

Exploring the Roots of Poor Mathematics Performance: A Stakeholder Perspective in Adamawa State, Nigeria

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Received: May 4, 2023 Accepted: November 17, 2023 Published: February 26, 2024

doi:10.5296/ije.v16i1.20957

URL: <https://doi.org/10.5296/ije.v16i1.20957>

Abstract

In numerous countries worldwide, poor performance in mathematics remains a critical concern, and Adamawa State in Nigeria is no exception. This study investigates the perspectives of key stakeholders, including students, teachers, and headmasters, regarding the roots of poor mathematics performance within Shangui and Hong Government Senior Secondary Schools, Adamawa State. Through quantitative and qualitative approaches, data were collected from 151 senior secondary school participants, including 121 students, 11 mathematics teachers, 10 heads of departments, and 9 head teachers from randomly selected secondary schools in the Hong Local Government Area of Adamawa State. The findings revealed a prevalent negative attitude among students towards mathematics. Moreover, the study has identified a significant factor contributing to poor performance, which was the secondary schools' ineffective mathematics curriculum. In addition, many elementary school teachers lacked the aptitude and skills necessary to teach mathematics, which significantly impacted pupils' disinterest and resulted in low achievement in secondary education. The study recommends crucial interventions, including the revision of the final year mathematics curriculum, the incorporation of technology in mathematics education, enhancement of the quality of secondary mathematics teachers, a reduction in the emphasis on examinations, and the integration of internal assessments, projects, and fieldwork into the mathematics curriculum. This comprehensive stakeholder inquiry sheds light on the multifaceted challenges faced by the educational system in addressing and improving mathematics performance in Adamawa State.

Keywords: performance; curriculum; mathematics

1. Introduction

Mathematics is a crucial subject taught in educational institutions globally (Suleiman and Hammed, 2019). The level of scientific and technological literacy within a nation significantly impacts its economic and social growth (Suleiman and Hammed, 2019; Mbugua, Kibet, et al., 2012). Mathematics, a fundamental subject, plays a significant role in everyday human life (Ali and Jameel, 2016; Karakolidis, Pitsia, and Emvalotis, 2012). Enu, Agyman, and Nkum (2015) assert that mathematics influences every aspect of human life on various levels. The success of learning about human life and education, according to Sa'ad, Adamu, and Sadiq (2014), hinges on an effective understanding of mathematics. Even non-scientific disciplines such as accounting, economics, geography, and the performing and artistic arts are founded on fundamental mathematics. In fact, nearly every area of science has its foundation in mathematics (Suleiman and Hammed, 2019; Ali and Jameel, 2016; Reddy, Chaudhary, Sharma, and Chand, 2020; Raj, Raghuwaiya, Vanualailai, and Sharma, 2018). It is a pivotal subject in the school system as it serves as an intersection to all knowledge (curriculum, Raj, Raghuwaiya, Vanualailai, and Sharma, 2016).

Research indicates that mathematics is a vital primary tool for any nation's scientific, technological, and economic growth (Suleiman and Hammed, 2019). Mastery of mathematics is considered a prerequisite for success in any field of study, as it is deemed a necessary part of life (Visser, Juan, and Feza, 2015). According to Suleiman and Hammed (2019), a country's economic growth and advancements in science and technology would be impossible without mathematics. Informal work opportunities, such as driving cars and buses, also require mathematics skills (Pattison, Rubin, and Wright, 2017). In essence, living in contemporary society without a foundational understanding of mathematics is virtually impossible.

Despite the widespread acknowledgment of the importance of mathematics, low student success remains an issue in schools in developing countries (Sharma, Lauano, Narayan, 2018a; Naiker, Sharma, Wakeling, 2020). Students often perceive mathematics as challenging, leading to a lack of enthusiasm and poor results (Akhter and Akhter, 2018). This perception results in some students avoiding the subject altogether (Sharma, Fonolahi, Bali, and Narayan, 2018). Students entering the classroom with inadequate abilities to simplify algebraic figures are set up for failure (Yeh, Cheng, Chen, Liao, and Chan, 2019). Good mathematical ability is considered rational thinking, making mathematics a prerequisite in many higher education programs, especially those focused on scientific knowledge (Sharma, Lauano, Narayan, Anzeg, Kumar, and Raj, 2018a).

Nicholas, Poladian, Mack, and Wilson (2015) observed a substantial drop in the proportion of students enrolling in higher-level math courses, resulting in decreased enrollment and low success rates. Poor performance in mathematics at the national assessments further contributes to a decline in candidates enrolling in science courses at tertiary institutions (Sharma, Lauano, Narayan Anzeg, Kumar, and Raj; 2018a; Naiker, Sharma, Wakeling, Johnson, Mani, Kumar, et al. 2020; Sharma, Fonolahi, Bali, and Narayan. 2018). Many students fail to meet the basic entry requirements for science courses at tertiary institutions, which necessitate a pass score in mathematics (Chand, 2013).

The results of the West Africa Senior Secondary Certificate Examination (WASSCE) and National Examinations Council (NECO) are shown below for two different schools for the WASSC and NECO examination performances: Table 1 shows the WASSC and NECO examination performance results for five years (2016–2020) in mathematics for Shangui Government Day Secondary Hong. Table 1.1 shows the WASSC and NECO examination performance results for five years (2016–2020) in mathematics for the Hong government secondary school senior section.

Despite significant investments in education by the Adamawa state government and its academic partners, low achievement in mathematics persists, especially in the final years of secondary institutions in the state. The government has implemented programs such as scholarships, free textbooks, and transit support to enhance the quality of education in the state.

The objectives of this paper are, therefore:

1. To examine the views and attitudes of senior secondary school students in Hong and Shangui.
2. To investigate the instructional techniques employed by math instructors in Adamawa State senior secondary schools in Shangui and Hong.
3. To ascertain the qualifications held by mathematics instructors at Adamawa State's senior secondary schools between Shangui and Hong.

Table 1. WASSC AND NECO Performance in Mathematic from 2016-2020

Years	2016	2017	2018	2019	2020
WASSCE Pass %	38	32	23	22	20
NECO Pass %	40	45	38	40	25

Source: Exams and Record of the School. (Shangui Day SS level)

Table 2. WASSC AND NECO Performance in Mathematic from 2016-2020

Years	2016	2017	2018	2019	2020
WASSCE Pass %	40	30	28	29	21
NECO Pass %	48	42	40	35	24

Source: Exams and Record of the School. (Hong GSS SS level)

1.1 Achievement in National Mathematics Examinations

Studies by Tshabalala and Ncube (2016) argue that the pattern of poor mathematics achievement is caused by interactions between students, instructors, and schools. Numerous studies have shown that variables related to students, teachers, and curriculum appear to have a

significant impact on mathematics achievement. (Yeh, Cheng, Chen, Liao, and Chan, 2019; Ifeoma, Chinyere, Efeyadu, and Juliana, 2017; Kizito, Munyakazi, and Basuayi, 2016). While evidence exists explaining the reasons behind poor achievement, there is a scarcity of formal and established research in this domain. This current research aims to conduct a comprehensive inquiry into the factors impacting students, teachers, and the curriculum by comparing the opinions and experiences of students, teachers, heads of mathematics departments, and administrators. The study seeks to investigate and discuss the perspectives of participants regarding the primary reasons contributing to unsatisfactory student performance in mathematics, particularly in senior secondary schools in Adamawa State. The study's findings will provide a practical understanding of how to improve students' mathematics performance at the secondary level through effective reviews and reforms within the Curriculum Development Unit (CDU), the Ministry of Education (MoE), and other relevant academic stakeholders. The recommendations derived from the study aim to foster a positive mental attitude toward mathematics among students and advocate for necessary alterations in the teaching methods employed in elementary and secondary institutions.

1.2 Adamawa State Secondary Schools are Carrying out Mathematics Tasks

The intermediate mathematics curriculum in Adamawa State has not recently undergone any significant structural adjustments. The academic system is still predominately exam-based, despite the fact that nearly every element of the curriculum has been altered to better suit state requirements. Before a suitable teaching strategy was implemented, there were no major alterations to the mathematics curriculum. 2017 saw a change in the curriculum that would enable instructors to implement a student-centered methodology and reorient education towards the student. The continuous anxiety and trauma of exterior exams would not have been present for students if not for the teacher-centered approach. According to a report given to Cabinet in 2018 by the Minister of Education, the very low average scores and success rates in SSI and SSII in the external exams were a failure of the educational system. With a proportion of 10.5%, mathematics had one of the lowest scores in Adamawa State's external exams in 2018. As a result, underprepared students were transferred from one year to the next without their teachers and parents being aware of the real performance level of the students in that year. This was ascribed to teachers' poor teaching methods and strategies as well as the insecurity brought on by the insurgency. Additionally, the removal of normalization was suggested and authorized by Cabinet in order to represent students' real abilities. This was done because previous mathematics results in this subject revealed excessive percentages and norms that did not correctly reflect students' true levels of understanding (Cava, 2015).

The Ministry of Education (MoE) recognized an urgent scarcity of math, physics, and chemistry instructors in 2018 and anticipated the shortfall would last for a considerable amount of time. This is when the effects of poor mathematics achievement were felt (Ministry of Education, 2019). MoE has gone as far as to hire retired teachers as assistant teachers, as the shortage of STEM instructors has been attributed to poor performance in mathematics at the senior secondary level, and very few students qualify for these courses. Because there aren't enough teachers of industrial arts in the nation, in some instances, school officials are even hiring teachers from other disciplines to take over the instruction of mathematics in secondary

schools. Additionally, after a few years of service, some graduates who have been accepted into STEM teaching schools choose to move to other nations because they receive more lucrative and better pay packets than the local teachers. However, there has been a significant drop in the performance in senior secondary mathematics, the number of students participating in STEM classes at colleges, and the number of graduates in the fields of math, science, and technology.

1.3 Review of the Literature

Given the state's ongoing trend of low mathematics achievement in secondary schools, the state government and stakeholders are concerned about whether Adamawa State's educational system can produce students who have the skills to survive in a rapidly changing technological society. Numerous studies have linked variables like students, instructors, and curriculum to why students perform poorly in mathematics. This research looked at the variables influencing senior secondary mathematic students' mathematics success in Adamawa State: Mathematics-related views and beliefs of students, mathematic instructors' views and opinions, the instructional strategies used by mathematic instructors, mathematics teachers' quality and performance, and the effectiveness and the usefulness of the mathematics programmed. The following overview from the literature describes the above elements that have contributed to students' poor performance in mathematics.

1.4 Mathematics Instructors' Views and Opinions

A number of studies argue that poor teaching practices by mathematics instructors are to blame for students' poor academic performance (Suleiman and Hammed, 2019; Cronhjort, Filipsson, and Weurlander, 2018). Obikwere (2008) states that instructors use ineffective approaches to instruction, which makes students hate the subject in general. The researcher emphasized that instructors must use instructional strategies and technological tools to stimulate students' interest in mathematics if they want them to understand it. A recent study by Suleiman and Hammed (2019) found that 85.63 percent of students felt discouraged from studying mathematics as a result of some of their instructors' poor teaching methods. Johnson and Johnson (2015) state that in the contemporary educational era, students are urged to actively participate in their learning as they investigate and broaden their knowledge. Teachers should use strategies that encourage students' active engagement while accommodating their interests. Lal (2016) notes that instructors are overly focused on teaching the material and maintaining students' attention with test questions and responses as a result of the examination-based system. The research also emphasized that because alternative teaching and learning techniques for mathematics require too much time and are viewed as unnecessary for completing exams, teachers are unwilling to use them.

1.5 Behaviour and Impression of Teachers in Mathematics Classes

Here, the issue of who bears responsibility for bad views towards mathematics emerges. Students' attitudes and mathematical achievement are significantly impacted by their instructors' hatred of mathematics. Studies by Mazana, Suero Montero, and Casmir (2018) have highlighted that one of the main factors contributing to students' unfavorable attitudes

towards mathematics is teachers' attitudes towards the subject. The way that students feel about instructors affects how they feel about mathematics. The personal and professional qualities of teachers have a significant impact on whether or not students enjoy mathematics. Studies by Mazana and Suero Montero (2018) show the connections between ineffective teaching methods, a lack of motivation on the part of the instructor, behavioral traits, poor student test scores, and students' failure to retain the information. Adamawa State, however, has not yet made any conclusions regarding this matter known. The general trend of local teachers' attitudes towards mathematics education and whether these attitudes have an effect on how well their students perform in mathematics must be determined through a comprehensive and extensive official investigation.

1.6 Mathematics-Related Views and Beliefs of Students

A student's level of endeavor to understand the subject at hand is determined by their level of interest. It describes the overall interest a student has in the subject at hand. (Reddy, Sharma, and Chandra, 2020; Hannula, 2002). Many research investigations have been carried out in several states to determine the causes of students' poor mathematics achievement. One of these variables that has been repeatedly examined is the views and opinions of the students (Reddy, Sharma, and Chandra, 2020; Binti Maat and Zakaria; Mohamed and Waheed, 2011). Studies by Enu, Agyman, and Nkum (2015) and Mohamed and Waheed (2011) Students' unfavorable attitudes and views, which stem from their belief that mathematics is a challenging topic to pass, are to blame for the difficulties with instructing mathematics. A recent study by Suleiman and Hammed (2019) found that 92.50% of students hated mathematics, while 86.25% had an unjustified fear of it. Mathematical phobia and nervousness among students eventually result in unfavorable attitudes that last for an extended period of time (Nicolaidou and Philippou, 2004).

However, they feel uncomfortable because of the conditions that surround them. These circumstances don't inherently imply that a student is always to blame for their poor performance. While there are currently regional studies that look at instructors' preparation for teaching mathematics and secondary students' attitudes towards science (Naiker, Sharma, Wakeling, Johnson, Mani, Kumar, et al., 2020) and ICT, there isn't a local survey that looks at how students feel about mathematics. To better understand the students' lack of optimism and poor performance in mathematics in secondary schools in Adamawa State, it is necessary to obtain the opinions of students, instructors, department leaders, and administrators.

1.7 Qualification, Quality, and Performance, of Mathematics Teachers

The attitudes and success of math students are greatly impacted by the quality, effectiveness, and qualifications of math instructors. The effectiveness and qualifications of instructors have been found to be closely related to student achievement (Lal, 2016). A recent study by Suleiman and Hammed (2019) revealed that most students don't think their instructors are good at teaching math. Due to the lack of appropriate training for instructors of 21st century methodology in mathematics in higher education, the bulk of math instructors do not engage students in interesting tasks during math lessons, which ultimately leads to poor mathematical performance and negative views of students.

As a consequence, in order to advance their jobs to the highest standards, it is essential that instructors receive both official and informal training. (Suleiman and Hammed, 2019). Studies by Sharma, Fonolahi, Bali, and Narayan (2018) and Keong, Horani, and Daniel (2005) have highlighted the essential function that technology performs in math education. ICT has already been incorporated into the curricula of some secondary institutions in Adamawa State, like Hong Government Senior Secondary School. ICT in the contemporary era allows for the integration of various creative and new evaluations in the classroom that were not feasible with conventional assessment methods, according to a recent local study by Totaram (2018). He continued by saying that by using ICT, teachers' workloads are considerably decreased, giving them more time to concentrate on what they do best: foster student achievement.

ICT integration into every classroom is something that many primary and secondary institutions intend to do (Reddy, Chaudhary, Sharma, and Chand, 2020; Reddy, Sharma, and Chaudhary, 2005). For many secondary institutions in Adamawa State, though, the expense of such investments continues to be a problem. Reddy, Chaudhary, Sharma, and Chand's (2020) local study demonstrates that students need to possess the necessary abilities, such as computer literacy and self-efficacy, to use these technologies successfully and effectively in their learning, in addition to using ICT in the curriculum and learning. Teachers who serve as students' guides must also possess the pertinent digital literacy skills that students will need to succeed in the digital world.

According to research by Popoola and Olarewaju (2010), students in secondary institutions in Adamawa State and throughout Nigeria perform poorly in mathematics due to a shortage of qualified teachers. Academic success is greatly impacted by teachers' language and subject expertise. Linguistic and conceptual comprehension are significant issues, according to research by Reddy, Sharma, and Chaudhary (2005). To ensure that every student knows and is not left perplexed, math instructors must explicitly describe mathematical ideas to students, needing both language and a fundamental grasp of the concept. A study by Arends, Winnaar, and Mosimege (2017) has shown that teachers' clarity, communication skills, content knowledge, and assessment procedures have a significant impact on student achievement in mathematics. Suleiman and Hammed (2019) have shown that secondary school students poor mathematics achievement is due to a shortage of effective math instructors. Statistical data that is useful and productive about the quality and preparation of science instructors employed in secondary institutions.

1.8 Teachers of Mathematics Employ a Variety of Instructional Techniques

Exam emphasis is a common criticism of courses in developing countries (Lingam, 1996). Teachers and other stakeholders are very worried about the school's test outcomes. As a result of the exam-oriented system, teachers therefore focus too much on completing the curriculum and trimming students for exam questions and answers (Lal, 2016). Additionally, they believed that the true purpose of curriculum and evaluation in schools was not being served successfully or efficiently (Lingam (2017). Exams are unable to gauge students' dispositions, leaving one of life's most crucial facets underdeveloped and likely the reason why quality isn't being achieved. The curriculum's content and the methodologies of evaluation used to determine the outcomes,

he continued, have been deemed to be incompatible, leading to the labelling of the educational system as ineffective. The 2018 Education Commission report even stated that the examination-based curriculum does not allow for progress in outcome-based teaching and learning. Several research studies have been conducted in many developing countries on the impact of curriculum and examinations on students' interest and achievement in mathematics (Khan, 2017). Local studies by Kumar (2018) recommended that the curriculum should be revised by the Ministry of Education to make it more adaptable and relevant to the various demands of various areas and students' backgrounds.

2. Methodology

Using a poll research methodology, this study is descriptive in nature. Through surveys, interviews, and focus group talks, data for the research was gathered. 151 respondents—121 students, 11 math instructors, 10 department leaders, and 9 principals—were chosen at random from the intended community and comprised a sample. These respondents came from seven secondary schools in Hong. Seven secondary schools were arbitrarily chosen in Hong regions out of a total of 21 secondary schools. The sample consisted of mathematics instructors, department leaders, and school officials. They answered surveys and took part in one-on-one interviews. Students with various academic skills were organized using a list of each student's most recent total grade point average, and secondary school students were chosen using the stratified random technique. This was done to ensure that the perspectives of all students, regardless of ability, were adequately represented. Additionally, the students who would take part in the focus group talk were chosen through a process known as deliberate selection. All respondents were given the assurance of confidentiality and anonymity regarding their identity in order to safeguard the respondents' privacy and collect the required data that accurately captures their true opinions. Appointments were made with the head teachers before conducting the field research, and consent was also obtained from each respondent.

2.1 Construction of Researcher Instruments and Research Tools

For the focus group talk, which took place in one of Hong's classrooms, students were chosen largely at random. Only qualitative data were gathered for the study through interviews and focus groups. Additionally, these instruments were pilot tested in the senior secondary institutions in the Hong area, which were not included in the sample. This was done to determine whether each tool's component was clear, meaningful, and understandable. After the pilot study, the researcher addressed how to strengthen the validity and dependability of the research instruments and answers. A Cronbach's alpha test using the Statistical Package for the Social Sciences (SPSS) was carried out. The alpha value of 0.76 indicated that the questionnaire was valid and reliable for the study.

3. Results and Discussion

3.1 What are the Attitudes and Perceptions of Senior Secondary School Students towards Mathematics as a Subject?

Questionnaires about senior secondary school students' views and impressions of mathematics were given out to participants in the research, including students, instructors, department leaders of mathematics, and administrators. Teachers, heads of department, and school officials also shared their ideas on how the students perceive mathematics. Each of the chosen students provided their own personal views and perceptions of the topic. The responses received are shown in Table 2 below.

Table 2. The Views of Learners towards Mathematics' Attitude-based Impression among Students

STATEMENT	SA%	A%	U%	D%	SD%
• fail most of the mathematics examination.	59(55.97)	11(17.01)	10(10.09)	8(7.02)	12(9.02)
• I have fear for mathematics.	61(54.02)	12(16.04)	11(11.07)	9 (9.07)	7(8.00)
• Mathematics is a difficult subject for to Pass	41(50.02)	17 (15.04)	16(15.07)	9(10.01)	17(8.05)
• I prefer other subject to mathematics.	51(51.02)	17(15.04)	16(15.07)	9 (9.01)	7(8.05)
• I lack the basis of mathematics	51(52.02)	17(16.04)	16(15.07)	9 (19.01)	7(8.05)
• Mathematics is among my best subjects.	60(52.02)	13(16.08)	10(11.07)	10 (9.05)	7(7.02)
• No one at home to give me extra lesson in math.	60(53.02)	13(16.04)	10(11.06)	10 (9.07)	7(8.02)
• I have no interest in mathematics	42(50.02)	27(16.04)	21(15.07)	14 (9.01)	7(8.05)
• I better learn mathematics with technology	51(54.02)	15(16.06)	14(11.01)	11 (9.03)	10(8.4)
• I cannot understand the teacher	60(53.02)	13(16.04)	10(11.07)	10 (9.07)	7(8.02)

The 30 instructors' answers are displayed in Table 2. More than 40% of instructors concur that students view mathematics as a difficult topic and frequently fail because of their understanding of the subject. More than 60% of the instructors who participated in the poll believed that students lacked fundamental mathematical abilities and never participated in class activities. Teachers have focused a significant amount of attention on students' attitudes towards mathematics (Chen et al., 2018; Goldin et al., 2016). Mathematical students are more likely to prioritise their studies because they have a favourable attitude towards the subject, admire it, and recognise its worth (Kiwauka, Van Damme, Van den Noortgate, and Reynolds, 2020; Mullis, Martin, Foy, Kelly, and Fishbein, 2020), which could lead to high performance in the same (Wigfiel, Tonks and Klauda, 2016). The comments additionally, over half of the teachers thought that students struggled with mathematics and that their fear of the subject caused most of their failures. According to the replies of the teachers, the attitudes of students towards mathematics and their mathematical achievement are positively correlated, according to several studies (Chen et al., 2018; Dowker, Cheriton, Horton, and Mark, 2019). Depending on their traits, there may be a different link between students' achievement in mathematics and their attitude towards the subject (Berger et al., 2020). Most of the answers came from the "SA"

and "A" columns, which show that students are having challenges with the subject of mathematics. Table 3 provides an overview of the various teaching and learning techniques used in the classroom during the instructional process.

3.2 What Teaching Methods are used by Senior Secondary School Mathematics Teachers?

Table 3. Different Types of Teaching Method Used

Teaching methods
A I simply assist the learning process when using a learner-centered approach. As a guide, I consider the learners' interests. They want to learn, and they want to know how they will evaluate they learning.
B Teachers-centered method. I do most of the talking, and students are listing. Specifically, explaining everything with no input from the students.
C Interactive lecture method. I actively involve all of my students in their learning centred on the teachers' activities problem-solving learning strategy. Encourage the learner to think and work to solve problems on their own, and to encourage other math teachers to teach again.

The strategies and approaches teachers employ to support instruction and learning in the classroom are known as teaching methods, and there are many varieties of them. Effective teaching methods, including the different types of teaching methods, teachers essential for ensuring that students are able to learn and apply new concepts and skills. The results in Table 3 studies revealed that A, in their mathematics classes, 41.4% of instructors used the interactive teaching method, these teaching strategies are intended to support students' interaction with the subject matter, foster the growth of their critical thinking abilities, and help them retain and apply the knowledge they learn. 26.3% used the learner-centered method. Teacher-centered education is one of the popular teaching philosophies utilized in classrooms. As the name implies, this method puts the teacher at the center of the students' learning process, acting as their main source of information and guidance. This method involves the teacher controlling the information flow, pacing the lesson, and guiding the students' learning process. 16.6% used the teacher-centered method, and 15.7% used the problem-solving learning method. At Shangui and Hong Senior Secondary Schools, students' reactions to the math instructors' teaching methods were conflicted. According to the results, few instructors preferred the teacher-centered approach (lecture method) when teaching mathematics, which is not good in teaching math. The lecture method is an inactive, outmoded, and ineffective teaching strategy that is currently used by teachers and, according to many experts, will soon be rendered useless. (French and Kennedy, 2016). There aren't many instructors who think the classroom technique is effective for teaching a lot of information, particularly to large groups.

3.3 What are the Qualifications of Mathematics Teachers in Shangui and Hong Senior Secondary Schools?

It was found that 58% of teachers hold the National Certificate in Education (NCE) at Shangui and Government Senior Secondary Hong, as shown in Figure 1, but they require additional

training to stay current with the methods they use in the curriculum. Mathematics teachers account for 23% of all qualified teachers in both schools; as such, their numbers are insufficient to run the state compared to the selected schools. Diplomas are 10% of those not teachers, unqualified without the teaching requirement of teaching qualification, and masters are very few at only 9%. A teacher is someone who has received professional training in a certain subject area in order to carry out their tasks in an efficient manner. This suggests that a teacher's credentials could be important for their ability to teach effectively. A teacher's quality can be determined by looking at their teaching credentials.

According to Arinde (2010), a certificate or licensing status is a gauge of a teacher's qualifications that incorporates knowledge of teaching and learning as well as subject matter. There are typically a few prerequisites to meet in order to acquire a teaching license, even for aspiring math teachers. According to Ademola's (2020) research, certain math curriculum topics are more challenging for students than others. According to Bamidele and Adekola (2017), there was a discernible difference in the academic performance of students taught by high-qualification teachers compared to students taught by low-qualification teachers, as well as between students taught by trained instructors and students taught by untrained instructors, and between students taught by experienced teachers with a long teaching history and experienced teachers with a short teaching history. Moreover, Ewetan and Ewetan (2015) found that students' academic achievement in mathematics, as determined by their achievement in the senior secondary certificate examinations (SSCE) and as reported by the respondents, has been considerably impacted by teachers' teaching experiences as required in Nigeria. The minimum requirement for teaching is the Nigeria Certificate of Education (NCE), as stipulated by the Federal Government of Nigeria. In the case of Adamawa, this is not the case.

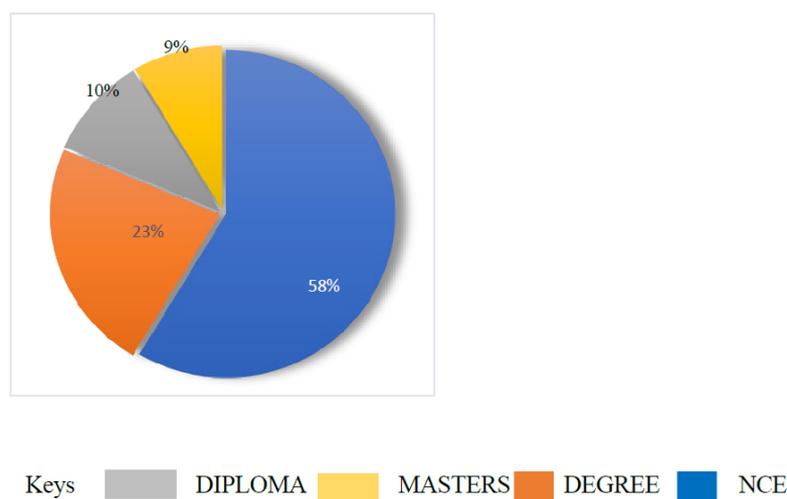


Figure 1. Qualification of Mathematics Teachers

4. Conclusion

The goal of the research was to identify and evaluate the factors influencing Adamawa State senior secondary school students' math achievement. Students' attitudes towards mathematics, instructors' teaching strategies, and teachers' mathematical training were all variables examined in this research, which highlighted how learning and achievement are related and how both have an impact on students and human overall sense of contentment with life. According to the research, students had an unfavorable mentality and view of mathematics. Additionally, mathematical deficiencies in learners' performance can be caused by teachers' lack of experience and expertise in the subject. Thus, teaching strategies may be affected. The students believed that the math instructors lacked the necessary skills for teaching mathematics at the intermediate level and had a negative mindset towards the subject. The math instructors' techniques of instruction were also subpar. Most students were concerned about the restricted use of technology by math instructors in their lessons. The research also discovered that the present secondary mathematics program is viewed as ineffective by both students and educators. This suggests that respondents think the main factors that greatly contribute to students' bad performance in mathematics at the upper secondary level are students' unfavorable attitudes and views towards mathematics and the ineffectual mathematics curriculum. The fact that many primary school instructors lacked the aptitude and expertise to instruct mathematics at the primary level also played a significant role in the students' lack of interest, which negatively impacted their success at both the upper and lower secondary levels.

5. Recommendations

Based on the results of the study, the following suggestions are made:

1. It is necessary to review and modify the senior secondary mathematics program in order to promote outcome-based teaching and learning. The significance and uses of mathematics in everyday life should be taken into account in the curriculum.
2. Instructors, department leaders, and headmasters stressed the importance of MoE involving all academic partners, including students and mathematics instructors, in all consultations, reviews, and curricular modifications. (in the interviews).
3. Exams shouldn't be the sole means of evaluating students' mathematical proficiency. To improve students' understanding of mathematics and spark enthusiasm among students with diverse needs, the mathematics curriculum must include internal examinations, fieldwork, and projects.
4. Technology helps students learn more effectively. To teach mathematics effectively, teachers need to use twenty-first-century skills, technology, and devices.
5. Students now have more opportunities to interact with and witness mathematical concepts using technology, which helps them develop favorable views of the subject.

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Acknowledgments

Not applicable.

Authors contributions

All authors contributed to the research design, data collection, data analysis, and write up. All authors contributed to the article and approved the submitted version.

Funding

This work was supported in part by the Fundamental Research Grant Scheme R.J130000.7853.5F529.

Competing interests

The authors declare that the research was conducted in the absence of any commercial or

financial relationships that could be construed as a potential conflict of interest.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Macrothink Institute.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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