PERCEIVED EFFECTS OF VISUAL INSTRUCTIONAL MATERIALS IN TEACHING MATHEMATICS AMONG SENIOR SECONDARY SCHOOL TEACHERS IN TAMBUWAL LOCAL GOVERNMENT AREA, SOKOTO STATE, NIGERIA

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Abstract
This paper "perceived effects of visual instructional materials in teaching mathematics among senior secondary school teachers in Tambuwal local government area, Sokoto state, Nigeria." The study was guided by three objectives, three research questions. The population of the study consisted of all Mathematics teachers in three Senior Secondary Schools of Tambuwal Local Government Area of Sokoto State. Nine Teachers were used as the sample for this study. Random sampling technique was employed to select the sample. The researchers used qualitative method with the use of individual interview for data collection. The data obtained was analyzed using coding system. The results shows that almost all the teachers are aware of visual instructional materials and used visual materials for teaching and learning. On the challenge of teaching mathematics using visual instructional materials, result shows that most of the mathematics teachers agree that visual instructional materials for teaching and learning mathematics are not available. The study recommends that Government should provide visual and other related instructional materials in Senior Secondary Schools for effective teaching and learning.

Keywords: *Instructional Materials; Visual Teaching Aids; Mathematics.*

INTRODUCTION

We live in a fast changing world that is becoming more scientific and more technological. As this transformation occurs, education in all forms and in all subjects is not left out. Teaching equipment and materials have changed over the years not only to facilitate teaching and learning situations but also to address the instructional needs of individuals and groups (Ema & Ajayi 2011). Advances in Technology have brought so many instructional materials especially the projected and electronics materials to the forefront as the most radical tools of globalization and development which have affected the classroom teaching and learning situation positively and bring about more effective instructions. For instruction to be effective, the teacher should be able to identify the instructional materials to be use. Instructional materials refer to all tools which can easily be used by a teacher to correct wrong impressions and to illustrate things that learners cannot forget easily

(Ema & Ajayi, 2011). Instructional materials are the different teaching aids or apparatus which a classroom teacher employs to facilitate his or her teaching for the achievement of the stated objective. Instructional materials are those materials which are helpful to the teachers and Students to maximize learning in various areas. The use of instructional materials in teaching of mathematics is very important because it provides a concrete basis for conceptual thinking motivates people to learn and captures students' imagination if used correctly.

Visual learning aids such as: Charts, pictures, posters, models, specimen, realia etc. are often designed to facilitate teaching and learning. The use of visual instructional materials gives the Learner opportunity to touch, smell, or test object in teaching and learning process. Consequently, knowledge passed on to the students at different level of educational instructions should be well planned and properly allied with relevant instructional materials for clarity and comprehensibility (Enohean, 2015). From the instructional point of view, the effectiveness of visual information is concerned with cognitive learning of students. This is because learning is a process through which knowledge, skills, habits, facts, ideas, and principles are acquired, retained and utilized; and the only means of achieving this is through the use of relevant visual instructional materials. (Aramide & Balarinde 2015) supportively asserts that any teacher who takes advantage of these resources and learns to use them correctly will find that he/she makes almost an incalculable contribution to instruction. He further said that use of relevant visual instructional materials in teaching are of height value in importing information, clarifying thought, sharpening observation, creating interest and satisfying individual difference. Visual instructional materials are aids that enhance teaching and learning. It helps learning from verbal to practical aspects. Visual instructional materials make teaching and learning lively, interesting, enjoyable, easy and more effective and help in retention of knowledge by the students (Ibrahim, 2011). Visual instructional materials are seen as great relief for teachers in impacting knowledge and making the message clearer.

Mathematics is the bed rock and essential tool for scientific, Technological, and economic advancement of any nation (Muhammad, maccido, & Hassan 2016). Mathematics is the study of size, numbers and patterns. It is the most international of all subjects, and mathematical understanding influence decision making in all areas of life-private, social and civil. It is the subject that enables scientists and technologists to develop relationships among biological, chemical and physical qualities; understand and explain natural phenomena. Mathematics education is a key to increasing post-school and citizenship of young people. The knowledge of mathematics is an essential tool in the society today. The contribution that mathematical knowledge and skills have made to economics, industrial and technological growths of modern world are quite obvious to almost everyone.

Despite the importance of mathematics in human progress, there are some other challenges in teaching the subject, such as lack of qualified teachers

in the area, lack of time in designing and developing the content by some teachers, insufficient relevant teaching aids in the schools. Furthermore, not all the teachers are aware that the utilization of visual instructional materials is important in teaching and learning process, Attitude of teachers towards using visual instructional materials. To facilitate and encourage students to keep constant practice especially after school hours becomes another obstacle.

Joseph (2000) carried out research to investigate effect of visual learning aids on students' academic performance in public Secondary school of Magu District. The outcomes showed that, students taught using visual learning aids had poor performance than students taught without visual learning due to the some other factors investigated.

Emma & Ajayi (2004) asserted that "teaching equipment and materials have change over the years, not only to facilitate teaching and learning situation but also address the instructional needs of individuals and groups."

Okendu (2012) asserted that regular instructional supervision has a significant bearing on students' academic performance. He also affirmed that adequate supply of instructional resources have significant effect on students' academic performance.

Onasanya & omesewo (2011) confirmed that both standard and improvised instructional materials have the same positive effects on students' academic performance.

Dogondaji (2009) confirmed that the use of visual instructional materials in teaching mathematics increases students' achievement.

It's on this background that the researcher want to investigate the perceived effects of visual instructional materials in teaching mathematics among senior secondary school teachers in Tambuwal local Government area of Sokoto state, of Nigeria.

Purpose of the Study

The objective of this study is to investigate perceived effects of visual instructional materials in teaching Mathematics among Senior Secondary School Teachers in Tambuwal Local Government Area of Sokoto State, Nigeria. Based on this, the purposes of the study in specific terms are:

1. To determine level of Mathematics teachers awareness of visual instructional materials.
2. To examine the extent to which Mathematics teachers use visual instructional materials.
3. To Find out the Mathematics Teachers perception on the challenges of using visual instructional Materials for teaching and learning.

Research questions

The following research questions guided the study.

1. What is the level of Teachers awareness of using visual instructional materials?
2. To what extent do teachers use visual instructional materials?
3. What is the perception of Mathematics Teachers on the challenges of using Visual Instructional Materials for teaching and learning?

Research Design

Descriptive survey research was adopted in this research. Qualitative method was used for data collection.

Population: The population of this study consisted of all Senior Secondary School Mathematics Teachers in Tambuwal local Government area of Sokoto state, Nigeria. There were 10 Mathematics Teachers during the period of the study.

Sample

The sample drawn from the population was Nine (9) Mathematics Teachers. The sample was small, this is because the intent of using qualitative method is to locate and obtain information from a small sample and to gather extensive information from the sample (Creswell, 2014 and Bian, 2017), shown in Table 2.

Instruments: Perceived effects of visual instructional materials (PEVIM) data bank was used as an instrument for data collection.

Individual Interview

Information was gathered through data-blank from the respondents. Nine (9) Mathematics Teachers in Senior Secondary School in Tambuwal Local Government area of Sokoto State were selected (Three (3) Teachers each). Data collected were analyzed using code, summarizing the key points of the information gathered make the researcher to arrive at the right decision/ interpretation.

Data Analysis of Individual Interview

Coding system was used to analyze data. Individual interview was held with Nine (9) Teachers (Three (3) Teachers each) were selected at random from the Schools. A code is a word or a short phrase that descriptively captures the essence of elements of your material (e.g. a quotation) and is the first step in your data reduction and interpretation (Celano, nd). Below are responses that were sampled of some respondents using coding; School (A), School (B) and School (C)

Respondent A1

"Yes, I am aware of visual teaching aids. I'm using visual teaching aids to teach mathematics. Insufficient visual teaching aids in the school".

Respondent A2

"Yes, I am aware of visual teaching aids. I'm using visual teaching aids at the course of instruction. Unavailable materials in the school".

Respondent A3

"Yes, I am aware of visual learning aids. I taught my students using visual learning aids. Visual learning aids are not available".

Respondent B1

"Yes, I am aware of visual learning aids. I don't use visual learning aids in the class. Visual learning aids are very scarce".

Respondent B2

"Yes, I am aware of visual learning aids. Yes, I'm using visual teaching aids in the class. We don't have enough visual teaching aids in the school."

Respondent B3
"Yes, I am aware of visual instructional materials. Yes I'm using visual instructional materials during teaching. Insufficient visual teaching aids".

Respondent C1
"Yes, I am aware of visual instructional materials. I taught my students via learning aids. In access to the materials".

Respondent C2
"Yes, I am aware of visual instructional materials. I'm using visual teaching aids in the class. No challenge".

Respondent C3
"Yes, I am aware of visual instructional materials. I'm using visual teaching aids in the class. I don't have any challenge".

Interpretations of Data and Results
Based on the Awareness, the above responses show that respondent A1, A2, A3, B1, B2, B3, and C1, C2, C3 constituted greater majority in the awareness of visual instructional materials. The result indicated that most of the mathematics teachers in Tambuwal local Government Area are aware of visual instructional materials in teaching and learning process, hence the result is positive.

The respondent A1, A2, A3, B2, B3, and C1, C2, C3 Shows that majority of the teachers use visual learning aids in teaching mathematics, where by only one single teacher respond negatively in using visual instructional materials, hence above result signifies that almost all the teachers are aware and use visual learning aids in teaching and learning of mathematics.

On the challenge of teaching mathematics using visual instructional materials, respondent A1, A2, A3, B1, B2, B3 and C1 agree that there are tremendous challenges. It is only respondent C2 and C3 disagree to have challenge. The result shows that most of the mathematics teachers agree that visual instructional materials for teaching and learning mathematics are not available.

Conclusion
From the foregoing discussion, it shows that Mathematics teachers are aware of visual instructional materials and used visual materials for teaching and learning of mathematics. Its huge privilege at this technological advancement which promotes mathematics teachers used visual learning aids for teaching and learning. In future, audio, audio visual and other electronic teaching materials could be possible where visual, videoconference, Snap chat, just to mention, would be used for teaching and learning purposes.