

INFLUENCE OF TEACHERS' CHARACTERISTICS ON STUDENTS' ACHIEVEMENT IN MATHEMATICS IN OGUN STATE, NIGERIA

¹Abiodun, T. O, ²Asanre, A. A, ³Ogundeji, M. A, ⁴Odupe, T. A, & ⁵Rasaki, M. G.

^{1, 2,3}Department of Mathematics, Tai Solarin University of Education, Ijagun. P.M.B 2118 Ijebu- Ode. Ogun-State.

^{4,5} Department of Mathematics, Micheal Otedole College of Primary Education, Noforija, Epe , Lagos State

Citation: Abiodun, T. O, Asanre, A. A, Ogundeji, M. A, Odupe, T. A, & Rasaki, M. G. (2022). Influence of teachers' characteristics on students' achievement in mathematics in Ogun State, Nigeria. *Journal of Science, Technology and Education (JSTE)*; www.nsukjste.com/ 6(3), 16-22.

Abstract

This study examined the influence of teachers' characteristics on students' Achievement in mathematics in Ogun State, Nigeria. Survey research design was adopted for the study. Three research question and three hypotheses guided the study. The population of the study comprises of 8, 334 Senior Secondary School students and teachers. Simple Random Sampling Technique was used to select four hundred and eight (408) respondents comprises of 360 students and 48 mathematics teachers from twelve (12) public secondary schools. Two instruments used for data collection were Mathematics Achievement Test (MAT) and a Structured Questionnaire on teachers' factor (QTF). The reliability of MAT was 0.86 using the test-retest reliability method and the reliability of QTF using Cronbach alpha reliability coefficient was 0.79. Research question were analyzed using descriptive statistics and the hypotheses were analysed

using inferential statistics of independent T-test. The study revealed that teacher's attitude has significant influence on students' achievement in Mathematics. Moreover, teacher's job satisfaction has significant influence on students' achievement in Mathematics. Furthermore, the study established that students' achievement in mathematics can be affected by the qualification of teachers. The study recommended among others, that teachers should exhibit positive attitudes toward the students during teaching and learning process in and outside the classroom.

Key words: Teacher's attitude, job satisfaction, qualification, performance.

Introduction

Mathematics is an essential tool for advancement of any nation. According to Azuka (2012) Mathematics is an integral part of everyone's life and virtually affects

every field of human endeavor. Mathematics without any doubt remains the most serviceable subject to all disciplines and fields of human work and it has become an indispensable tool in the study of Humanities, Sciences and Technology and has relevance in many areas of human activities (Kurumeh, Onah & Mohammed, 2012). For this reason, the importance of students' competence in Mathematics at all levels of education particularly Senior Secondary School cannot be over emphasized. It is however disheartening that, going by the Chief Examiners' Reports (2015-2018) in West African School Certificates examinations on students' performance in Mathematics is nothing to write home about.

Reports from different researches have also portrayed a poor state of Nigerian students in terms of Mathematics achievement. Various factors have been identified for poor performance of students in Mathematics. These factors are not limited to the following; teachers factors such as attitude and qualification, interest of students in Mathematics and students' personality (Lewis, 2018). According to Adedayo (2015), the observed failure of students in Mathematics at Senior Secondary School Mathematics has always been attributed to some teacher's factors. Ashikhia (2010) attributed some teacher's

factors and student's factors as some of the root causes of the undesirable poor achievement of students in Mathematics. Therefore, for students to be able to make connection between what is taught in school and its application in problem solving in real life, the teacher has to be effective in their teaching (Goldhaber & Brewer, 2000). The important role of the teachers in the learning is unquestionable and also, they have a lot of influence on their classroom practices (Akinsolu, 2010). Hence, for a way forward to be sorted for, there is need to study some of the teacher's factors that affect student's achievement in Mathematics.

An important teacher's factor established by researchers for addressing students' failure in Mathematics is the attitude of the teacher in and outside of the classroom. Attitudes is defined by Coelli (2011) as a relatively enduring predisposition to respond in a relatively consistent manner towards a person, object situation or idea. Adesoji (2012) defined attitude as cognitive, emotional, and action tendency to a particular behavioural intent. He ascertained that that attitude is an important factor that determined achievement of students in Mathematics. Halladyna & shanghnessy (2008) also stated that there are number of factors that contributed to poor performance of students in Mathematics, they identified

teachers' attitude as a major factor and then concluded that teachers' attitude is an important factor that determine the achievement of students in Mathematics. Another teacher's factor identified by researchers as capable of addressing students' poor achievement, if special attention is attached to it is teacher's job satisfaction. Habib Ahmad (2010) defined job satisfaction as how much happy an individual is with his/her job. Satisfaction can be achieved when a person performs what he/she likes to do in a particular situation (Abiodun, 2012). Teacher's job satisfaction is a source of motivation that sustains effort in performing tasks required of a good teacher, such tasks include preparation of schemes of work, daily lesson plans, careful marking of assignment, detailed record keeping to monitor students' progress. (Poipoi, 2010). Briones (2016) reports that teachers' quality in terms of job satisfaction contributes to an increase in students achievements.

Quality of education is bound to suffer a great set back if teachers were unable to deliver good substances in the classroom as a result of their faulty quality in terms of their qualification. Teacher's qualification has high influence on their teaching methodologies, communication skills, and organization of content, planning of lessons, confidence and knowledge of subject

matter. Moreover, teacher qualification has influence on students' on students' performance (Maende, 2012). Akinsolu (2010) asserts that availability of qualified teachers determined the performance of students in schools. Asikhia (2010) emphasizes that teachers involved in in-service training were more effective in classrooms as compared to teachers who had not undergone training. However, there is still a need to establish the influence of teachers' qualification on students' academic performance in secondary school education in Nigeria. Therefore, this study examined the influence of teachers' characteristics on students' Achievement in mathematics in Ogun State, Nigeria.

Research Questions

1. What is the influence of teacher's attitude on students' achievement in Mathematics?
2. What is the influence of teacher's job satisfaction on students' achievement in Mathematics?
3. What is the influence of teacher's qualification on students' achievement in Mathematics?

Hypotheses

- HO₁ Teacher's attitude has no significant influence on students' achievement in Mathematics.

HO₂ Teacher's job satisfaction has no significant influence on students' achievement in Mathematics.

HO₃ Teacher's qualification has no significant influence on students' achievement in Mathematics.

Methodology

The research adopts descriptive research design of survey type. Twelve (12) secondary schools were randomly selected from the public secondary schools Ijebu North East and Odogbolu Local Government Area of Ogun state. A sample 408 respondents comprises of 360 students and 48 mathematics' teachers were randomly selected from the sampled schools. Simple random sampling technique was used to select thirty (30) students and five (4) Mathematics' teachers from each of the sampled schools. The population of the study comprises of 8, 334 Senior Secondary School students and teachers in Odogbolu Local Government area and Ijebu-North East Local governments of Ogun State.

Two instruments used to collect relevant data for the study. These are: Mathematics Achievement Test (MAT): This is a multiple choice items with four options lettered A – D that measures students' performance in Mathematics. The test items were constructed in such a way to reflect the three categories of cognitive task of knowledge, comprehension and application.

A draft of 50 multiple choice objectives items were first developed. The questions were from senior secondary certificate examination past questions of both WAEC and NECO from 2014 – 2018. Thirty (30) items which survived the item analysis constituted the Mathematics Achievement Test. The 30-items MAT was administered on a sample of 120 SSII students in two schools that were not part of the study and from the students' responses, a reliability coefficient of 0.856, using test-retest method was obtained. Structured Questionnaire on teachers' factor (QTF)

This questionnaire was designed by the researcher. QTF measured the identified teachers' factors. It was divided into three (3) sections. Section A sought to gather the demographic information of the respondents while section B focus on relevant questions on teachers' job satisfaction and section C focus on teachers' attitudes toward teaching and learning of Mathematics, with alternative responses for the choice of the respondents in reaction to each items whereby the respondents will be asked to tick the appropriate answers by using four likert scale; Strongly Agree (SA), Agree (A), Strongly Disagree (SD), and Disagree (D). The reliability of QTF was determined using Cronbach alpha reliability with coefficient 0.791. The face and content validity of the instruments were determined by the perusal of two experts in

Mathematics Education and it was confirmed that the instrument was relevant, unambiguous, detailed and capable of eliciting the needed responses from the targeted population.

Copies of the instruments were administered on the respondents in the selected schools. The data collected from the respondents were analyzed according to the hypotheses. The data were analyzed

using descriptive statistics and independent t-test.

Results

The descriptive report of the study with respect to the scores obtained by the respondents in the independent variables (Teacher's attitude, job satisfaction and qualification) and the dependent variable (students' achievement in Mathematics) are presented in Table1

Table 1: Descriptive statistics of the independent and dependent variables

Variables	Mean	S. D	N	Max	Min
Teacher's attitude	3.25	0.838	48	4	1
Job satisfaction	2.96	0.771	48	4	1
Teacher's qualification	2.85	0.684	48	4	1
Students' performance	18.02	5.587	360	28	8

Result in table 1 shows the mean and the standard deviation of the variables as follows: 3.25 and 0.838 for Teacher's attitude, 2.96 and 0.771 for job satisfaction, .2.85 and 0.684 for teacher's qualification, and performance in Mathematics with mean

of 18.02 and standard deviation of 5.587 respectively. Therefore, teacher's attitude, job satisfaction and teacher's qualification influence students' achievement in Mathematics.

Hypotheses

Hypothesis One: Teacher's attitude has no significant influence on students' achievement in Mathematics.

Table 2: *t*-test Analysis of Teacher's Attitude on Students' Achievement in Mathematics

Variable	N	Mean	S.D	df	t	P-value	Remark
Attitude	48	3.25	0.838	406	18.164	0.015	Significant
Achievement	360	18.02	5.587				

Table 2 revealed that teacher's attitudes has significant influence on students' achievement in Mathematics ($t = 18.164$, $df = 406$; $p < 0.05$). This confirms the hypothesis rejected and we

then conclude that teacher's attitude has significant influence on students' achievement in Mathematics. This result supports the assertion of Afolabi (2017) which confirm that attitude of teacher is a major factor that affect the performance of students in Mathematics. Also, in support of findings that that teacher's attitude has significant influence on students' achievement in Mathematics, is the study by Chhinh &. Tabata (2014) which revealed that the type of the attitude that teacher

exhibits determine the performance of the learners and then concluded that teacher's positive attitudes encourages learning inside or outside the classroom. Furthermore, Goldhaber and Brewer (2000) studied how the teachers' attitude contributed to students' academic performance and behaviour and found out that teacher's with positive attitude towards teaching and learning produces students with good academic performance.

Hypothesis Two: Teacher's job satisfaction has no significant influence on students' achievement in Mathematics.

Table 2: *t*-test Analysis of Teacher's job Satisfaction on Students' Achievement in Mathematics

Variable	N	Mean	SD	df	t	P-value	Remark
Job Satisfaction	48	2.96	0.77	406	18.552	0.008	Significant
Achievement	360	18.02	5.587				

The result of findings in table 2 revealed that job satisfaction has significant influence on students' achievement in Mathematics ($t = 18.552$, $df = 406$; $p < 0.05$). Hence, hypotheses 2 is rejected and then conclude that teacher's job satisfaction has significant influence on students' achievement in Mathematics. This implies that teacher's job satisfaction in terms of their working condition is directly related to their output especially during teaching and learning

process. This finding is in agreement with Briones (2016) who reported that teachers' quality in terms of job satisfaction contributes to an increase in students' achievements. This finding also supports that of Muhammad Rafiq (2012) who reported that one of the major variables that contribute to teacher's effectiveness in the classroom is satisfaction toward the job they are doing.

Hypothesis Three: Teacher’s qualification has no significant influence on students’ achievement in Mathematics.

Table 3: *t*-test Analysis of Teacher’s Qualification on Students’ Achievement in Mathematics

Variable	N	Mean	SD	df	t	P-value	Remark
Qualification	48	2.85	0.684	406	18.164	0.005	Significant
Achievement	360	18.02	5.587				

Result in table 3 revealed that there is a significant influence of teachers qualification on students’ achievement in Mathematics ($t = 18.164$, $df = 406$; $p < 0.05$). Hence the null hypothesis is rejected. This result corroborates the findings of (Abiodun et al, 2016) that revealed a positive significant relationship between teachers’ qualification and student’ performance in Mathematics. Also, Akinsolu (2010) established in his findings that teachers without training qualification correlated negatively on student achievement.

Conclusion and Recommendation

This study examines the influence of teachers’ characteristics on students’ Achievement in mathematics in Ogun State, Nigeria. The study revealed that teacher’s attitude has significant influence on students’ achievement in Mathematics. Moreover, teacher’s job satisfaction has significant influence on students’ achievement in Mathematics. Furthermore, the study established that students’ achievement in mathematics can be affected by the qualification of teachers. It is therefore recommended that teachers should

exhibit positive attitudes toward the students during teaching and learning process in and outside the classroom. The government should also provide more incentives for the teachers in order to make them satisfy with their chosen job. Also, Mathematics teachers without teaching qualification should be retrained to develop their skills, through appropriate methodology course in teacher education programme that lay more emphases on teachers’ personality variable including the three predictor variables in this study.

References

- Abiodun, A. (2012). Job Satisfaction Status of Primary School Teachers in Ota, Nigeria. *European Journal of Educational Studies*, 4(1), 11-18.
- Abiodun, T.O, Lawani, A.O, Fatade, O.A and Asanre A.A (2016): Teachers’ factor as predominant to Student academic performance in Mathematics in Ogun State, Nigeria.
- Adedayo, A.O. (2011). The place of mathematics in Nigeria Secondary School Course on effective teaching of mathematics. Phase 2, in ABACUS: *The Journal of*

- mathematical Association of Nigeria*. 27(1) 30.
- Adesoji, F.A (2012). "Modern strategies in the teaching of integrated science." In Ayodele, S.O., ed. *teaching strategies for Nigeria secondary school* (pp.205-212) Ibadan, power house press publishers.
- Afolabi, F. (2017). Teachers' Attitude and Gender Factor as Determinant of Pupils' performance in Primary Science. *African Research Review* 10(1): 326-332
- Akinsolu, A. O. (2010). Teachers and Students' Academic Performance in Nigerian Secondary Schools: Implications for Planning. *Florida Journal of Educational Administration & Policy*, 3(2), 86-103.
- Asikhia, H. (2010). Students and teachers' perception of the causes of poor academic performance in Ogun state secondary schools. *European Journal of Social Sciences*, 13(2), 1-28.
- Azuka, B. F. (2012). Improving the memory of students in Mathematics classroom towards better performance. *Journal of mathematical Association of Nigeria*, 37 (3), 65-72.
- Briones, E. T. (2016). Job Satisfaction of Secondary School Teachers: Effect of Demographic and Psycho-Social Factors. *The Colegio Oficial de Psicólogos de Madrid*, 26(2), 115-122.
- Chhinh, S., Y. Tabata, (2014). Teacher Factors and Mathematics Achievement of Cambodian Urban Primary School Pupils. *Journal of International Development and Cooperation*, 9(2): 29-41.
- Coelli, M (2011). Leadership Effects: School Principals and Student Outcomes. *An International Journal of Research, Policy and Practice*, 10(5), 75-89
- Elizabeth L.W., Enose M.W., and Okwach, T.O. (2016). *Influence of Teacher Factors on Students' Academic Performance in Secondary School Education*. *Greener Journal of Educational Research* 6 (4), 151-169.
- Goldhaber, D. D., & Brewer, D. J. (2000). "Does Teacher Certification Matter? High school Teacher Certification Status and Student Achievement" *Educational Evaluation and Policy Analysis*, 22 (2), 129-145.
- Kurumeh, M. S.; Onah F.O & Mohammed A.S (2012). Improving Students' Retention in Junior Secondary School Statistics using the Ethnomathematics Teaching Approach in Obi and Oju Local Government Areas of Benue State, Nigeria. *Greener Journal of Educational Research*, 2 (3), 54-62.
- Habib Ahmad, K. A. (2010). Relationship between Job Satisfaction, Job Performance, Attitude towards Work and Organizational Commitment. *European Journal of Social Sciences*, 18(2), 257-267.
- Lewis, E.R. (2008). *Assertive discipline: Positive management for today's classroom*. Seal Beach, CA: Canter and Associates.
- Maende, B. J. (2012). Influence of Professional Development on Teacher Effectiveness in Public Secondary Schools in Mumias District, Kenya. An unpublished M.ED Thesis: Maseno University.
- Muhammad Rafiq, M. J. (2012). Effect of Rewards on Job Satisfaction: Evidence from Pakistan. *Interdisciplinary Journal of Entemporary Research in Business*, 4(1), 337-347.
- Poipoi, L. C. (2010). Perceived factors influencing public secondary school teachers' job satisfaction in Busia District, Kenya. *International Research Journals*, 1(11), 659-665.