

Utilization of Instructional Materials by Physics Teachers and Students in Ekiti State Secondary Schools, Nigeria

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ABSTRACT

This study investigates the level of use of Instructional Materials by Professionals and non-professional Physics teachers in Ekiti State Secondary Schools. The purpose is to determine the availability of Instructional materials in schools and its level of use by professional and non-professional Physics teachers. The study employs the descriptive survey as its research design. The population for the study consisted of all physics teachers and physics students in senior secondary schools in Ekiti State. Stratified random sampling technique was employed to select 120 physics teachers and 240 physics students from the population. Data were analysed using descriptive and inferential statistics. It was revealed through the result of this study that most of the instructional materials that can improve the teaching and learning of Physics in schools were not available while the little ones available were not put into effective use. Based on the finding of this study, it is recommended among others that efforts should be made by all the stakeholders in the education sector towards the provision of adequate instructional materials in schools for effective teaching and learning of physics in Ekiti State Secondary Schools.

Keywords: *Instructional Materials, Availability, Utilization, Professional Teachers, Experienced Teachers, and Non Professional Teacher.*

INTRODUCTION

Science and technology have long been recognized as instruments for nation building. Every country craves for science and technology advancement and this can only be achieved through education. In a developing country like Nigeria, where means of achieving technological development and economic survival are sought; high priority is now placed on the teaching and learning of science in schools. This is reflected in section 8 of the National Policy on Education (NPE) where it was stated that, "Not less than 60% of places shall be allocated to science and science-oriented courses in the conventional universities and not less than 80% in the universities of technology" (F.G.N, 2004). Physics is among the disciplines essential for national development. It is important as its knowledge is required for the successful study in many important professions such as engineering, pharmacy, medicine, agriculture and so many others. A poor physics foundation at the secondary school level will jeopardize any future effort to enhance achievement in the subject. In realization of its numerous advantages, physics has been introduced in Nigeria secondary school curriculum in order to achieve the following objectives.

- (i) To provide a solid foundation for everyday living

(ii) To develop computational skills and ability to be accurate to a degree relevant to the problem in hand

(iii) To stimulate and enhance creativity (F.G.N, 2004)

In order to make these objectives realizable, teachers are in position to:

(i) Select the appropriate learning experience (content) based on the use of learners

(ii) Select the appropriate instructional materials to lesson abstraction in Physics and to make learning meaningful

(iii) Select the appropriate methodology and

(iv) Select the mode of evaluation in order to assess if the objectives have been achieved.

Therefore the position and the influence of teachers in the attainment of these noble objectives cannot be over emphasized. It has been summarily stated by the National Policy on Education that “No Education System can rise above the quality of its teachers (FRN, 2004). Teachers’ quality and professional standard are issues of serious concern to educational planners everywhere in the world because of the need for quality education. Quality education can be conceptualized as education that is relevant to the developmental needs of the recipient as individuals, and to the society in which the individuals live and operate as active participants (Anikweze, 2008). Quality education should be seen to be locally relevant and culturally appropriate (UNESCO, 2000).

During the administration of Ronald Reagan as the President of America, there was widespread public perception in America that something was seriously remiss in their educational system. A country that once enjoyed unchallenged pre-eminence in commerce, industry, science, and technological innovation, found itself being overtaken by competitors from the Eastern Bloc of the world. The handlers of education, and perhaps the stakeholders as well, could have been thoughtless for quite some time until the Russian Sputnik woke them from slumber. Consequently, the then Secretary of Education (T.H. Bell) created the National Commission on Excellence in Education on August 26, 1981. The major directive given to the Commission was to examine the quality of education in the United States, the first item in the terms of reference being to assess the quality of teaching and learning in the nation’s public and private schools, Colleges, and Universities (Education News Org., 1983). Among the findings of the Commission (Education news.org, 1983) were the following:

i Not enough of the academically able students are being attracted to teaching;

ii Too many teachers are being drawn from the bottom quarter of graduating high school and college students

iii The teacher preparation curriculum is weighted heavily with courses in “educational methods” at the expense of courses in subjects to be taught

iv Severe shortages of certain kinds of teachers exist in the fields of mathematics, science and foreign languages

v Half of the newly employed mathematics, science, and english teachers are not qualified to teach these subjects; Fewer than one-third of U.S. high schools offer physics taught by qualified teachers.

While citing NPE (2004), Olateju (2004) further says that the performance of a

student is a function of what the teacher inputs (impart) in him. No matter the amount of money spent to procure materials without the teacher the whole process is a failure. The teachers are expected to be well trained and certified to enable him build a solid foundation for technological development of a nation. Ayoola (2007) is of the opinion that the qualification of a teacher dictates the quality of information imparted to the students through teaching. It is however very sad that, majority of teachers teaching Physics in most schools are not professionally qualified. According to a research carried out by Thomas, (2002) and cited by Abolade (2007) a study of professionally qualified teachers was carried out in senior secondary schools in Kwara State finds that the number of untrained Physics teachers out-numbered that of the trained ones. He then concluded that professionally qualified teachers were in short supply as most of them in secondary schools had not been adequately prepared for teaching. Igwe (1982) throws more light on this, when he says:

A poor teacher tells
An average teacher informs
A good teacher teaches
An excellent teacher inspires

Adegboye (2007) argues that it is a glaring fact that in any type of education system education achievement depends very much on the quality of the teacher. Okonkwo (2000) carries out a study on the relationship between teacher's variables and students' performance in mathematics, in junior secondary schools in Delta State. His results revealed that school location, school type, teacher's qualification and experience can significantly affect the performance of Junior Secondary School Students in Mathematics. In order to show how important the teachers' qualification is, the national Policy on Education of the country stipulates that, the minimum qualification for entry into the teaching profession shall be the Nigeria Certificate in Education (FGN, 2004). This was further corroborated by the National Commission for Colleges of Education (NCCE) which was established by an act in 1989. Mandate of the commission include the laying down of rules and regulations that will be guiding all programs of teachers education, accreditation of certificate and academic awards including guidelines for approval. The NCCE (2007) listed the qualification of academic staff thus:

- (a) Every academic staff shall be a professionally qualified teacher (that is, minimum of NCE or PGDE)
- (b) A good bachelor's degree (Not less than a second class lower division) in the relevant discipline as the minimum qualification for appointment as lecturer III or its equivalent
- (c) Higher degrees or additional professional qualification in the relevant discipline are added advantages.

Abimbola (2001) observes that the following aspect of National Policy on education have not yet been realized, he states that:

- (a) Not all teachers in Educational institutions are professionally trained as required by the policy

(b) At the primary and secondary school levels, appointment of qualified persons as teachers and head teachers is not yet fully realized throughout the country.

Munzali and Ukeje (1997) and cited by Ibrahim (2007) view professionally qualified teacher as a person who has successfully gone through a well- designed educational programmes in recognized institutions. He is one who is professionally prepared and practices the teaching in accordance with the accepted professional principles. A good teacher should not only possess the knowledge alone but should equally have the knowledge of how to impart the knowledge acquired to others. It is because acquiring knowledge in a particular field of knowledge does not make one a good teacher, one would need to learn the art of teaching. Hence, the aims of this study are to examine:

- (1) the level of availability of Instructional Materials for Teaching and Learning of Physics in Ekiti State Senior Secondary Schools?
- (2) whether there is any significant difference in the utilization of instructional materials by different cadres of Physics teachers in the Senior Secondary Schools in Ekiti State?
- (3) whether there is any difference in the level of use of instructional materials between professional and non-professional Physics teachers in Ekiti State Senior Secondary Schools?

In order to realised the objectives of this study and to test the relationship between the variables, the following hypotheses were generated.

- H₀1 There is no significant difference in the utilization of instructional materials by different cadres of Physics teachers in Senior Secondary Schools in Ekiti State
- H₀2 There is no significant different in the level of use of instructional materials between professional and non professional Physics teachers in Ekiti State Senior Secondary Schools.

METHOD

This study adopted the descriptive research design. The population for this study consists of all Secondary School Physics Teachers and Physics Students in Ekiti State, Nigeria. The sample for this study consisted of 120 Physics Teachers and 240 Senior Secondary School two (SS II) Physics Students selected through multistage sampling technique from Senior Secondary Schools in Ekiti state. The first stage was a simple random selection of six Local Government Areas in Ekiti State. The second stage involve the use of purposive sampling techniques to select four schools from each Local Government Area, putting into consideration the locations of the Schools, while stratified random sampling technique was used to select 10 students and five Physics teachers each from the sampled schools. Two types of instruments were used in this study for data collection. They are questionnaire for Physics Teachers (QPT) and Physics Achievement Test (PAT). The Questionnaire for Physics teachers was divided into four sections (A-D), Section A contained the bio-data of the respondents such as sex, age, school type, location and local Government area. Section B was constructed to elicit information on the availability of Instructional Materials

for Teaching Physics, their Functionality and Level of Use in Schools. Section C comprises of items on factors considered to be affecting the use of instructional materials while section D consists of information about teachers' perception of the use of instructional materials. The Physics Achievement Test (PAT) has two sections A and B. Section A contains the Bio data of the respondents such as sex, age, school and Local Government Area (LGA). Section B was constructed to measure students' cognitive learning in Physics test following the compilation of the outline of the course content for SS II Physics. It contains 30 multiple choice questions. The reliability of the instrument was also determined through test – retest method within two weeks interval. The data obtained was analyzed using the Pearson Product Moment Correlation Analysis. A reliability co-efficient of 0.75 and 0.83 were obtained for Questionnaire for Physics Teacher (QPT) and Physics Achievement Test (PAT) respectively and these were considered adequate for the study. The questionnaire were administered to the respondents by the researchers and collected in the spot. The data generated from the two hypotheses were analysed using t-test and one-way ANOVA. The result of the data analysis are presented on tables according to the research hypotheses

RESULTS AND DISCUSSION

Table 1 shows that most of the instructional materials used for learning and teaching of physics were not available except for a few such as charts, photographs and some equipment. Table 2 shows that f-calculated (2.89) is greater than f-table (2.70), hence, the null hypothesis that there is no significant difference in the use of instructional materials by different cadres of Physics teachers in Senior Secondary Schools in Ekiti State is rejected. This implies that there is a significant difference in the use of instructional materials by different cadres of physics teachers in senior secondary schools in Ekiti State. The results on table 2 reveal that professional teachers had a mean score of 1.92 and a standard deviation of 0.313 while the non-professional teachers had a mean of 1.00 and a standard deviation of 0.068 in their level of use of instructional materials. The t-calculated was 22.6 while t-table value was 2.02 since t-calculated is greater than t-table. It shows that the result is significant and the hypothesis that there is no significant difference in the level of use of instructional materials by professional and Non- professional physics teachers in Senior Secondary Schools in Ekiti State is rejected.

It therefore means that there is a significant difference in the level of use of instructional materials between professional and nonprofessional physics teachers. The findings of this study show that most of the instructional materials that could aid the teaching and learning of physics in schools were not sufficiently available. This finding is consistent with the earlier research findings of Buari (2006) and Ajayi (2007) who found out that the instructional materials availability in most schools are grossly inadequate. Further findings of this study also reveal that there is a significant difference in the use of available instructional materials by different cadres of physics teachers in senior secondary schools in Ekiti State. Also, there is a significant difference in the use of instructional materials by professional and non-professional physics teachers in Ekiti State. For instance, table 2 shows clearly

that the mean scores and standard deviation of professional teachers were 1.92 and 0.313 respectively while the means scores and standard deviation of non-professional teachers were 1.00 and 0.068 respectively. This shows that the professional teachers make effective use of the instructional materials than the non-professional teachers. This finding buttresses the point by Anikweze (2008) that a professional educator does not only possess the knowledge alone but equally have the ability on how to impart the knowledge through effective use of the resources available at his disposal.

Table 1: Availability of Instructional Materials for Teaching and Learning of Physics in Senior Secondary School in Ekiti State?

	Availability			
	Available		Not Available	
	f	%	F	%
Printed Materials	120		120	
Test book & work book	55	45.83	65	54.17
Journal	35	29.17	85	70.83
Magazines	80	66.67	40	33.33
Newspaper	27	22.50	93	77.50
Bulletins	30	25.0	90	75.0
Visual Materials				
Photographs	102	58.00	18	15.00
MAP	98	81.67	22	18.33
Diagrams, charts	105	87.50	15	12.50
Posters	94	78.33	26	21.66
Slide and Projector models	10	8.33	110	91.67
Audio Materials				
Cassettes and Tape Recorder	37	30.83	83	69.17
Record player	34	28.33	86	71.67
Audio Visual				
Television Set & Video Tape	32	26.67	88	73.33
Cine film	35	29.17	85	70.83
Slide & Television	34	28.33	86	71.67
Projector	10	8.33	110	91.67
Equipment				
Pendulum Bob	84	70	36	30.00
Stop Watch	70	58.3	50	41.67
Mirrors (Plane)	73	60.83	47	39.17
Thermometers	61	50.83	59	49.17
Retort Stand	65	54.17	55	45.83
Vernier Caliper	45	37.5	75	62.5
Micrometer Screw Gauge	43	35.83	77	64.17
Rectangular Glass Block	73	60.83	47	39.17
Ammeters	40	33.33	80	66.67
Voltmeter	59	49.17	61	50.83
Potentiometer	42	35.0	78	65.0
Calorimeter	55	45.83	65	54.17
Prisms	85	70.8	35	29.17
Lenses	63	52.5	57	47.5

Source: Survey, 2012

Table 2: Summary of One-Way ANOVA Showing the difference in the Use of Instructional Materials by different Levels of Physics Teacher

Variables	SS	MSS	Df	F-cal	F-table
Between Groups	4.425	1.475	3	2.89	2.70
Within groups	86.168	0.510	116		
Total	90.593	119			

$P < 0.05$ **Source:** Survey, 2012

Table 3: Summary of paired sample t-test showing the level of use of Instructional Materials between professional and Non professional Physics Teachers.

Variables	N	Mean	S.D	Df	t-cal	t-table
Professional teachers	62	1.92	0.313	118	22.6	2.02
Non-professional teachers	58	1.00	0.068			

$P \leq 0.05$ *Source:* Survey, 2012

CONCLUSION AND RECOMMENDATIONS

The assertion that professionalism in teaching is the fulcrum of educational quality cannot be easily controverted. The Roadmap for the Nigerian Education Sector was meant to represent a proactive refocusing of efforts to strengthen the implementation of strategies that will enable education perform its pivotal function in facilitating and indeed fast-tracking the overall development in Nigeria (Egwu, 2009). Thus this study has established that there is a significant different in the level of use of instructional materials between professional and non-professional physics teachers in Ekiti State Secondary Schools. This was shown through the data analysis with professional teachers having a mean score of 1.92 and a standard deviation of 0.313 as against non-professional Physics teacher with a mean score of 1.00 and a standard deviation of 0.068. It is therefore recommended that effort should be made by the Government and stakeholders in the education sector in Ekiti State to:

- (i) Provide adequate instructional materials for effective teaching and learning of Physics in Ekiti State Secondary Schools
- (ii) Encourage professionalism in teaching by organizing in-service training, workshops and seminars for teachers so as to keep them abreast of recent development in the field of educational technology.
- (iii) Give additional orientation to both teachers and students on instructional materials utilization and production so as to enhance their performances both in teaching and learning.

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