaluation technique on their academic achievement in Algebraic processes. A post hoc multiple comparison test was done and the result is presented in Table 2.

Table 2

LSD post hoc test analysis of the influence of students' perception of teachers' lesson evaluation on their academic achievement in Algebraic processes

Teachers' mastery	Low (n=182)	Average (n=339)	High (n=279)
Low	14.99[a]	-3.04[b]	-0.99
Average	-4.04[*C]	18.03	2.05
High	-1.27	3.09*	15.98
Ms within 67.13			

P<.05

a= Group mean along the principal diagonal

b= Mean differences above the principal diagonal

c= t-values below the principal diagonal.

A Post hoc multiple comparison test result also indicates that the Fisher's significant t-value of -4.40 and 3.09 and a non-significant t-value of -1.27. This imply that, students with perception of teachers' average / low evaluate technique (t=-4.40;p=.000) and teacher average/high mastery of the subject matter (t=3.09; p=0.000) has a significant influence on their academic achievement in Algebraic processes.

Hypothesis two

There is no significant influence of students' perception of teacher-student relationship on their academic achievement in Algebraic processes. The independent variable in this hypothesis is teacher-student relationship while the dependent variable is students' academic achievement in Algebraic processes. To test this hypothesis, teacher- student relationship were classified into three groups low from 6-11, average from 12-18 and high from 19-24 based on students' score in rating teacher evaluation technique in the research questionnaire.

Based on this categorization, one-way analysis of variance (ANOVA) test statistic was employed in testing the hypothesis based on their academic performance in Algebraic processing.. The result of the analysis is presented in Table 3.

Table 3

One-way analysis of variance (ANOVA) of influence of students' perception of teacher-student relationship on their academic achievement in Algebraic processes

Teacher-student	N	X	SD
Low	270	15.44	6.89
Average	319	18.18	7.85
High	211	14.20	6.07
Total	800	16.21	7.99

Source of variation	SS	df	MS	F-ratio	p-level
Between Group	1,276.04	2	863.52	12.700*	.001
Within Group	54,208,083	797	68.02		
Total	55,484.123	799			

* Significant at 0.05 level (Critical $F_{2, 797} = 3.00$)

The result of analysis in Table 3 (F=12.700: p=.001) indicated that the null hypothesis was rejected at 0.05 level of significance while the alternate was upheld. This imply that there is a significant influence of students' perception of teacher-student relationship on their academic achievement in Algebraic processes. A post hoc multiple comparison test was done and the result is presented in Table 4.

Table 4

LSD post hoc test analysis of the influence of students' perception teacher-student relationship on their academic achievement in Algebraic processes

Teacher-Student	Low (n=270)	Average (n=319)	High (n=211)
Low	15.44[a]	-2.74[b]	1.24
Average	-4.02*[C]	18.18	5.44
High	1.60	4.02*	14.20
Ms within 68.02			

P<.05

a= Group mean along the principal diagonal

b= Mean differences above the principal diagonal

c= t-values below the principal diagonal.

The Post hoc multiple comparisons test result also indicates that the Fisher's significant t-value of -4.02 and 4.02 and a non-significant t-value of 1.60. This imply that, students with perception of teacher-student relationship with average / low (t=-4.57;p=0.001) and teacher- student with average/high (t=4.02; p=0.001) has a significant influence on their academic achievement in Algebraic processes.

Discussion

The result of the first hypothesis revealed that there is a significant influence of teachers' lesson evaluation on academic achievement of students in algebraic processes. This finding agreed with Smith (2010) who stated evaluation is an integral and essential aspect of all learning. Mayer and Ibrahim (2015) pointed out that point that education is the planned process of seeking to modify behaviour in directions which are socially desirable. The finding of this study was in line with Nwakonobi (2017) who investigated effect of teachers' evaluation technique on students' academic achievement in algebraic processes in Onitsha Education Zone of Anambra State and concluded that there is a significant influence of teachers' lesson evaluation technique on students' academic achievement in algebraic processes. The finding is in line with the study of David (2017) who concluded that teachers' evaluation lesson strategies significantly influence students' academic achievement in Algebraic processes. This implies that students' negative perception of teachers' lesson evaluation accounted significantly for their poor academic performance in Algebraic Processing in the study area.

The result of second hypothesis revealed that there is a significant influence of teacher-student relationship on academic achievement of students in

Algebraic processes. According to Ana and Adina (2012), the establishment of common ground between teachers and students is a fundamental component for a good and lasting interpersonal relationship. This finding agreed with Hughes and Chen (2011) who see teacher–student relationships as a the basis of the social context in which learning takes place. This finding is in tandem with the finding of Joe (2015) who carried out a study on teacher- student interpersonal relationship on students' academic achievement in algebraic processes in public senior secondary schools in Ikot Ekpene Education Zone of Akwa Ibom State. The result shows that there is a significant effect of the teacher-student relationship on academic achievement of students in algebraic processes.

In the similar vein, Godfrey (2015) conducted a study to examine the relationship between teacher student relationship and students' academic achievement in Mathematics amongst secondary students in Bunguru Educational Zone of Zamfara State. The result of the analysis shows that amongst other variables, that there is a positive relationship between teacher-student relationship and students' academic achievement in Mathematics. Hughes and Chen, (2011), supportive and positive relationships between teachers and students ultimately promote a "sense of school belonging" and encourage students to "participate cooperatively in classroom activities" This implies that students' negative perception of teacher-student relationship accounted significantly for their poor academic performance in Algebraic Processing in the study area.

Conclusion

Learning is a complex process involving skills and some of the skills needed is the act of teacher's interactions with his students and evaluation techniques. From the review of related literature, it could be inferred that evaluation techniques and teacher-student relationship was crucial in a classroom setting, its effectiveness depends on the teacher teaching skill and teacher-student relationship. These teaching skills/relationship exhibited by the teachers enhances effective teaching and learning of Mathematics. Based on the results of the study, it was concluded that students' perception of teachers' evaluation technique and teacher-student relationship significantly influence their academic achievement in Algebraic processes.

Recommendations

On the basis of study finding, the following recommendations were made

1. Teachers should improve their competence in term of evaluation technique and teacher-student relationship through attending conferences, seminars and workshops of stakeholders in education to enhance students' academic achievement.

2. Teachers should actively monitor students by watching them closely, giving feedback to correct undesirable behaviours and to praise the students for good behaviours**.**

3. Teachers should endeavour to establish cordial relationship with their students in the school system, so as to create a friendly interaction between the teacher and students during teaching- learning. Thus, enhancing their academic achievement in algebraic processes.

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