

# Influence of Effective Usage of Instructional Materials on Primary School Pupils' Academic Performance in Mathematics in Niger State

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**Abstract:** *The study examined the roles of provision and effective usage of instructional materials in teaching and learning of mathematics in primary schools in the Senatorial Zone C of Niger state of Nigeria. Instructional materials (teaching aids) serve as an important channel in delivering instruction between the teachers and learners. It is a tool that connects teachers, instruction (subject content) and the learners. The population of the study was the teachers and the students in primary schools in the senatorial zone C of Niger state. The sample of this research consisted of one hundred and thirty (130) students and one hundred and thirty-four (134) teachers as respondents for the designed questionnaires. Also, thirty-nine (35) students were used for both experimental and control groups. The data collection for this research study was through the researcher developed test titled 'Fractional Mathematics Test' (FMT) on fractions which consisted of a ten-item objective questions. Also, the questionnaire was administered by the researchers to both the teachers and the pupils. The findings revealed that school management and teachers provided instructional materials for effective teaching and learning of mathematics in primary schools. Also, the result shows that instructional materials enhances students' academic performance in mathematics. Therefore, it recommended that teachers should endeavour to use instructional materials to complement their teaching. Also, the educational stakeholders should intensify effort in the provision of more instructional materials to primary schools in the state.*

**Keywords:** instruction materials, mathematics, teachers, pupils, academic performance

## INTRODUCTION

It is the belief of educational planners that to improve nation's economic, scientific and technical education the citizen's level of proficiency in mathematics must be improved considerably. And this must start from primary school level. Since Mathematics is compulsory at both primary and secondary school levels, working towards improving good performance of the learners in the subject must be the concern of all stakeholders. Teaching and learning of mathematics in Nigerian primary school level have not yielded expected results because of many factors. Most of the primary school mathematics concepts can fully be comprehended by the pupils with the effective usage of instructional materials, to give basic arithmetic knowledge which might have help them in their further studies or life endeavours. So, teaching and learning of Mathematics at this level deserves much attention because this can be the last stage of education for some pupils. Hence, the use of teaching aids in teaching and learning of this subject cannot be over emphasized.

Mathematics is a fundamental subject in the school curriculum, considered essential for a well-rounded education. Most modern professions necessitate mathematical knowledge. Fields like engineering, accounting, medicine, economics, banking, technology, and many others rely heavily on mathematical concepts. Mathematics is also indispensable in offices, factories, and other workplaces, where it's used to analyze, organize, and evaluate data for informed decision-making. Oloda (2021). Malik and Salman (2018) stated that mathematics is a core subject which serves as fundamental for pupils' level of thinking, skill development and problem solving. It is interesting to know that the advancement in the areas of science and technology in a nation's development are indebted to mathematics to a great extent. Adegoke (2013) stated that students develop numeracy, reasoning, thinking skills and problems solving skills through the learning and application of Mathematics. The authors added that the importance of mathematics is not limited to every science and technology but also in every living and the work place.

Instructional materials (teaching aids) serve as an important channel in delivering instruction between the teachers and students. It is a tool that connects teachers, instruction (subject content) and the learners. Instructional materials play a crucial role in promoting student learning and achieving educational objectives. These resources, which encompass textbooks, visual aids, audio-visual materials, and other teaching tools, have been identified as significant factors in primary school academic success. (Irumba, 2024). They enhance understanding, engage students, and accommodate diverse learning needs. A research found that students in well-resourced schools consistently perform better than those in under-resourced institutions, indicating that instructional materials are crucial for enhancing learning outcomes. (Eusob et al., 2023). They are seen as important tools in the hands of teachers for effective communication. Generally, teaching and learning can greatly improve when adequate teaching materials are used. Experience over the years have shown that many teachers are in the habit of not using instructional materials in teaching their pupils, but they use chalk boards and excessive use of words to convey ideas or facts to learners, which is not sufficient. Instructional materials are essential for effective teaching and learning in mathematics lessons. Effective usage of instruction materials in the teaching and

learning of Mathematics will do more good to learners especially at basic classes which will motivate and increase the interest of the learners at early stage in the subject. And this will eventually leads to good performance in the subject. Mathematic instructional materials is an interface between the teachers, instruction and the learners at every stage of education. All teaching can greatly be improved by the use of materials, because they make teaching experience memorable and when use intelligently promote the most effective kind of learning (Dele,1969 ). The result is that it will produce a last long knowledge in the life of learners. Many have the belief that Mathematics is a magic and abstract. To correct this erroneous belief, there is need for adequate provision and effective usage of mathematics instruction materials by teachers to make the subject less abstract. The use of instructional materials such as real objects or models will make learning more readily and lovely to learners. To buttress this, (Hartanto & Supramanto, 2023) stated that students need to use more alternatives in answering various mathematical problems. The paradigm of students who initially regarded mathematics as a scary lesson ca finally make them happy in learning mathematics using props. In their conclusion, they stated that the use of teaching aids has a considerable impact on student learning outcomes to enhance students' learning outcomes

The resource material used in the teaching/ learning of Mathematics can also be described as Mathematic Instructional Materials (MIM) which provides an interface between the teachers, instruction and the learners (Ejakpovi & Uverruveh, 2014). Instructional materials have direct contact with sense organs of the body which enable them to use the combination of sense like smelling, hearing, touching, tasting and sighting which stimulate effective learning process among students (Suleiman & Audu, 2020).

### **Statement of the Problem**

Instructional materials (teaching aids) serve as an important channel in delivering instruction between the teachers and students. It is a transmission of facts and information from teachers to pupils in orderly manner in a teaching –learning process. Today, there is a general impression that mathematics education is not achieving the desired objectives especially with high incidence of pupils' poor performance in mathematics. Mathematics is the bedrock for science and technology. The persistence poor performance of mathematics in primary and secondary school levels in Nigeria has been a major concern for parents, society, educators and government who spent a lot of money in funding education but to no avail. This poor performance can be attributed to many factors such as poor methods of teaching, lack of qualified mathematics teachers, attitude of the learners towards the subject and lack of provision and effective usage of instructional materials among others. Today, a modern education programme is impossible without appropriate instructional materials. In order words, the learners will find it difficult to understand subject content. It is a belief that if the schools are well equipped with teaching aids, teaching and learning will improve significantly which will result in a better performance of pupils. So, this work intends to find the effect of provision of instructional material on academic performance in mathematics in primary schools in zone C of Niger State.

## **Purpose of the Study**

The purpose of the study was to examine efficiency in the use of instructional materials in teaching and learning of mathematics in primary schools in senatorial zone C of Niger state of Nigeria. The following are the objectives of this study:

1. To determine the level of provision of instructional materials for teaching of mathematics in primary schools.
2. To determine the efficiency in the use of the instructional materials in teaching and learning of mathematics in primary schools.
3. To determine the effect of instructional materials on the academic performance of pupils in mathematics.

## **Research questions**

The study is guided by the following research questions:

1. To what extent does the school management and teachers provide instructional materials for effective teaching and learning of mathematics in primary schools in Zone C of Niger state?
2. How does the use of instructional materials facilitate and enhance performance of pupils in mathematics in primary schools in Zone C of Niger state?

## **Hypothesis**

HO<sub>1</sub>. There is no significant difference in academic performance between the pupils taught with instructional materials and pupils taught without instructional materials.

## **LITERATURE REVIEW**

This chapter contains a review of literature related to the study under the following headings and sub-headings:

### **Provision of instructional materials for the enhancement of academic performance in mathematics in primary schools**

Modern primary mathematics classrooms have become dynamic learning environments that blend traditional and innovative teaching tools. At the foundation are hands-on manipulatives, those tangible objects students can touch and move, which bring abstract mathematical concepts into the concrete world. For example, when young learners pick up base-10 blocks or arrange fraction circles, they're literally getting a grip on mathematical principles that might otherwise seem elusive or abstract. (Fusoon, 2017). The digital revolution has also ushered in a new dimension of learning through interactive whiteboards and educational software. These tools can instantly transform a classroom wall into an interactive playground of numbers and shapes, allowing teachers to demonstrate concepts dynamically while keeping students engaged. Students can now drag, resize,

and manipulate virtual objects, making mathematical exploration more intuitive and engaging than ever before. (Hodanova et al., 2020). Visual aids remain crucial allies in mathematics instruction, with carefully designed charts, graphs, and posters adorning classroom walls. These silent teachers provide constant reference points for students, reinforcing concepts and offering visual cues for problem-solving strategies. Meanwhile, multimedia resources have added another layer of engagement, combining sight and sound to create memorable learning experiences. (Chundung et al., 2020)

Furthermore, the emergence of virtual learning platforms has perhaps been the most revolutionary change, creating borderless classrooms where students can practice mathematics at their own pace. These digital environments offer personalized learning paths, immediate feedback, and the ability to revisit concepts as needed. They've proven especially valuable in supporting different learning styles and abilities, ensuring that every student can find their own route to mathematical understanding. (Enikanolaye, 2021). Combining these instructional materials skillfully creates a comprehensive learning environment that can reach every student, regardless of their preferred learning style or current skill level. The key lies not just in having these resources available, but in using them thoughtfully to build strong mathematical foundations for every young learner.

### **Problems encountered in the provision of instructional materials**

The provision of instructional materials for mathematics, a key subject in primary education, is essential for building a solid foundation in mathematical skills and concepts. However, various challenges have hindered the adequate supply and effective use of these resources, directly affecting the quality of mathematics instruction and student learning outcomes. (Amadi, 2019). Thus to have a robust interactions between the pupils and teachers in teaching-learning process using instruction materials, these barriers encountered must be removed. Some of the problems encountered are stated below:

#### **Inadequate Availability of Resources**

One major issue is the inadequate availability of resources. Many primary schools, especially public or government-owned institutions, lack sufficient textbooks and workbooks. This shortage limits students' opportunities to practice and reinforce mathematical concepts. (Okeke et al., 2023). Additionally, the absence of manipulatives, such as counting blocks, geometric shapes, and number lines, further hampers the development of mathematical understanding, as these concrete materials are essential for hands-on learning.

Access to calculators and graphing tools, which can greatly enhance problem-solving skills and foster a deeper comprehension of mathematical concepts, is also limited in many Nigerian primary schools. Furthermore, the lack of adequate assessment materials, such as standardized tests, worksheets, and other evaluation tools, makes it difficult to measure student progress and identify areas that need improvement.

This scarcity of mathematics resources is particularly severe in rural and disadvantaged areas. These regions often face limited budget allocations and logistical challenges in acquiring essential materials. Consequently, students in these areas are placed at a significant disadvantage compared to their peers in better-resourced schools, further exacerbating educational inequities. (Ameen et al., 2024)

### **Poor quality and appropriateness of materials**

The quality and appropriateness of instructional materials in primary mathematics education present significant challenges that ripple through the entire learning process. A common challenge in resource availability is the misalignment between available materials and national curriculum requirements. This misalignment often forces teachers to piece together resources from various sources or create their own materials, which can result in inconsistent learning experiences across classrooms. (Onweazu et al., 2021).

Some instructional materials fail to account for the developmental stage of primary school students. During these crucial years, children typically operate at a concrete operational level, requiring hands-on experiences and tangible demonstrations to grasp mathematical concepts. However, many textbooks and teaching aids leap directly into abstract representations without providing the necessary foundation through physical manipulation and visual learning. (Fu soon, 2017) For instance, when teaching fractions, materials might immediately introduce symbolic notation ( $\frac{1}{2}$ ,  $\frac{3}{4}$ ) without first allowing students to explore these concepts through concrete models or visual representations.

The physical quality and design of materials often fall short as well. Issues range from poor durability and unclear printing to confusing page layouts and insufficient visual aids. More critically, many resources emphasize rote memorization over conceptual understanding, offering repetitive drill exercises instead of opportunities for genuine problem-solving and critical thinking. This approach fails to develop the higher-order thinking skills essential for mathematical proficiency. The gradual progression from simple to complex ideas (scaffolding of concepts) is often insufficient. Materials may omit crucial intermediate steps, leading to gaps in understanding that can accumulate over time. This problem is compounded by limited differentiation options, making it difficult to address the needs of both struggling and advanced learners. Moreover, many resources lack appropriate cultural context and relevance, using examples or language that may be unfamiliar or inappropriate for their intended audience (Umuzoha, 2021).

### **Teacher competence and effective utilization of instructional materials**

The challenge of teacher competence and effective utilization of instructional materials in mathematics education represents a critical gap in educational delivery. This issue is particularly pronounced in resource-constrained and rural settings, where professional development opportunities are often limited or non-existent. Umuzoha et al., 2021)

Teachers frequently find themselves in classrooms equipped with materials they haven't been adequately trained to use. While they might have access to manipulatives, digital tools, or modern textbooks, the lack of proper training often results in these resources being underutilized or, in some cases, completely unused. For example, a teacher might have access to base-10 blocks for teaching place value but may not understand the various ways these can be used to demonstrate addition, subtraction, or decimal concepts. Similarly, interactive whiteboards or educational software might sit idle or be used merely as expensive projector screens due to insufficient training in their educational applications.

The problem extends beyond mere technical knowledge of how to operate or handle materials. Many teachers lack the pedagogical content knowledge necessary to effectively integrate these resources into their teaching strategies. They might not understand how to sequence the use of materials to build conceptual understanding, when to transition from concrete to abstract representations, or how to use materials to address common student misconceptions. This gap between having materials and knowing how to use them pedagogically creates a significant barrier to effective mathematics instruction. (Ejar et al., 2023)

Professional development in this area is often superficial or one-off, failing to provide the sustained support teachers need to become confident and competent users of instructional materials. Quick workshops or brief training sessions rarely translate into meaningful classroom implementation. Teachers need ongoing mentorship, opportunities to practice with materials, and regular feedback on their implementation strategies. Without this support, they often default to traditional chalk-and-talk methods, even when better resources are available.

The situation is further complicated by the rapid introduction of new educational technologies and teaching aids. Teachers who are already struggling with basic material utilization must now contend with an ever-expanding array of digital tools and resources. Without proper training, these new materials can become overwhelming rather than empowering, leading to resistance or superficial implementation.

This competency gap has direct implications for student learning. When teachers cannot effectively utilize available materials, students miss out on opportunities for hands-on learning, visual representation of concepts, and interactive engagement with mathematical ideas. This particularly affects students who might benefit from multiple representations of mathematical concepts or alternative approaches to problem-solving. (Omariba, 2012).

The challenge is systemic and requires attention at multiple levels: initial teacher education, ongoing professional development, school-level support systems, and policy frameworks that prioritize teacher competency development. Without addressing this fundamental aspect of educational delivery, the mere provision of materials will continue to fall short of its intended impact on mathematics education. (Adewale, 2011 and Enoch et al., 2023).

The integration of technology into mathematics education is increasingly recognized as a crucial component for enhancing student engagement and learning. (Ameen, 2023). However, numerous technological barriers exist, particularly in low-income or remote areas. Access to digital instructional materials such as interactive software, online resources, and virtual learning platforms is often limited. Schools in these regions may lack the necessary infrastructure, such as computers, tablets, or reliable internet access, to fully integrate technology into their curriculum. This creates a significant digital divide, where students in urban, wealthier areas benefit from enriched learning environments, while their counterparts in underprivileged regions fall further behind. This divide exacerbates existing inequalities in education and widens the achievement gap, as some students gain access to cutting-edge learning tools while others remain deprived of these advancements. (Okeke, 2023)

### **Equity and Distribution Issues**

A pressing challenge in the provision of mathematics instructional materials is the inequitable distribution of resources. Schools in urban areas often have better access to high-quality teaching aids, textbooks, and digital tools than those in rural or marginalized communities. This unequal distribution is driven by factors such as logistical challenges and systemic inequities that prioritize schools in more accessible, better-resourced regions. (Okeke, 2023). The lack of equitable access to instructional materials widens the educational gap between urban and rural students, leading to lower learning outcomes for students in underserved areas. This disparity in resource allocation also perpetuates broader socioeconomic inequalities, as students in resource-poor regions are less equipped to compete academically with their peers in wealthier areas. (Eusob et al., 2023)

### **Financial Constraints**

A major underlying issue in the provision of instructional materials for mathematics is the persistent lack of financial resources. Both government funding and individual school budgets are often insufficient to procure high-quality, up-to-date teaching aids and textbooks. Governments may not allocate enough resources to fully support the needs of primary education, leading to widespread shortages of essential materials. ( Onweazu et al.,2021) In some cases, schools are expected to purchase their own resources, placing an additional financial burden on already limited budgets, particularly in low-income areas. This burden is further compounded by the need for maintenance and periodic replacement of materials, resulting in schools relying on outdated, worn, or inappropriate instructional aids. As a consequence, students are often deprived of the tools they need for effective learning, while teachers struggle to deliver quality instruction with limited resources.



## **Cultural and Linguistic Barriers**

In addition to financial and logistical challenges, cultural and linguistic barriers can hinder the effective use of mathematics instructional materials. In many regions, textbooks and teaching aids may not be tailored to the linguistic and cultural context of the students. For example, materials may be written in a language that is not the primary language of instruction or the language spoken at home, making it difficult for students to understand mathematical concepts.

Moreover, many instructional materials fail to incorporate examples and contexts that reflect the students' daily lives and experiences. (Enoch et al., 2023) This disconnect between the instructional materials and students' lived realities can lead to disengagement and a lack of motivation, further hindering their ability to grasp fundamental mathematical concepts.

These issues collectively contribute to a learning environment that may prioritize memorization over genuine mathematical understanding. The result is often a shallow grasp of fundamental concepts, potentially impacting students' mathematical development and their ability to apply these skills in real-world situations. For meaningful improvement in mathematics education, these material-related challenges must be addressed comprehensively, ensuring resources that truly support both teaching and learning at the primary level.

## **Effect of instructional materials on students' academic performance in mathematics**

The use of instructional materials has shown significant influence on how primary school pupils learn and perform in mathematics. When young learners interact with concrete materials like counting blocks, fraction circles, and geometric shapes, abstract mathematical concepts become more tangible and understandable. This hands-on approach transforms typically challenging mathematical ideas into accessible learning experiences that students can grasp and retain. (Irumba, 2024). Research indicates that students who regularly engage with well-chosen instructional materials demonstrate marked improvement in their mathematical abilities. For instance, when learning place value concepts, students using base-ten blocks show better understanding compared to those taught through traditional methods alone. Similarly, the use of fraction circles and number lines helps students develop clearer mental models of numerical relationships, leading to improved problem-solving skills and mathematical reasoning. (Amadi et al., 2019). The impact extends beyond mere academic scores. Students exposed to varied instructional materials typically show increased confidence in tackling mathematical problems. Their engagement in mathematics lessons improves significantly, as these materials provide multiple ways to approach and understand mathematical concepts. This enhanced engagement often translates into better classroom participation, reduced math anxiety, and more positive attitudes toward mathematics as a subject.

Performance assessments reveal that students who learn mathematics through instructional materials demonstrate stronger retention of concepts. They not only perform better in tests but also show greater ability to apply mathematical principles to real-world situations. For example,

students who use measurement tools and practical objects during lessons develop a better understanding of mathematical concepts like length, weight, and volume, enabling them to solve related problems more effectively. (Eusob et al., 2023). Digital instructional materials have also proven particularly effective in enhancing mathematical performance. Interactive software, educational games, and virtual manipulatives provide additional ways for students to practice and reinforce mathematical concepts. These technological tools often offer immediate feedback, allowing students to learn from their mistakes and adjust their understanding accordingly. The positive effects of instructional materials are especially evident in concepts that students traditionally find challenging. Abstract ideas become more concrete when students can physically manipulate objects or visualize relationships through well-designed materials. This tangible approach to learning mathematics has consistently shown to improve student performance across various mathematical topics, from basic arithmetic to more complex problem-solving tasks. (Ukobiazaba et al., 2019).

## **RESEARCH METHODOLOGY**

### **Area of study**

The area of study was the senatorial zone C of Niger state

### **Research Design**

The research designs adopted for this research were quasi experimental and descriptive designs.

### **Population**

The population of the study was the teachers and the students in primary schools in the senatorial zone C of Niger state.

### **Sample and Sampling Techniques**

Random sampling techniques were used in selecting the primary schools for the study. The sample of this research consisted of one hundred and thirty (130) students and one hundred and thirty – four (134) teachers as respondents for the designed questionnaires. In the experimental group, (16) students were used while in the control group 19 pupils were used, making a total sample size of 35 for the quasi experimental design. This sample size was generated from primary schools in Zone C, the north senatorial zone of Niger State.

### **Research Instruments**

Two instruments were designed for this study.

1. A well prepared lesson plan and a lesson note on the topic “fractions” from primary four syllabus and a recommended Mathematics textbook were used. The lesson note on the topic was prepared to accomplish the purpose of the instructional material for the study. The teaching was done in accordance with the school time- table period allocated for mathematics in the concerned classes. The period of data collection was four weeks for the selected schools.

2. The second instrument for collection of data from respondents was questionnaire designed by the researchers tagged as “*Effect of Instructional Materials on Teaching and Learning of Mathematics (EIMTLM)*” was used for data collection .This is subdivided into three parts. Part A measures demographic information such as name of school, sex, working experience and student teachers ratio while part B contains 14 items that have their primary focus on quality assurance in Nigeria Certificate in Education. The questionnaire was structured on four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with nominal value of 4, 3, 2 and 1 assigned to them respectively. Mean and percentages were used to answer the research questions.

### **Method for Data Collection**

The data collection for this research study was through the researcher developed tests. Fractional Mathematics Test (FMT) on fractions was used for data collection. Fractional Performance Test (FMT) consisted of a ten- item objective with the marking scheme from primary four mathematics textbooks were used. The experimental group was taught with the designed instructional materials while the control group was taught using chalkboard and the recommended textbooks. The two groups for the study- the experimental and control groups- did not have free experiment sampling equivalence; only pupils in the experimental group received teaching with the geometric shapes while pupils in the control group were taught without the use of geometric shapes. The answer scripts were collected and marked by the researchers, both for the experimental and control groups at the end of the test. Also, the questionnaire was administered by the researchers to both the teachers and the pupils. The instructions were carefully read to the pupils with the help of their teachers. The pupils were given enough time to respond to the various questions before the questionnaires were collected from them.

### **Validity of the instrument.**

The instrument was subjected to face and content validity by two experts from the departments of mathematics, Federal College of Education, Kontagora, Niger State.

### **Reliability test**

The reliability of the qualitative instrument (questionnaire) was tested using Cronbach’s alpha, which was find at 0.95 and Pearson product correlation coefficient achieving a reliability coefficient of 0.85, indicating high internal consistence was used for the second instrument.

**Analysis of Data**

Descriptive statistics such as percentage and mean were used for research questions while t-test was used for hypothesis.

**Analysis of Results****Research questions 1**

To what extent does the school Management and Teachers Provide Instructional Materials for Effective Teaching and Learning of Mathematics in primary school in zone C of Niger State?

**Table 1: Extent to which School Management and Teachers Provide Instructional Materials for Effective Teaching and Learning of Mathematics**

Items	GE	LE	Mean	S.D
The school management provides instructional materials	98 <b>(75.4)</b>	32 <b>(24.6)</b>	3.5	1.0
I improvise instructional materials for my lessons	108 <b>(83.1)</b>	22 <b>(16.9)</b>	3.6	0.9
I find it difficult to use the available instructional materials	61 <b>(46.9)</b>	69 <b>(53.1)</b>	2.4	1.1
We don't have enough instructional materials in our school.	87 <b>(66.9)</b>	43 <b>(33.1)</b>	3.3	1.1
I always use instructional materials when teaching mathematics	111 <b>(85.4)</b>	19 <b>(14.6)</b>	3.6	0.9
The use of instructional materials make my lesson easy	124 <b>(95.4)</b>	06 <b>(4.6)</b>	3.8	0.7
<b>Average Mean</b>			<b>3.5</b>	
<b>Decision Rule = 2.5</b>				

Table 1 presents the result on the extent to which school management and teachers provide instructional materials for effective teaching and learning of mathematics in primary schools in the study area. The result shows that 75.4% (majority) of the respondent agreed that the school management provides instructional materials for teaching of mathematics (Mean =3.5, SD=1.0), also 83.1% (majority) agreed that they improvised instructional materials for their lesson. (Mean = 3.6, SD= 0.9), additionally majority (53.1%) opined that disagreed that they find it difficult to use available instructional materials. (Mean =3.0, SD=1.1). Furthermore 66.9% (majority) agreed on inadequate instructional materials their (Mean =3.3, SD=1.1), similarly 85.4% of the respondent exposed that they always use instructional materials when teaching mathematics. (Mean =3.6, SD = 0.9), and 95.4% (majority) of the respondents agreed that use of instructional materials makes lesson easy. (Mean =3.8, SD=0.7). From the findings it's deduced that school

management and teachers provide instructional materials for effective teaching and learning of mathematics in primary schools in the study area because the average mean (3.5) is greater than the decision rule (2.5).

## Research Questions 2

How the use of instructional materials facilitate and enhance performance of pupils in mathematics in primary schools?

**Table 2: Influence of instructional Materials on Academic Performance of Pupils in Mathematics**

Items	A (%)	D (%)	Mean	S.D
Instructional materials improves my retention (recollection) of mathematics concepts	115 <b>(88.5)</b>	15 <b>(11.5)</b>	3.8	0.6
Instructional materials make mathematics lesson more interesting	100 <b>(76.9)</b>	30 <b>(23.1)</b>	3.5	1.0
Instructional materials make mathematics more concrete (real)	110 <b>(84.6)</b>	20 <b>(15.4)</b>	3.6	1.0
Instructional materials help to arouse pupils' interest in mathematics lessons	115 <b>(88.5)</b>	15 <b>(11.5)</b>	3.7	0.9
Instructional materials help me to understand mathematics well.	119 <b>(91.5)</b>	11 <b>(8.5)</b>	3.8	0.8
Instructional materials improves my performance in mathematics	118 <b>(90.8)</b>	12 <b>(9.3)</b>	3.8	0.7
Instructional materials creates opportunity for pupils' participation during lesson	116 <b>(89.2)</b>	14 <b>(10.8)</b>	3.7	0.8
My mathematics teachers always use Instructional materials during lessons.	93 <b>(71.5)</b>	37 <b>(28.4)</b>	3.2	1.3
<b>Average Mean</b>			<b>3.6</b>	
<b>Decision Rule = 2.5</b>				

Table 2 presents the results on how instructional materials enhance pupil's academic performance in mathematics. The result shows that 88.5% (majority) of the pupils agreed that instructional materials improves their retention (recollection) of mathematics concepts. (Mean =3.8, SD=0.6). In addition 76.9% (majority) of the pupils agreed that instructional materials aids their interest in

mathematics lesson. (Mean =3.5, SD=1.0), it was also discovered that 84.6% (majority) of the pupils agreed that instructional materials makes mathematics real to them. (Mean =3.6, SD=1.0). Furthermore majority (88.5%) of the respondents agreed that teaching aids help to arouse pupils' interest in mathematics lessons. (Mean =3.7, SD=0.9). In the same manner the findings shows that majority (91.5%) of the respondents agreed that instructional materials help them to understand mathematics well. (Mean =3.8, SD= 0.8). Moreover the finding revealed that 90.8% (majority) of the respondents agreed that instructional materials improved their performance in mathematics. (Mean =3.8, SD = 0.7). Also 89.2% (majority) of the respondents agreed that instructional materials creates opportunities for them to participate in classroom activities. (Mean =3.7, SD= 0.7), and 71.5% (majority) of the pupils agreed that their teachers always used instructional materials. (Mean =3.2, SD=1.3). From the result it is inferred that instructional materials enhances students' academic performance because the decision rule 2.5 is lesser than the average mean which is 3.6.

## Hypothesis Testing

### Hypothesis 1

There is no significant difference between the performance of pupils taught with instructional materials and pupils taught without instructional materials

**Table 3. T-test analysis of difference in academic performance of pupils taught with instructional materials and those taught without instructional materials in primary schools**

Variable	N	Mean	SD	DF	t-cal	P-Value	Decision
Control group(Without)	19	19.526	4.800	33	-2.462	0.019	SIG
Experimental group(With)	16	23.625	5.032				

$P < 0.05$

The results in table 3 show that there is a significant difference in academic performance of students taught with instructional materials and those taught without instructional materials in primary schools [ $t$  (df = 33) = -2.462;  $p < 0.05$ ]. The mean difference is significant at 0.05. The mean values shows that there is significant difference between the performance of pupils taught with instructional materials and pupils taught without instructional material in mathematics in primary schools. Therefore, null hypothesis one, which states that there is no significant difference in academic performance of students taught with instructional materials and those taught without instructional materials in mathematics, is rejected.

## DISCUSSION

The findings revealed that instructional materials have a significant effect on students' academic performance in mathematics. The table one revealed that there was provision of instructional materials by the school management for teaching and learning of mathematics in the zone. The

result also shows that the teachers improvised teaching materials for teaching of mathematics. Also, it revealed that teachers made use of instructional materials.

The findings reveals that the instructional materials enhanced the performance of the pupils in mathematics in the zone. The results show that pupils enjoyed lessons when teaching aids are used and enhances their performance in mathematics. This result agrees with (Sulaiman and Audu, 2020).

The findings also shows that the students that were taught with instruction materials performed better than the students taught without instruction materials. This result agrees with (Ogundeji, Farayola & Adedapo, 2024).

### **Implication to research and practice**

These are the ways in which this study has advanced knowledge:

1. This study showed that, provision of instruction materials are essential in teaching and learning of mathematics.
2. Furthermore, it was discovered through this study that pupils would greatly benefit from the use of instructional materials, if is effectively utilized.

### **CONCLUSION**

Instructional materials are vital for enhancing pupils' academic performance in mathematics by supporting conceptual understanding, catering to diverse learning styles, and fostering critical thinking. While there are challenges in accessing quality materials, efforts should be made to improve availability and provide ongoing professional development for teachers on their effective use. Investing in instructional materials is an investment in the future of mathematics education and in the overall academic success of pupils.

Base on the study, the following conclusion were made:

1. Using teaching aids to enhance students learning outcome in mathematics is very influential.
2. It gives room for more participation among their counterparts.
3. Students need to use more learning alternatives in answering various mathematical problems.
4. Provision of instructional materials by the school management and teachers paid off, since it increased the performance of the pupils in mathematics.

### **Suggestions for Future Research**

Future research may target the following areas in light of the limitations found in this study:

1. More research is required to determine whether teaching aids have impact on academic performance of students in junior secondary school mathematics.
2. What are the mechanisms of dealing with inadequate instructional materials?

### **Recommendations:**

Based on the findings of the study, the following are recommended:

1. There is need to in-service head-teachers and teachers on cheap ways of availing instructional material for teaching-learning process in schools.
2. The teachers should be aware that instructional materials are needed to complement teaching-learning process, especially at foundation level of education.
3. The government and the other stakeholders should collaborate with the school authorities in providing the needed instructional materials for schools.
4. There is need to in-service teachers on the importance and effective use of varied instructional materials in teaching -learning process

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