

**PRODUCTION AND USAGE OF THREE-DIMENSIONAL TOOLS FOR LEARNING IN
LOWER PRIMARY SECTION (A CASE STUDY OF JOY AND JOLLY NURSERY SCHOOL
NAMUNGOONA)**

1 Nanyombi Jauharah, 2 Nkwasiwe Kenneth

1, 2 Metropolitan International University

ABSTRACT

Everyone wants to see the change of children from pre-primary to primary level go as smoothly as feasible so that a child can achieve the maximum academic development and advancement through an effective teaching learning process. Nevertheless, there are a number of difficulties that students and teachers must overcome in order for the transition to go smoothly, and these difficulties are entirely dependent on the affordability of teaching learning methods and materials. On the basis of this context, the study investigated the creation and application of multidimensional learning aids in the lower primary section at Joy and Jolly Nursery School, Namugooona. The three research questions what materials are ideal for generating 3-dimensional learning tools? were the foundation of the study, which was inspired by Piaget's theory of cognitive development, which recognizes the importance of educational the supply of resources in the teaching and learning process. What use do multidimensional tools have for the lower primary section? What effect does employing three-dimensional tools serve on primary school students' learning? Data from 76 participants, including students, instructors, and school officials were gathered via questionnaires. The collected data was tabulated and analysed with numbers and percentages. The results of the study showed that multidimensional teaching and learning tools are not used to their full potential, and they advised using recycled and locally available materials as an alternative to purchasing basic three-dimensional interactive manipulatives (IMs) for use in classrooms, particularly at the primary level. Teachers have a responsibility to create easy-to-use tools that can help students learn and comprehend subjects covered in lower primary school.

Key words: production, three-dimensional and learning

Background of the study

(Rather, 2004) Visual aids, usually referred to as instructional materials, are powerful instruments that "invest the past with an air of actuality." Visual aids provide the students with accurate information, retaining their interest and assisting in the comprehension of the wonders of antiquity. Through the visual and aural senses, they make demands on the mind. One of the factors that roots pupil engagement in the class is the use of three-dimensional teaching tools because when learners look at a visual model or assistance, it is regarded as a form of input. Additionally, the introduction of visual aids encourages movement and could improve control.

According to (Wu et al., 2001), instructional materials are made to let participants compare two-dimensional in nature drawings with multidimensional visualizations while they learn about organic chemistry. The application allows students to create virtual models of tiny organic compounds using a variety of widely used molecular approximations. Because they stimulate, encourage, and temporarily hold the learner's concentration during the educational process, learning aids of many kinds, including both 2D and 3D tools, can reinforce understanding. Due to their use in educational institutions to promote the teaching and learning process, three-dimensional tools draw pupils in and make it easier for teachers to explain concepts.

Statement of the problem

It is quite concerning to see how our educational system is degrading. Insufficient instructional and instructional resources are a problem that teachers and pupils face today, but they must be used effectively in order to improve educational outcomes. However, it has been recognized that pre-service teachers require an integrated source for knowledge on the creation and use of instructional resources. The majority of the issues with the method of instruction and education will be lessened as a result. Despite this, the issue with these educational materials is the cost of the materials' acquisition. Other issues that prevent schools from using

instructional resources effectively include reliance on only multifaceted materials for instruction, a lack of electrical supply to operate some visual aids, and a lack of skilled educational technologists to operate them. However, curriculum developers place a strong emphasis on instructors' utilization of instructional resources to make an improvement in students' academic performance. No matter the teacher's degree of education or expertise, the investigator finds it puzzling that most two-dimensional teaching aids and a small number of a three-dimensional visualisation tools are employed in science lessons to accomplish results. Therefore, the purpose of this study is to create multidimensional teaching aids and ascertain whether they have an impact on the teaching and learning process in the lower elementary section.

Objectives of the study

- 1. To develop three dimensional tools for learning in the lower primary section.*
- 2. To assess the utilisation of three dimensional tools in lower primary section.*
- 3. To examine the impact of using three dimensional tools in teaching lower primary section.*

Studio guiding questions

- 1. What materials are suitable for developing three dimensional tools for learning in lower primary section?*
- 2. How can three dimensional tools be utilised in the lower primary section?*
- 3. What impact does using three dimensional tools have on learning in lower primary section?*

Methodology

Research Design

According to (Ling, 2006), a research design is a strategy, plan, or strategy used to produce solutions to investigate challenges. The case study was a part of the investigation's design, which also employed both qualitative and quantitative approaches. Through interviews and surveys, the investigator was able to focus on a specific demographic and gather primary data using the case study design. Additionally, the investigator gathered secondary data by reviewing books and other library materials as well as other types of publications.

Population of the Study

Ngechu (2004), defined population as a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. The study population will consist of the key stakeholders such as administrators, teachers, other staff members and students. The above target population was of great importance because they were believed to have in-depth information on the study variables.

Sample Size

According to Polit (2001), sample size is the population's percentage. A sample is a limited portion of a statistical population whose characteristics are investigated to learn more about the entire population. When working with people, a group of participants may be chosen for this survey from a sizable population. Mugo (2002) claims that sampling is the chosen method for selecting suitable participants who may represent the entire community. Therefore, the appropriate procedure was applied to choose a sample size that would reduce bias findings.

Sampling Techniques

Simple Random Sampling

In this method, respondents were picked both purely randomly without any other influence to select pupils and purposely targeting lower primary teachers and administrators. This method ensured that each member of the target population i.e. seventy six (76) had an equal and independent chance of being included in a sample so as to minimize cost and select people who would provide relevant

information about the use of three dimension TLS in Joy and Jolly Nursery School Namugooona

Purposive sampling technique

Purposive sampling, according to (Tellis, 2014), occurs when participants are chosen for sampling based on whether or not the needs of the research are met. Participants selected by the application of purposeful sampling judgment. Nevertheless, a specific group of persons who would be able to provide the most pertinent details for this study were identified using the purposive sampling technique.

Data Gathering Techniques

Using a questionnaire

A survey, according to (Daniel, 2018), is a planned series of inquiries that the subject participant must answer without the interviewer providing guidance or explanation. The investigator used this to obtain knowledge, particularly from the authorities. To increase the possibility of responding, both open and closed inquiries will be sent.

Data Management and Analysis

To correct problems, fieldworkers manually cleaned, sorted, and modified the raw data. This required checking the responses to the surveys carefully for mistakes, omissions, and unclear designations. The Statistical Package for Social Scientists (SPSS) was used to import the data and execute the analysis. To better understand the results, cross-tabulates with percentages and frequency distributions were created.

RESULTS

Respondent's Particulars

Gender of respondents

Table 1: Showing the gender characteristics of respondents

Gender	Frequency	Percentage
<i>Female</i>	43	56.6
<i>Male</i>	33	43.4
<i>Total</i>	76	100

Source: Primary Data, November, 2022

Table 1 indicates that 56.6% of the respondents were female as compared to male who constituted 43.4%. They all responded to the questionnaires given to them in the study. According to the research, more questionnaires were given to the females because most of them were lower primary teachers who could give appropriate data.

Education level of respondents

Table 2: Showing the education level of respondents

Education Level	Frequency	Percentage
<i>Primary</i>	20	26.31
<i>Certificate</i>	30	39.47
<i>Diploma</i>	14	18.42
<i>Bachelors</i>	07	9.21
<i>Masters</i>	05	6.58
<i>Total</i>	76	100

Source: Primary, Data, January, 2022

Table 2's findings show that the majority of the answers provided by respondents regarding their educational backgrounds indicated that 39.47% of them had a certificate, as the vast majority of those spoke with were third-grade teachers, and 26.31% had a childhood education, as they had been chosen at random from their primary school. Since some of the educators surveyed had been promoted to grade V, 18.42% of the group held diplomas, followed by 9.21% of those with bachelor's degrees and 6.58% of those with master's degrees, mostly school administrators. The general finding was that the individuals who were questioned

came from a wide range of educational backgrounds, providing adequate data.

Occupation background of respondents in terms of years

Table 3: Showing the occupation background of respondents in terms of years

Occupation	Frequency	Percentage
<i>Above 10 years</i>	<i>30</i>	<i>39.5</i>
<i>05-09 years</i>	<i>26</i>	<i>34.2</i>
<i>00-04 years</i>	<i>20</i>	<i>26.3</i>
<i>Total</i>	<i>80</i>	<i>100</i>

Source: Primary Data, November, 2022

In table 3, the study indicated that 39.5% were above ten years, 34.2% were between 05-09 years since majority of the respondents were experienced long serving teachers, 26.3% were the pupils and newly required teachers into the service. The researcher noted that there is a need for the government to come up with more programs to help both teachers and pupils to make three-dimension teaching aids although there are two-dimension teaching aids like charts are used at Joy and Jolly Nursery School Namungoona.

Whether three-dimension teaching learning aids are utilised in teaching

Table 4: Showing responses on whether three-dimension teaching learning aids are utilised in teaching

Responses	Frequency	Percentage
<i>Yes</i>	<i>10</i>	<i>13.2</i>
<i>No</i>	<i>52</i>	<i>68.4</i>
<i>Not sure</i>	<i>14</i>	<i>18.4</i>
<i>Total</i>	<i>76</i>	<i>100</i>

Source: Primary Data, November, 2022

According to table 4's findings, 68.4% of the participants said that Joy and Jolly Nursery School Namungoona does not employ three-dimensional instructional and educational aids in its lower division, 13.2% said that they do, and 18.4% said they were unsure. This shows that three-dimensional theory of learning is not

employed in the study area, making this study extremely pertinent to the management of Joy and Jolly Nursery School Namungoona. Given a higher percentage of conflicts and uncertainty coupled, it is also plausible that they are less successful.

Responses on the materials used during teaching learning process

Table 5 Responses on the materials used during teaching learning process

Material	Frequency	Percentage
Textbooks	21	27.6
Chalk board	14	18.4
Real objects	12	15.8
Slates	08	10.5
Charts	15	19.7
3D tools	06	7.9
Total	76	100

Source: Primary Data, November, 2022

From the interview of 76 respondents, 27.65% indicated that textbooks are mainly used during teaching learning as TLs for teaching, 19.7% indicated use of charts as it was ranked second, 18.4% indicated the use of chalk board, 15.8% of the respondents indicated the use of real objects, 10.5% of the respondents indicated the use of slates while 7.9% indicated the use of 3D tools and was ranked with the smallest percentage indicating that it was not being effectively utilised in the area of study.

Responses about the utilisation of teaching learning aids

Table 6: Showing responses about the utilisation of teaching learning aids

Use	Frequency	Percentage
Reading and writing	40	52.7
Reciting and conveying ideas	26	34.2
Visual perception	10	13.2

Total	76	100
--------------	-----------	------------

Source: Primary Data, November, 2022

In table 4, the study indicated that 52.7% indicated that TLs are used for reading and reading purposes and was ranked highest, 34.2% of respondents indicated reciting and conveying ideas while 13.2% of the respondents indicated visual perception. The researcher noted that there is a need for the administration to initiate a programme that will attract attention of both teachers and pupils to make three-dimension teaching aids to boost on their visual perception at Joy and Jolly Nursery School Namungoona.

The impact of teaching aids as they were aired out by respondents.

Table 7 Reveals the possible solutions that were aired out by respondents.

Response	Frequency	Percentage
Boosts creativity	35	46.1
Makes the lesson practical	18	23.7
Marital counselling	15	19.7
Strengthen gender/church	08	10.5
Total	76	100

source: Primary data, November,2022

The greatest proportion, 46.1%, was obtained for dedication, suggesting that in order to prevent issues, couples must be faithful to one another. such as fraud and the spread of illnesses like HIV/AIDS. joining religious organizations for spiritual guidance This perspective received a score of 23.7%. Because all religions stress the need of being present and available to family and spouse "in good or bad times," it was inferred that divorce would turn out to be less common in homes whose members fear God. 19.7% of respondents suggested pre- and post-marital counselling as a way to prevent divorce. Some respondents admitted they entered marriages without understanding what happens in marriage institutions.

Production and Usage of Three-Dimensional Tools for learning in lower primary section (A case study Joy and Jolly Nursery School Namungoona) the study findings here indicate the researcher produced Three Dimensional Tools for Learning in lower primary section at Joy and Jolly Nursery School Namungoona for use during teaching learning process. The illustration included counting numbers from 1-5 as shown in the developmental stages show in figure below. They were installed for use in the lower primary section for (A case study Joy and Jolly Nursery School Namungoona)

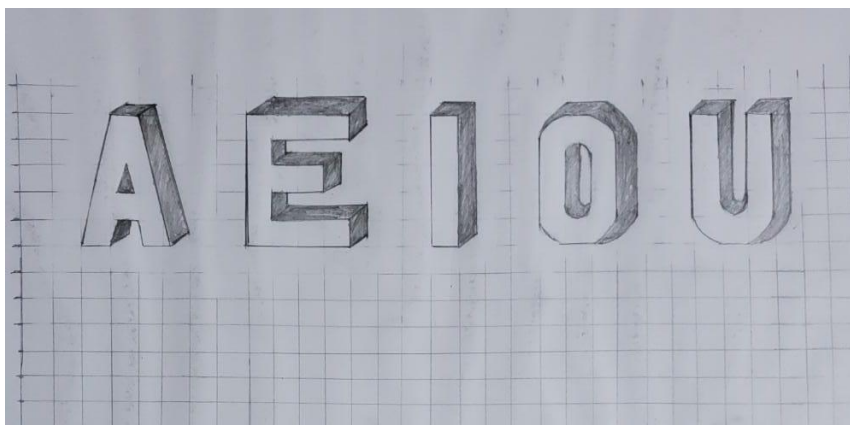




Figure:6 Three-dimension Teaching learning Aids

Source: A researcher, November,2022

Conclusions

The study also showed that our immediate environs are rich in supplies that can help meet the nation's needs for educational resources for schools and also help schools and communities near them work successfully together in utilizing the tools and materials in their local environments.

As a result, finding and reusing garbage and other items can help to improve teaching in Uganda's primary schools.

Recommendations

Primary school teachers can utilize some known skill that they have acquired or learn some basic skills from known experts that will enable them to design and develop simple but effective aids to enhance pupils' knowledge and understanding of abstract science topics that they are taught at the lower primary level

REFERENCES

Adeyanju, G.A. (1977); Creativity Learning and Learning Styles. Zaria: Nigeria. Isola Ola & Sons.

Atkinson, R. K. (2000). Learning from Examples: Instructional principles from the worked Examples Research. Mississippi: Mississippi State University.

Babayomi A. A. (1999). Comparative study of the Teaching and Learning Resources in Private and Public Secondary Schools in Lagos State. Master's Thesis, Department of Educational Administration, University of Lagos, Nigeria.

Fuller, B., & Clark, P. (1994). Raising School Effects While Ignoring Culture? Local Conditions and the Influence of Classroom Tools, Rules, and Pedagogy. Review of Educational Research. 64(2): 119 - 157.

Glewwe and Kremer (2006). School Quality Trends in the Third World (mimeo), By B. Fuller. Washington DC: World Bank, Education and Training Department.

Hanushek, Eric, S. Rivkin, and L. Taylor (1996) "Aggregation and the Estimated Effects of School Resources, Review of Economics and Statistics; 78(4): 611-27, November.

Mugenda, O. M. and Mugenda, A. G (2003). Research methods. Nairobi: African Centre for Technology Studies (ACT).

Onche, A. (2014). Meeting the Challenge of Accessibility and Utilization of Modern Instructional Materials in Rural Secondary Schools in Nigeria. International Journal of Multidisciplinary Studies. I, (2): 1 - 13.

Owoeye, J. S. (2011). School Facilities and Academic Achievement of Secondary School Agricultural Science in Ekiti State, Nigeria. Kampala: Kampala International University.

Romer and Weil (1992) 'The Dallas school accountability and incentive program: an evaluation of its impacts on student outcomes' Economics of Education Review vol. 18 pp. 1 - 16.

Tinio, V. L. (2002). ICT in Education: UN Development Programme. (Retrieved on April 2016 from <http://www.eprmers.org>).