EXTENT OF UTILIZATION OF INSTRUCTIONAL MATERIALS IN TEACHING PRIMARY AND SECONDARY SCHOOLS SCIENCES IN ENUGU STATE

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Abstract

This study investigated the extent of utilizing instructional materials in teaching sciences in primary and post-primary schools in Enugu State of Nigeria. Questionnaire was used for collecting data in teachers' knowledge instructional materials and the extent of utilizing the during science teaching. Percentage statistics was used to analyze the data while the product moment correlation statistic was used to establish the relationship between the mean ratings of primary and secondary science teachers. The findings included apparent under-utilization of the instructional materials in teaching sciences at lower levels in the state. These findings have far reaching implications for solid science foundation for technological growth in Nigeria.

Introduction

The need for a solid foundation in science is very crucial if Nigeria would attain the required technological height and this solid foundation starts from primary education. Again, science foundation is a necessary requirement for accelerated technological growth. Since so much emphasis has been placed on science education, it stands to right reason that lovers of education should constantly be looking for ways by which the teaching of science subjects could be made effective right from the lower level (Oyedeji, 1986). One way of achieving this is the utilization of instructional materials at that level in that state for science teaching.

Instructional materials (IM) are used in teaching to bridge two worlds of experience - the subject matter and the real life situations (Iloputaife and Eze, 1994). Also, instructional materials are used to supplement the normal learning process of listening, seeing, reading and writing. The saying: "hear and forget; see and remember; do and understand" makes a strong case for utilization of instructional materials (Iloputaife, 1993).

Also, instructional materials would appear to be one of the principal parameters essential for effective science training. That might be the reason why Maduabum (1983), feels that inadequacy of instructional materials in the laboratory will greatly hamper effective science teaching. Relatively, ivowi (1983), stressed on the need for instructional material in physics teaching because many physics concepts are vaguely explained in languages not easily comprehended by students. Researchers (Obi, 1995; Okeke, 1995; Okwo, 1995), have shown the gains in the use of instructional materials.

Before now, the learning aids available were in the form of visual aid until the coming of radio, television, tape recorders, communication satellites and computers. Instructional materials are thus grouped on the basis of the senses to which they appeal - visual aids, audio aids and audiovisuals. Instructional materials help teachers to generate curiosity, interest, stimulate imagination and positive attitude among the students, but despite the positive attributes of instructional materials, it appears they have not received the attention they deserve in our classroom settings. This view was supported by Ali (1986) who observed that the existing infrastructural facilities including instructional materials available in Nigerian schools are not fully utilized. Also, Salisu (1991), stated that instructional materials are yet to find their ways into Nigerian classroom.

Therefore, the major problem of this study is formalized as follows: to what extent do teachers of science utilize instructional materials in the teaching of primary and secondary school sciences in Enugu State? Hence, the major purpose of this study was to investigate the extent to which science teachers in primary and secondary schools in Enugu State of Nigeria use instructional materials to enhance the explanation of the science concepts they teach primary and secondary school children.

Research Questions

The following research questions guided the study:

1. What kind of instructional materials (IM) exist for primary and secondary science teachers? (R Ql).
2. To what extent are these instructional materials utilized by science teachers in the course of their teaching? (R Q 2).

Research Hypothesis

For this survey, one null hypothesis was formulated and tested beyond 0.05 probability level. There is no significance relationship in the mean ratings of primary and secondary school science teachers on the extent of utilization of instructional materials in the course of their teaching the science subjects.

Methodology

A sample of 350 (200 primary school science teachers and 150 secondary school teachers) was drawn from 51 schools (30 primary schools and 21 secondary schools randomly selected from the former Enugu State. The State was stratified into three education zones, Abakaliki, Enugu and Nsukka. Ten primary schools were randomly selected from each zone. And in the same manner seven secondary schools were selected from each education zone for the study.

One instrument was used for data collection, styled questionnaire on available instructional materials and utilization (QA1MU). This instrument was developed based on the research questions and was face-validated by two experts in measurement and evaluation. The QUIMU consists of 24 items used to find out the science teachers knowledge of instructional materials and the extent of utilizing those instructional materials by the science teachers under study. ESUT Sandwich students helped to administer the instruments to the respondents. Out of 350 questionnaires distributed, 310 was recovered and used for analysis. Percentage statistic was used to analyze the response measures on QAIMU. The product moment correlation coefficient (r) was computed for the relationship between the mean ratings of primary and secondary schools science teachers.

Table 1: Percentage Scores on Science Teachers Knowledge of IM

S/No	Items	% Response
1	Pictures (Flat)	100
2	Film strips	100
3	Overhead projection	89
4	Radio programmes	100
5	Video/tape recorders	100
6	Television	100
7	Computers	95
8	Charts	100
9	Graphs	100
10	Specimens	80
11	Models	92
12	Science books and magazines	96

Table 1, indicated that 100 percent of the respondents have knowledge of items, 1,2, 4, 5, 6, 8 and 9, while 89, 95, 80, 92 and 96 percent of the respondents have knowledge of items 3, 7, 10, 11 and 12 respectively.

Table 2: Percentage Scores on Utilizing the IM

S/No	Items	% Response
1	Pictures (Flat)	100
2	Film strips	00
3	Overhead projection	00
4	Radio programmes	7
5	Video/tape recorders	7
6	Television	00
7	Computers	00

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8	Charts	100
9	Graphs	100
10	Specimens	70
1 1	Models	74
12	Science books and magazines	30

As shown in table 2, items 2, 3, 6 and 7 were not utilized whereas items 1, 8, 9, were utilized 100 percent. Items 4 and 5 were utilized 7 percent, items 10, 11 and 12 were utilized 70, 4 and 30 percent respectively.

Table 3 presents relationship between the responses of primary and secondary school science teachers.

X	Y	H^2	Y^2	XY	$(X)^2$	(Y^2)	df	R
39.5	39.8	85.27	84.91	89.56	1560.25	11584.94	10	0.90

Significant beyond 0.05 level (table value of r = 0.58)

The present study revealed that almost all the science teachers used for this study have known all the types of instructional materials under study, but a disturbing feature in this study is that only flat pictures, charts and graphs were extensively utilized by science teachers in their classes. Pictures, charts and graphs are good but most of the time would not show detailed features especially in three dimensions. Specimens and models are considered very useful in the teaching of abstract science concepts but they are utilized for only 70 and 74 percent respectively in teaching by the science teachers.

Films, overhead projectors, television and computers were not utilized at all. Radio programmes and video/tape recorders were only utilized for 7 percent by the teachers. The findings correlate with those of Iloputaife and Eze (1994); Okwo (1995) and Obi (1995), that even where the instructional materials are available, they are not utilized by the teachers.

Analysis further revealed that there is significant ($P<0.05$) relationship in the mean ratings of primary and secondary school science teachers on the course of their teaching the science subjects. This might generally mean that the mean ratings of the respondents are perfectly related. A correlation coefficient of 0.09 indicates 81% common variance. It seems that the difference in primary science teachers mean ratings is attributable to its tendency to vary with secondary science teachers mean teachings. Therefore, there is no doubt regarding the validity of the responses.

Conclusion

The result of this study to suggest that:

1. all science teachers have known or at least heard of all those categories of instructional materials under study.
2. there is apparent under utilization of these instructional materials especially for television, computers, films, overhead projections etc.

Based on the findings of this study, the researcher suggested that utilization of instructional materials must be considered a major input in the teaching of sciences. This is because the use of instructional materials in teaching of sciences enables the teachers to present difficult and abstract concepts. It also promotes better acquisition as well as promoting the retention of facts. They supply a concrete basis for conceptual thinking and reduce meaningless word response of pupils.

All these therefore, necessitate the need for teachers to use instructional materials in order to make educational process very effective and efficient and consequently, lay the solid foundation required for technological growth in this country.

References

Ali, A. (1986). Nigerian scientists and science teachers educators' perception of the processes and products of science. ***JSTAN, 24 (l and 2), 134 - 142.***

Iloputaife, E. C. (1993). Trends and issues in science education in Nigeria. In Obodo, G. C (ed). Science and Mathematics education in Nigeria. Nsukka, Nigeria: ***The Academic Forum.***

Iloputaife, E. C. and Eze, A. E. (1994). Physics teachers perception of the roles of instructional materials in the teaching and learning of physics in secondary schools. ***Oriental Journal of Educational Research.*** 1 (1), 46 - 58.

lvowi, U. M. O. (1983). Achievement level in understanding physics concepts in secondary school. ***JORIC 1 (2) 22 - 30.***

Maduabum, M. A. (1983). ***Laboratory management in teaching biology effectively.*** Maduabum (ed) Jos: University Press.

Obi, T. E. C. (1995). Efforts of multi-media approach on students achievement in some units of senior secondary school economics. A paper presented at national conference on effective teaching. At NAU, Awka, from 24lh to 26'1' Oct.

Okeke, R. J. N. (1995). Effects of audio-visuals in teaching social studies. An empirical study. A paper presented delivered at the NAEMT conference at FCE (T) Asaba from 21st - 25thy Nov.

Okwo, F. A. (1995). Media awareness among trained in-service teachers enrolled in teacher education programmes. A paper presented at the NAEMT conference at FCE (T), Asaba from 21st - 25th Nov.

Onyejemezie, D. A. (1981). Curriculum materials. In Uga O. (ed). ***Curriculum development for Africa.*** Nigeria: African Publishers Ltd.

Onyedeji, N. B. (1986). Management of science equipment for efficiency and effectiveness of the 3 - 3 system of education. ***JSTAN 24 (1 and 2), 267 - 273.***

Salihu, S. O. (1991). Improving the quality and techniques of teacher educators through educational technology. In K. Isyaku (ed). ***Proceedings of he national conference ofNCE teacher educators in Nigeria, Kaduna NCCE, 236 - 241.***