

# Effects of Teacher's Qualification and Instructional Materials on Secondary School Mathematics Student's Academic Performance in Jos Metropolis of Plateau State

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## **Abstract**

*The study was conducted to investigate the effect of teacher's qualification and instructional material on students' performance in Mathematics in Jos metropolis. Three (3) research questions and three (3) hypotheses were formulated for the study. A sample size of one hundred (100) students was selected for the study through simple random sampling technique. The research design used for the study was a descriptive survey design. A Questionnaire was used as instruments for data collection. Descriptive statistics of mean and standard deviation were used to answer the research questions and inferential statistics of chi-test was used to test the research hypotheses. findings of the study revealed that teacher qualification has significant effect on students' performance in Mathematics in Jos Metropolis. The findings of the study showed that teacher' years of teaching experience has significant effect students' performance in Mathematics in Jos Metropolis. The study also revealed that the availability and teachers' ability to use instructional materials has significant effects on students' performance in Mathematics in Jos metropolis. It was recommended that the government and employers of teachers should recruit qualified teachers to teach Mathematics at the senior secondary school level. It was also recommended that Mathematics teachers with long term teaching experience should be assigned to teach the subject.*

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**KEYWORDS:** *Teacher's Qualification, Mathematics, Instructional Materials and Performance*

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## INTRODUCTION

Science is the bedrock on which modern day technological breakthrough is hinged. Different authors, according to their different understanding have defined Science accordingly. (Fanen, 2011), defined science as a systematic study of the properties and nature of the material and physical world around us through observation, experimentation, measurement and recording. In addition, Mathematics provides the basic knowledge and understanding of principles, whose applications contribute immensely to the quality of life in the society. Mathematics is a fundamental science that has a way that an individual reasons and promotes the habit of accuracy, logical systematic and orderly arrangement of numbers or events. It also provides us with powerful theoretical and computational techniques to advance our understanding of modern world and societal problems and to develop and manage the technology industries that are the backbones of any economy. Quality education is a concern and challenge to all nation of the world. This is due to the rapid changing of technology and job demands, that have forced the focus of education to oscillate. Today, we live and work in era dominated by computers, world – wide communication and global economy.

In recent times, countries all over the world, especially the developing ones like Nigeria, are striving hard to develop technologically and scientifically, since the world is turning Scientific and all proper functioning of lives depend greatly on Science.

The quality of education of a nation could be determined by the quality of her teachers. The most important factor in improving students' achievement is by employing seasoned qualified teachers in all schools. A teacher is the bridge that makes teaching and learning effective. Yala and Wanjo (2011) and Adeyemi (2010) found that teachers' experience and educational qualification were the prime predictors of students' academic achievement. Teaching and learning depend to a large extent on teachers' knowledge of the course content and ability to adequately or effectively deliver the instruction to the students. In essence, teachers' attitude, personality, quality, effectiveness, academic qualification, experience and gender of a teacher enhance or determine his/her performance. It could also be noted that the level and quality of education attained by the teacher determines the characteristics exhibited vis-à-vis the performance of the students Policy investment on quality of teachers is related to improvement in students' performance (Abe & Adu, 2013). It is further reported that, teacher's characteristics such as certification status and degree in area of specialization are very significant and positively correlated with students learning outcomes (Salman, 2009).

The use of standard science teaching materials is very indispensable in science investigations and their efficient use has continued to be in demand. Instructional materials are essential and significant tools needed for teaching and learning of science especially Mathematics to promote teacher's efficiency and improve students' performance in sciences. Instructional materials are essential and significant tools needed for teaching and learning of school subjects to promote teachers 'efficiency and improve students' performance. They make learning more interesting, practical, realistic and appealing. They also enable both the teachers and students to participate actively and effectively in lesson sessions. They give room for acquisition of skills and knowledge and development of self- confidence and self- actualization (Olayinka, 2016). (Adodo, 2017), defined teaching aids as materials used for practical demonstration in the classroom situation by students and teachers and for (Ikerionwu, 2013) instructional materials as objects or devices that assist the teacher to present a lesson to the

learners in a logical and manner.

Instructional materials are wide varieties of equipment and materials use for teaching and learning by teachers to stimulate self-activity on the part of the students. Teaching and learning of Mathematics without instructional materials may certainly result in poor academic achievement in Mathematics and could also attribute to many factors such as, low interest of students in Mathematics, inadequate motivation from teacher. The effect of instructional materials in promoting students' academic performance through teaching and learning in educational development is indisputable. The teaching of Mathematics in Nigerian secondary schools needs to be properly handled. The materials used by teachers to teach and drive home their subject points in Mathematics are done through the use of instructional materials. Instructional materials are materials which assist teachers to make their lesson explicit to learners. They are also used to transmit information, ideas and notes to learners (Ijaduola, 2010).

Instructional materials include both visuals and audiovisuals such as retort stands, voltmeter, block prism, posters, ammeter, stopwatch, radio, pendulum, video projectors, television, interactive boards, and computers among others. These materials serve as supplement to the normal processes of interaction. The study of Biology traces the study of the living world from ancient to modern times. Mathematics is an important subject that must be compulsorily credited at the secondary school level by science students before gaining admission into tertiary institutions to study courses like engineering, medicine, pharmacy, biochemistry, biology, botany, zoology, microbiology, anatomy among other.

The importance and technicality of Mathematics makes it necessary that relevant instructional materials should be used to teach it to the learners. This fact is supported by Macaulay (2015) who asserted that visual aids make lesson come alive and help students to learn better. It is against this background that this study attempts to examine the extent to which the utilization of instructional materials could advance senior secondary school students achievement in Biology. Poor academic achievement in Biology could be attributed to many factors which teacher's strategy itself was considered as an important factor. This implies that the mastery of Mathematics concepts might not be fully achieved without the use of instructional materials. The teaching of Mathematics without instructional materials may certainly result in poor academic achievement. A professionally qualified science teacher no matter how well trained, would be unable to put his ideas into practice if the school setting lacks the equipment and materials necessary for him or her to translate his competence into reality.

A teaching qualification is one of number of academic and professional degrees that enables a person to become a registered teacher in a primary or secondary school. Such qualification includes, is not limited to the Postgraduate Certificate in Education (PGCE), the professional Graduate Diploma in Education (PGDE), the Bachelor of Education and National Certificate of Education (NCE). Primary education is the first stage of compulsory education, it is preceded by pre – school or nursery education and is followed by Secondary education. In most countries, it is compulsory for children to receive primary education, although, it is permissible for parent to provide it. The major goals of primary education are achieving basic literacy and numeracy among all pupils, as well as establishing foundations of science, mathematics, geography, history, and other social sciences. In most schools teaching of mathematics is handled by those that have only a supplementary training in mathematics e.g.

graduates of Physics, Chemistry, Biology, and even Economics. The need to improve students' achievement in mathematics is extremely critical. However, students' performance in mathematics depends on the complex interplay of factors both within and outside the classroom. These factors range from teacher qualification to professional development the teachers have received to support their teaching, to student socio – economic backgrounds and to the teaching practices, the teacher use to accomplish their professional practice. Examining relationship between teacher certification, college graduate school year, years of experience and students' achievement in mathematics may help teachers and school administrator gain better insights to students' performance. According to Alabama teacher equity plan (2006), well prepared teacher is the critical ingredient in student learning mathematics. The no child left behind Act (NCLB) of 2001 requires that all teachers in core academic subjects be highly qualified. NLCB stipulates that to be considered highly qualified teachers must demonstrate that they have sufficient subject matter, knowledge and teaching skills to be effective teachers. Specifically, highly qualified teachers must: -

1. Have obtained full state certification as a teacher passed the state teacher licensing examination and hold a license to teach.
2. Has demonstrated subject matter competency in each of the academics subjects he or she teaches and
3. Hold a minimum of bachelor's degree. Ontario's Education minister, Jante Ecker (1999), indicated that governments must require teachers to have sufficient skills and knowledge in order to maintain teacher certification and to provide the highest level of education students.

It may be very difficult to find some of the electronic gadgets and equipment for the teaching of Mathematics in schools adequately. A situation that is further compounded by the galloping inflation in the country and many at times, some of imported sophisticated materials and equipment are found expensive and irrelevant; thus the need to produce materials locally. Obioha (2016) reported that there were inadequate resources for teaching science subjects in secondary schools in Nigeria. The researcher's personal investigation revealed that the available ones are not usually in good conditions; therefore, there is the need for improvisation. However, there is improvisation demands adventure, creativity, curiosity and perseverance on the part of the teacher, such skills are only realizable through well-planned training programme on improvisation, use of instructional materials can appeal to individual attention by creating interest goal that will help the learner achieve direct effort. Instructional materials are print and non-print items to explain information to students in the educational process. Instructional materials include items such as: kits, textbooks, magazines, newspaper, pictures, recording videos and the rest.

The use of instructional materials can enhance achievement. Cronbach (2009) stated the important elements of behaviour that provides the base for learning theory situation which consists of all objects, persons and symbols in the learning environment are the instructional materials. Experience in current situation prepares a person to respond to similar one in future through proper preparation. The use of instructional materials can appeal to the individual attention by creating interest goal that will help the learner achieve direct effort. Teacher's problem of motivation is essentially one of planning teaching with instructional materials in

which the learner will achieve the stated objectives intended to be attained. It is against this background that this study attempts to examine the effect of teachers' qualification and instructional materials on Secondary School Mathematics students' academic performance in Jos Metropolis, Plateau State?

### **STATEMENT OF THE PROBLEM**

The differential scholastic achievement of students in Nigeria has been and is still a source of concern and research interest to educators, government and parents. This is so because of the great importance that education has on the national development of the country. All over the country, there is a consensus of opinion about the fallen standard of education in Nigeria (Adebule, 2014). There has been an alarming rate of poor academic achievement in Mathematics over the years. This is evident in the WAEC Mathematics results of the last decade. Daily Trust of Wednesday, August 25, 2010 as cited in Sa'ad and Usman (2014) reported that 75% of candidates who sat for May/June, WAEC 2010 examination failed to meet the minimum requirement into tertiary institutions. Again, the Daily Trust of 21<sup>st</sup> August, 2014 in Sa'ad and Rabi (2014) reveals that the recently released WAEC results indicated that over seventy percent failed in November/December examination results. 86612 candidates representing 25.54 percent of the total number of candidates who sat for the November/December examination of West African Examination Council (WAEC), obtained credits in five subject.

This could be as a result of teachers' quality and use of ineffective methods and strategies in teaching Mathematics which among other factors have contributed to students' poor achievement in the subject at the senior secondary schools. Several researchers have conducted research with a view to finding better ways of teaching and learning Mathematics. Results indicated that performance in public examination in Mathematics still remain poor. Not much effort seems to have been made towards finding out why students still find some concepts in Mathematics difficult to comprehend.

Although, many factors may account for students' poor performance in Mathematics, it is evident that most students have difficulties in learning some concepts and this may be because the teachers do not teach well. This research will seek to ascertain the actual cause of students' poor achievement in Mathematics. Whether the quality of a teacher directly determines students' achievement level or not.

The problem which this study intends to solve: what then is the effect of teachers' qualification and instructional materials on Secondary School Mathematics students' academic performance in Jos Metropolis, Plateau State?

### **PURPOSE OF THE OF THE STUDY**

The aim of this study is to assess the effect of Mathematics teacher's qualification and instructional material on students' performance in Mathematics in Jos metropolis. Specifically, the study sought to:

1. To determine the role of teacher qualification on students' performance in Mathematics.
2. To determine the extent to which teachers' years of experience affect students' performance in Mathematics.
3. To determine the extent to which the availability and use of instructional materials affect students' performance in Mathematics.

## **RESEARCH QUESTIONS**

1. To what extent does teacher qualification affect students' performance in Mathematics?
2. To what extent does teachers' years of experience affect students' performance in Mathematics?
3. To what extent does the availability and teachers' ability to use instructional materials affect students' performance in Mathematics?

## **HYPOTHESES**

The following null hypotheses were formulated to guide this study and will be tested at 0.05 alpha level of significance.

1. There is no significant relationship between the qualification of teachers and secondary school students' performance in Mathematics in Jos metropolis
2. There is no significant difference between the years of experience of teachers and secondary school students' performance in Mathematics in Jos metropolis.
3. There is no significant difference between the availability/use of instructional material in teaching and secondary school students' performance in Mathematics in Jos metropolis.

## **METHODOLOGY**

This study will employ the use of descriptive survey design to investigate the effect of teachers' qualification and instructional materials on senior secondary school Mathematics students' academic performance in Jos Metropolis.

The instrument for data collection was generated through literature review and suggestions from colleagues. The instrument was first presented to some experts (lecturers) in the department and the supervisor of the research for content and face validation. They were requested to rate each item on a four-point scale of Strongly Agree (SD) Agree (A), Disagree (D) and Strongly Disagree in their determination to establish whether the instrument can be used for the intended study. The constructed questionnaire for the study was presented to the project supervisor to confirm for content validity. Necessary corrections were made and after which it was re-written before it was fully approved.

Reliability of an instrument refers to the degree to which a test yields consistent results when administered over a period of times. A Cronbach Alpha method was used to determine the reliability coefficient of the instrument. The questionnaires were administered on representative sample as a pilot test to establish the reliability coefficient of the instrument. This was done to ascertain the reliability of the instrument. The reliability coefficient of the instrument is expected to be within the acceptable range for the instrument to be considered reliable. The reliability coefficient of the instrument obtained was 0.84 which indicated a strong reliability of the instrument.

The data was obtained by means of a structured questionnaire. The schools used as samples for the study were visited by the researcher. The researcher took permission from principals of the schools and the principal directed their head teachers to assist the researcher in

administering the questionnaire to the student. The researcher explained the purpose of the questionnaire to the students and made them to understand that the information given was not to use against them, but was to be treated as confidential.

One hundred (100) copies of the questionnaires were administered to the students and collected immediately after the respondents have filled in their responses. This showed a hundred percent (100) return rate.

### **POPULATION AND SAMPLE OF STUDY**

Population of study for any research work has been variously defined by different scholars and their definitions pointed toward the same direction. Nsikan and Uwem (2014) defined population of a study as the universe of the study or the entire entity within which all the subjects of the study are found. The population of the study comprised of all public secondary schools in Jos metropolis. There are about twenty-nine (29) public secondary schools in Jos metropolis. The population of the study also consisted of Mathematics students of the public schools within Jos metropolis. There are 870 senior secondary school two (SSII) Mathematics in public secondary schools in Jos Metropolis. The sample size used was five secondary schools that was randomly sampled from the population of the schools. A sample size of 100 Mathematics students was drawn from the population of students. 20 Mathematics students were randomly from each of the selected schools for the study.

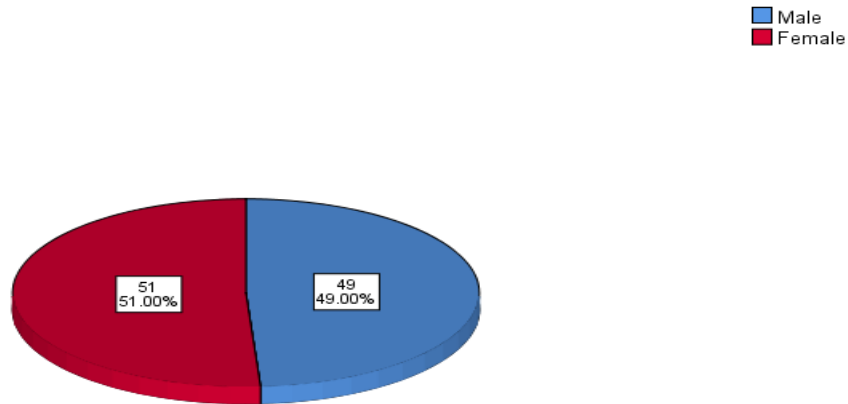
In each of the five (5) schools, twenty (20) students were randomly selected using the simple random sampling technique. A total of one hundred (100) SSII students were sampled in the five (5) schools which were randomly selected using sampling technique through simple balloting. In this case, the names of all the twenty-nine (29) governments owned secondary schools were written on a piece of paper and these pieces of papers were folded and dropped into a container. The container was shaken properly to mix up the folded papers. The pieces of papers were picked until the required numbers of schools were selected.

The research instrument for data collection was a questionnaire titled “the effect of teachers’ qualification and instructional materials on senior secondary school Mathematics students’ academic performance in Jos Metropolis”. The constructed research questionnaire has two main parts; section A and B measured the personal data of the respondents such as name of school, gender, class etc. while section B contained twenty (20) items which were structured to elicit information on ‘the effect of teachers’ qualification and instructional materials on Mathematics students’ academic performance in Jos Metropolis. The questionnaire has four-point rating scale.

### **RESULTS**

This chapter presents the data analysis and discussion of results. The data collected were analyzed based on the research questions and the hypotheses raised for the study.

**Male and Female Students**



**Fig. 1 shows pie chart count of the respondents based on gender.**

Fig. 1 shows pie chart count of the respondents based on gender. The pie chart shows that 51 respondents representing 51.0% were female students while 49 respondents representing 49.0% were male students. This implies that most of the students used as samples for the study were male students.

**Demographic Information of Respondents Based on Age**

**Age of students**



**Fig.2 Pie chart Count of Respondents based on Age**

Fig. 2 shows pie chart count of the respondents based on age. The pie chart shows that 85 respondents representing 85.0% were within the age of 14-17 years, 10 respondents representing 10.0% were within the age of 18-21 years while 5 respondents representing 5.0% were within the



age 22 years and above. This implies that most of the students used as samples for the study were the age of 14-17 years.

### Research Question 1

To what extent does teacher qualification affect students' performance in Mathematics

**Table 2: Mean Responses and Standard deviation of Students on the Extent to Teacher Qualification Affects Students' Performance in Mathematics**

S/N	ITEM	N	Mean	SD	Crit. mean	Remark
1.	I performed better in Mathematics when taught by a teacher with high academic qualification in Mathematics	100	2.95	0.81	2.50	Accept
2.	My performance got improved when taught by a professionally qualified Mathematics teacher	100	3.36	0.56	2.50	Accept
3.	I enjoy and learn better when taught by our regular Mathematics teachers than student teachers	100	2.62	0.86	2.50	Accept
4.	Teachers' qualification has significant effects on students' academic performance in Mathematics	100	3.24	0.71	2.50	Accept
5.	Mathematics students taught by qualified Mathematics teachers perform better than those taught by unqualified Mathematics teachers.	100	3.37	0.80	2.50	Accept
<b>Cumulative Mean</b>			<b>3.12</b>			

Table 2 presents the mean score of students on the extent to which teacher qualification affect their performance in Mathematics. The table shows that items 1, 2, 3, 4 and 5 had mean scores of 2.95, 3.36, 2.62, 3.24 and 3.37 respectively with their standard deviations of 0.81, 0.56, 0.86, 0.71 and 0.80 accordingly. The mean scores of the all items are greater than the criterion mean of 2.50 and were all accepted. The cumulative mean (3.12) of the items is also greater than the criterion mean. By implication, all the items were accepted as the extent to which teacher qualification affects students' performance in Mathematics. It was accepted that students performed better in Mathematics when taught by a teacher with high academic qualification in Mathematics, students' performance got improved when taught by a professionally qualified Mathematics teacher, students enjoy and learn better when taught by our regular Mathematics teachers than student teachers, teachers' qualification has significant effects on students' academic performance in Mathematics and that Mathematics students taught by qualified Mathematics teachers perform better than those taught by unqualified

Mathematics teachers.

### Research Question 2

To what extent does teachers' years of experience affect students' performance in Mathematics?

**Table 3: Mean Responses and Standard deviation of Students on the Extent to which Teachers' Years of Teaching Experience Affects their Performance in Mathematics**

S/N	ITEM	N	Mean	SD	Crit. mean	Remark
6.	I perform better in Mathematics when taught by Mathematics teachers with long term teaching experience	100	3.35	0.91	2.50	Accept
7.	My performance got improved when taught by qualified and experienced Mathematics teachers	100	3.29	0.70	2.50	Accept
8.	Mathematics students taught by experienced Mathematics teachers perform better than those taught by inexperienced Mathematics teachers	100	3.45	0.59	2.50	Accept
9.	I enjoy and learn faster when taught by experienced Mathematics teacher	100	3.41	0.55	2.50	Accept
10.	Students' poor performance in Mathematics could be attributed to teachers' low experience in teaching the subject	100	2.97	0.70	2.50	Accept
<b>Cumulative Mean</b>			<b>3.29</b>			

Table 3 presents the mean score of students on the extent to which teacher's year of teaching experience affect their performance in Mathematics. The table shows that items 6, 7, 8, 9 and 10 had mean scores of 3.35, 3.29, 3.45, 3.41 and 2.97 respectively with their standard deviations of 0.91, 0.70, 0.59, 0.55 and 0.70 accordingly. The mean scores of the all items are greater than the criterion mean of 2.50 and were all accepted. The cumulative mean (3.29) of the items is also greater than the criterion mean. By implication, all the items were accepted as the extent to which teacher' years of teaching experience affects students' performance in Mathematics. It was accepted that students perform better in Mathematics when taught by Mathematics teachers with long term teaching experience, performance got improved when taught by qualified and experienced Mathematics teachers, Mathematics students taught by experienced Mathematics teachers perform better than those taught by inexperienced Mathematics teachers, students enjoy and learn faster when taught by experienced Mathematics teacher and that students' poor performance in Mathematics could be attributed to teachers' low

experience in teaching the subject

### Research Question 3

To what extent does the availability and teachers' ability to use instructional materials affect students' performance in Mathematics?

**Table 4: Mean Responses and Standard deviation of Students on the Extent to which Availability and Teachers' Ability to Use Instructional Materials Affects Their Performance in Mathematics**

S/N	ITEM	N	Mean	SD	Crit. mean	Remark
11.	Adequate laboratory facilities can boost students' performance in Mathematics	100	3.43	0.73	2.50	Accept
12.	Effective utilization of instructional materials in teaching Mathematics enhances students' performance in the subjects	100	3.20	0.57	2.50	Accept
13.	The teachers' ability to use instructional materials in teaching has effects on students' academic performance in Mathematics	100	3.39	0.55	2.50	Accept
14.	A well-equipped Mathematics laboratory with available instructional materials promote the understanding and performance of students in Mathematics	100	3.66	0.52	2.50	Accept
15.	Non-availability of instructional materials in Mathematics and their poor utilization in teaching the subject has negative effects on students' performance.	100	3.55	0.81	2.50	Accept
<b>Cumulative Mean</b>			<b>3.45</b>			

Table 4 presents the mean response score of students on the extent to which the availability and teachers' ability to use instructional materials affect their performance in Mathematics. The table shows that items 11, 12, 13, 14 and 15 had mean scores of 3.43, 3.20, 3.66, and 3.55 respectively with their standard deviations of 0.73, 0.57, 0.55, 0.52 and 0.81 accordingly. The means scores of the items are greater than the criterion mean of 2.50 and were accepted. The cumulative mean (3.45) of the items is also greater than the criterion mean. By implication, all the items were accepted as the extent to which the availability and teachers' ability to use instructional materials affect students' performance in Mathematics. It was accepted that adequate laboratory facilities can boost students' performance in Mathematics,

effective utilization of instructional materials in teaching Mathematics enhances students' performance in the subjects, teachers' ability to use instructional materials in teaching has effects on students' academic performance in Mathematics, a well-equipped Mathematics laboratory with available instructional materials promote the understanding and performance of students in Mathematics and that non-availability of instructional materials in Mathematics and their poor utilization in teaching the subject has negative effects on students' performance.

## HYPOTHESES

1. There is no significant relationship between the qualification of teachers and secondary school students' performance in Mathematics in Jos metropolis.

**Table 5: Chi-square test of the significant relationship Between Qualification of Teachers and Students' performance**

Opinions	Observed frequency	Expected Frequency	Df	X <sup>2</sup>	Sig	Decision
No Significant relationship	10 (10.0%)	50 (50%)	3	69.44	0.00	Significant
Significant relationship	90 (90.0%)	50(50%)				
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>				

*Value in parentheses are percentages (X<sup>2</sup> = 69.44, df = 3, p = 0.000 < 0.05)*

Table 5 shows that the chi-square value obtained was 69.44 with a p-value of 0.00 at df = 3. Since the p-value is less than the level of significance (p=0.000 < 0.05), we reject the null hypothesis (H<sub>01</sub>) which states that there is no significant relationship between the qualification of teachers and secondary school students' performance in Mathematics in Jos metropolis. Therefore, the alternative hypothesis (H<sub>a1</sub>) be upheld and we can conclude that there is a significant relationship between the qualification of teachers and secondary school students' performance in Mathematics in Jos metropolis.

2. There is no significant difference between the years of experience of teachers and secondary school students' performance in Mathematics in Jos metropolis.

**Table 6: Chi-square test of the significant relationship Between Qualification of Teachers and Students' performance**

Opinions	Observed frequency	Expected Frequency	Df	X <sup>2</sup>	Sig	Decision
No Significant relationship	5 (5.0%)	50 (50%)	2	36.50	0.00	Significant
Significant relationship	95 (95.0%)	50(50%)				
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>				

*Value in parentheses are percentages (X<sup>2</sup> = 36.50, df = 2, p = 0.000 < 0.05)*

Table 6 shows that the chi-square value obtained was 36.50 with a p-value of 0.00 at  $df = 2$ . Since the p-value is less than the level of significance ( $p = 0.00 < 0.05$ ), we reject the null hypothesis ( $H_0$ ) which states that there is no significant difference between the years of experience of teachers and secondary school students' performance in Mathematics in Jos metropolis. Therefore, the alternative hypothesis ( $H_1$ ) be upheld and we can conclude that there is a significant difference between the years of experience of teachers and secondary school students' performance in Mathematics in Jos metropolis.

3. There is no significant relationship between the availability/use of instructional material in teaching and secondary school students' performance in Mathematics in Jos metropolis.

**Table 7: Chi-square test of the significant relationship Between the Availability/Use of Instructional materials and Students' performance**

Opinions	Observed frequency	Expected Frequency	Df	$X^2$	Sig	Decision
No Significant relationship	4 (4.0%)	50 (50%)	3	123.36	0.00	Significant
Significant relationship	96 (96.0%)	50(50%)				
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>				

*Value in parentheses are percentages ( $X^2 = 123.36, df = 3, p = 0.000 < 0.05$ )*

Table 7 shows that the chi-square value obtained was 123.36 with a p-value of 0.00 at  $df = 3$ . Since the p-value is less than the level of significance ( $p = 0.00 < 0.05$ ), we reject the null hypothesis ( $H_0$ ) which states there is no significant difference between the availability/use of instructional material in teaching and secondary school students' performance in Mathematics in Jos metropolis. Therefore, the alternative hypothesis ( $H_1$ ) be upheld and we can conclude that there is a significant relationship between the availability/use of instructional material in teaching and secondary school students' performance in Mathematics in Jos metropolis.

## RESULT

The study was conducted to assess effect of Mathematics teacher's qualification and instructional material on students' performance in Mathematics in Jos metropolis.

The findings of the study in table 2 revealed to a great extent that teacher qualification affects students' performance in Mathematics. It was revealed that students performed better in Mathematics when taught by a teacher with high academic qualification in Mathematics, students' performance got improved when taught by a professionally qualified Mathematics teacher, students enjoy and learn better when taught by our regular Mathematics teachers than student teachers, teachers' qualification has significant effects on students' academic performance in Mathematics and that Mathematics students taught by qualified Mathematics teachers perform better than those taught by unqualified Mathematics teachers. The finding of the study is in line with the study by Afangideh (2011) who asserts that teacher qualification influences students' performance and professional preparation is needed by chemistry teachers

through adequate and informed exposure to courses for teaching effectiveness. The Education and Training Commission of Europe (2010) also points out that teacher qualification is an essential factor that provides learners with personal fulfilment, better social skills and more diverse opportunities.

The result of the findings in table 3 showed that to a great extent, teacher' years of teaching experience affects students' performance in Mathematics. It was revealed that students perform better in Mathematics when taught by Mathematics teachers with long term teaching experience, performance got improved when taught by qualified and experienced Mathematics teachers, Mathematics students taught by experienced Mathematics teachers perform better than those taught by inexperienced Mathematics teachers, students enjoy and learn faster when taught by experienced Mathematics teacher and that students' poor performance in Mathematics could be attributed to teachers' low experience in teaching the subject. The result of the findings is in line with the study by Okey (2012) stated that experience is directly related to teachers' ability to plan lessons, address divergent student responses, reflects on their teaching effectiveness and their ability to stimulate student inquiry. Akinyele (2015) and Commey-Ras (2013) commented that experience improves teaching skills while students learn better at the hand of teachers who have taught them continuously over a period of years.

The findings of the study in table 4 revealed that the availability and teachers' ability to use instructional materials affect students' performance in Mathematics. It was revealed that adequate laboratory facilities can boost students' performance in Mathematics, effective utilization of instructional materials in teaching Mathematics enhances students' performance in the subjects, teachers' ability to use instructional materials in teaching has effects on students' academic performance in Mathematics, a well-equipped Mathematics laboratory with available instructional materials promote the understanding and performance of students in Mathematics and that non-availability of instructional materials in Mathematics and their poor utilization in teaching the subject has negative effects on students' performance. The findings concurred with the findings of the study by Oyetunde (2018) who was of the view that the problem of lack of school facilities or inadequate school facilities is affecting all State Secondary Schools in the federation. Ahmed (2013) revealed that in most of the nation's Secondary Schools, teaching and learning take place under a most non conducive environment, lacking the basic materials and thus hindered the fulfilment of educational objectives. Lack of adequate facilities such as text books, workshops, ill equipped classrooms, laboratories and libraries are among the probable causes of student's poor performance in examination.

The results of the findings in table 5 revealed that there is a significant relationship between the qualification of teachers and secondary school students' performance in Mathematics in Jos metropolis. The result of the findings in table 6 revealed there is a significant relationship between the qualification of teachers and secondary school students' performance in Mathematics in Jos metropolis. The result of the study in table 7 revealed that there is a significant difference between the availability/use of instructional material in teaching and secondary school students' performance in Mathematics in Jos metropolis.

## CONCLUSION

From the result of the findings above, it is concluded that teacher qualification has significant effect on Mathematics students' performance in Jos Metropolis. It can also be concluded that teacher' years of teaching experience has significant effect students' performance in Mathematics in Jos Metropolis. An inference can also be drawn that the availability and teachers' ability to use instructional materials has significant effects on students' performance in Mathematics in Jos metropolis.

## RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. The government and employers of teachers should recruit qualified teachers to teach Mathematics at the senior secondary school level.
2. Mathematics teachers with long term teaching experience should be assigned to teach the subject.
3. Instructional materials/teaching aids should be made available in the Mathematics laboratories for effective teaching and learning of the subject.
4. Mathematics teachers should be sponsored and be given the opportunities to attend workshops and seminars on how to effectively use instructional materials in teaching Mathematics

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