
Utilization of Instructional Materials by Professional and Non Professional Teachers in Basic Science and Technology in Ekiti State for Sustainable Developments

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Abstract

The study investigated the level of use of instructional materials by professional and non professional teachers in Basic science and technology in Ekiti State Secondary schools. The purpose was to determine the availability of instructional materials for teaching science and technology in secondary schools in Ekiti state and the level of use of instructional material by professional and non-professional science teachers in the state. The study employs descriptive research design of the survey type. The population for the study comprises of all Basic science and technology teachers in Ekiti state, a sample of 120 basic science and technology teachers were selected through multistage sampling technique. The instrument used for data collection was a structured questionnaire on utilization of instructional materials in Basic science and technology by professional and non-professional basic science teachers duly validated by experts in measurement and evaluation and two experience basic science and technology experts. Data collected were analysed using descriptive and inferential statistics. It was revealed through the result of the study that most of the instructional materials that can improve the teaching and learning of Basic science and technology were not available while those available were not put into effective use. Also it was discovered that the mean scores of professional teacher was significantly higher than the mean score of non-profession with regards to the level of use of instructional materials. Based on the finding, it was recommended among others that effort should be made by stakeholders to encourage professionalism in the teaching and learning in the state. Also concerted efforts must be geared toward provision of adequate instructional materials on schools for effective teaching and learning of Basic science and technology in Ekiti state secondary schools.

Keywords: Instructional Materials, Availability, Utilization, Professional and Non-Professional Teachers.

Introduction

Globalization and technological changes are process that have accelerated teaching and learning. The recent years have created a new global economy that is powered by technology, fulfilled by information and driven by knowledge. The emergence of this new global economy has serious implications for the nature and purpose of educational institution. Sciences and technology have long been recognised as instruments for nation building as no nation can rise above the quality of her educational philosophy and training (Asubiojo & Aladejana, 2019). Every country crave for science and technology advancement and this can only be achieved through effective science teaching at the basic level of educational system. 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 and technology 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 convectional universities and not less than 80% in the Universities of technology (FRN, 2013). This yielded no satisfactory result given the dwindling nature of students seeking admission into science-oriented courses in the Nigerian tertiary institution; more students are seeking admission into art and social science courses on yearly basis (Oludipe, 2011).

Basic science and technology is among the disciplines essential for national development. It the first form of science course a student comes across at the junior secondary school level in Nigeria and it prepares the recipient at the upper basic education level for the study of core science subjects such as physics, chemistry and biology at the senior secondary level (Ajibola, 2008). In view of this, Wushishi & Kubo (2011) reveals that Basic science forms the basis on which further scientific and technological studies rested upon.

Therefore a poor foundation in basic science at the initial secondary school level will jeopardise any future effort to enhance achievement in technical development. In realization of its numerous advantages, Basic science and technology has been introduced in Nigeria secondary school curriculum in order to achieve the following objectives:

- [i] To provides school foundation for everyday living
- [ii] To develop computational skills and ability to be accurate to a degree relevant to the problem in had
- [iii] To select appropriate learning experience (content) based on the use of learners
- [iv] Select the appropriate instructional materials to lesson abstraction in the learning and teaching of science.

Instructional materials refers to those materials that can be used to encourage, promote and facilitate teaching and learning activities (Asubiojo, 2013). They are used to provide required environment to improve students’ knowledge, abilities and skills, monitor assimilation of information and to contribute to their overall development and upbringing (Hala, 2014). Instructional materials play important roles in making the instructional process interesting, captivating and understanding, retention and retrieval of learning material (Akinplelu, 2011).

Instructional materials and equipments happen to be the physical evidence of what we do as we integrate variables to solve learning problems (Adeoluwa, 2013). The use of instructional materials influence the way we learn in these percentages;

- 10% of what we read
- 20% of what is heard
- 30% of what is seen

50% of what is seen and heard
70% of what is seen and talked about
90% of what is talked about and done (Dike, 2002).

Therefore, the position and influence of teachers in handling instructional materials in the process of teaching and learning toward the attainment of learning objectives cannot be over emphasised. It has been summarily stated by National policy on Education that “No Education system can rise above the quality of its teachers (FRN, 2014). Teachers quality and professional standard are issues of serious concern to educational planners everywhere in the world. While citing NPE (2004), Olaleju (2004) further wrote that the performance of a student is a function of what the teacher impart in the student. No matter the amount of money spent to procure materials without the teacher the whole process may be a failure. The teachers are expected to be well trained and certified to enable him build a solid foundation for technological development of nation Ogbaji (2017) is of the opinion that the qualification of a teacher dictates the quality of information imparted to the students through teaching.

Basically, two categories of teachers are employed in Nigeria that is teacher who are academically qualified and those that are professionally qualified to carry out instruction in the classroom (Pitsoe, 2013).

By academically qualified (non-professional) teachers, it mean teachers who have academic training without professional teacher training as a result of enrolment into institution of higher learning to obtain qualifications that can enable them gain lucrative employment. While professionally qualified teachers, are teachers who got professional teacher training that gives them professional knowledge, skills, techniques, aptitude as different from the general education. It is however very sad that majority of teacher teaching sciences in especially basic science and technology in most school 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 school in Kwara state, and found out that the numbered of untrained physics teachers out-numbered that of the trained ones. He then concluded that professionally qualified teachers were in short supply in most of their secondary in the state.

Munzali & Ukeje (1997) cited by Mohd (2018) view professionally qualified teacher as a person who has successfully gone through a well-designed educational programmes in recognised institutions. He is one who is professionally prepared and practice the teaching in accordance with the accepted professional ethics. A good teacher should not only posses the knowledge alone, but should equally have the knowledge of how to impart the knowledge to others. Asubiojo (2020) carried out a study on the relationship between teacher’s variables and students performance in physics in senior secondary school in Ekiti state. The results revealed that school location, school type, teacher’s qualification and experience can significantly affect the performance of senior secondary school students in Physics. In order to show how important the teacher’s qualification is, the National Policy on Education stipulated 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 the certificate and academic awards including guideline for approval. Acquiring knowledge alone does not make someone a good teacher, one would need to learn the art of teaching; hence the aim of study is to examine the level of use of instructional materials by professional and non professionalthis basic science and technology teachers in Ekiti state secondary schools.

Research Questions

The following research questions were raised in the course of this study;

- [i] What is the level of availability of instructional materials for the teaching and learning of basic science and technology in Ekiti state secondary school?
- [ii] Would there be any significant relationship in the utilization of instructional materials by different cadres of Basic science and technology teacher in the secondary schools in Ekiti state?

Research Hypotheses

In order to realized the objective of this study and test the relationship between the variables highlighted in the research questions, the following hypotheses were generated;

- Ho₁: There is no significant difference in the utilization of instructional materials by different cadres of basic science and technology teachers in Ekiti state secondary schools.
- Ho₂: There is no significant difference in the level of use of instructional materials between professional and non professional basic science and technology teachers in Ekiti state secondary schools.

Methodology

The study adopted the descriptive research design of the survey type.

The population consists of all basic science and technology teachers in Ekiti state. A sample of 120 basic science and technology teachers was selected through multi-stage sampling technique. The first stage was a simple random selection of six local government area in Ekiti state. The second stage involved the use of purposive sampling technique to select four schools from each of the local government putting into consideration the locations of the schools; while stratified random sampling technique was employed to select five basic science and technology teachers each from the sampled schools.

The instrument used for data collection was a structured questionnaire titled Availability and Utilization of Instructional Material by Professional and Non-Professional Basic Science Teachers. The questionnaire for the Basic science and technology teachers was divided into two sections A and B. Section A contained the bio-data of the respondent such as sex, age, school types, qualifications, location and local government area. While section B was designed to elicit information with regards of utilization of instructional materials by different cadres of Basic Science and Technology Teachers. The reliability of the instruments was determined through test-retest method. A reliability co-efficient of 0.76 was obtained. The value was considered adequate for the study. Data collected were analysed using t-test and one-way ANOVA. All hypotheses generated were tested at 0.05 level of significant.

Results and Discussion

Research Question 1: What is the level of availability of instructional materials for the teaching and learning of basic science and technology in Ekiti state secondary schools.

Table 1 showing availability of instructional materials for teaching and learning of basic science and technology in Ekiti state secondary schools.

SN	Printed Materials	Availability		Not availability	
		f	%	f	%
1	Text book & work book	70	58.33	70	58.33
2	Journal	30	25.00	90	75.00
3	Magazines	85	70.83	35	29.17
4	Newspaper	28	23.33	92	76.67
5	Bulletins	35	29.17	85	70.83
	Visual Materials				
6	Photographs	100	83.33	20	16.67
7	MAP	95	79.17	25	20.83
8	Diagrams, charts	107	89.17	13	10.83
9	Posters	92	76.67	28	23.33
10	Slide and Projector models	12	10.00	108	90.00
	Audio Materials				
11	Cassettes and Tape Recorder	40	33.33	80	66.67
12	Record Player	35	29.17	85	70.83
	Audio Visual				
13	Television Set & Video Tape	33	27.5	87	72.50
14	Cine Film	36	30.00	84	70.00
15	Slide and Television	34	28.33	86	71.67
16	Projector	8	6.67	102	85.00
	Equipment				
17	Venier Caliper	45	37.5	75	62.50
18	Hammer	73	60.83	47	38.19
19	Plier	63	52.5	57	47.5
20	Model of an Heart	42	35.0	78	65.0
21	Thermometers	43	35.83	77	64.17
22	Retort Stand	64	53.33	56	46.67
23	Waste Disposal Tank	55	45.53	65	54.17
24	First Aid Box	70	58.3	50	41.67
25	Model of a car	40	33.33	80	66.67
26	Desktop Computers	45	37.50	75	62.50

Table 1 shows that most of the instructional materials used for learning and teaching of Basic science and technology were not available except for a few such as photographs, chart, maps and posters. The audio visual materials such as television set, video tape, slide and film projectors were not available. Also, equipments such as Desktop computers, thermometers, vernier callipers were not available. This finding is consistent with the findings of Omiko (2015) who pointed out that instructional materials availability in most schools are grossly inadequate.

Research Question 2: What are the qualification and experience of Basic Science and Technology Teachers in Ekiti State Junior Secondary Schools.

TABLE 2: Frequency and percentage of Basic science and technology teachers' qualification

Qualification	URBAN		RURAL	
	Frequency	Percentage	Frequency	Percentage
N.C.E	09	11.25	10	25.00
B.Sc	35	43.75	12.0	30.00
HND/PGDE	31	38.75	15.00	37.40
B.Sc(Ed) &B.Ed	05	6.25	03	7.50
Total	80	100	40	100

Table 2b: Frequency and Percentage of Basic Science and Technology Teacher's Experience

Experience	URBAN		RURAL	
	Frequency	Percentage	Frequency	Percentage
2-5 years	23	31.94	15	31.25
6-10 year	49	68.06	33	68.75
Total	72	100	48	100

A critical look at the table 2 above on teacher's qualification shows that there were 9 NCE teachers representing 11.25%. Basic science and technology teachers in the urban, while there were 40 graduate Basic science and technology (Degree holder) representing 50% that were teaching Basic science and technology in urban area, out of these 40 graduate teachers only 5 Basic science and technology representing 6.25% of the total sampled teachers i.e. (80 Basic science and technology teachers) were graduate of Integrated science that were teaching Basic science and technology in the Urban area while 31 HND holders with teaching qualification representing 38.75% of the total sampled teachers i.e (80 basic science and technology teachers) where teaching Basic science and technology in Ekiti state junior secondary school.

On the other, 10 NCE Basic science and technology teachers representing 25% were teaching Basic science and technology in the rural areas while 15 graduate representing 37.5% were teaching basic science and technology in the rural area. Out of those 15 graduates teachers only 3 basic sciences and technology teacher representing 7.5% major in integrate science education as a discipline.

From the above analysis if a degree in integrated science education is made the yardstick to teach this subject i.e. basic science and technology in the senior secondary school I Ekiti state it implies that only 13.75% (i.e. total percentage of B.Sc.Ed & B.Ed). Basic science teachers were available. This is grossly inadequate. Therefore more qualified basic science and technology teachers are still needed to teach this subject in the junior secondary schools in Ekiti state.

Besides, 49 basic science and technology teachers representing 60.06% in the urban area have a teaching experience ranging from 10 years and above. Also 33 basic science and technology teachers representing 68.75% have a teaching experience ranging from 10 years and above in the rural area of the state, from this data we can therefore conclude that the teachers teaching basic science and technology in Ekiti state secondary schools are well experienced.

Ho₁: There is no significant different in the utilization of instructional materials by different cadres of basic science teachers in Ekiti state secondary schools.

Table 2: Summary of One-way ANOVA showing the difference in the use of instructional materials by different level of Basic science teachers in Ekiti state secondary schools.

Variable	S.S.	M.S	df	F-cal	F-table
Between groups	4.43	1.48	3	2.89	2.71
Within Groups	86.17	0.51	116		
Total	90.60		119		

P < 0.05

Table 2 shows that f-calculated (2.83) 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 basic science and technology in Ekiti state secondary schools is hereby rejected. This implies that there is a significant difference in the use of instructional materials by different cadres of basic science and technology teachers in Ekiti state secondary schools.

Ho₂: There is no significant different in the level of use of instructional materials between profession and non-professional Basic science teachers in Ekiti state secondary schools.

Table 3: Summary of paired sample t-test showing the level of use of instructional materials between professional and non-professional basic science teachers in Ekiti state secondary schools

Variable	N	Mean	S.D	df	t-cal	t-tab
Professional teachers	62	1.93	0.31	118	22.6	2.02
Non-professional teachers	58	1.00	0.07			
Total						

P < 0.05

Table 3 shows that professional teacher made effective use of instructional materials than the non-professional basic science and technology teachers.

Table 3 shows that professional teachers has a mean score of 1.93 with a standard deviation of 0.31 while non-professional teachers had a mean score of 1.00 with a standard deviation of 0.07 in the use of instructional materials. Again the calculated value was 22.6 as against the table value of 2.02. Since the calculated value (t-table = 22.6) is greater than the table value, t-table (2.02). The null hypothesis is hereby rejected. This shows that there is a significance difference in the use of instructional materials by professional and non-professional basic science and technology teachers in Ekiti state secondary schools.

The finding contradicts the study of Ogbaji (2017) who found out that there was no significant difference in the use of Educational resource by professional and non-professional teachers. He however pointed out there is relationship between education resources of the schools and academic achievement of the students.

Conclusion and Recommendations

The assertion that professionalism in teaching is the pivot of quality education upon other variables depends cannot be over emphasized. The roadmap for Nigeria education sector was meant to represent a proactive refocusing of efforts to strengthen the implementation of strategies that will enable education perform its pivotal functions in facilitating and indeed fast-tracking the overall sustainable development in Nigerian (Pitso, 2013).

Thus this study has established that there is a significant, different in the level of use of instructional materials between professional and non-professional basic science and

technology teachers in Ekiti state secondary schools with the professional basic science technology teachers having higher mean score of 1.93 and a standard deviation of 0.31 as against non-professional basic science and technology teachers having of a mean score of 1.00 and a standard deviation of 0.07 as shown to the analysis in tables. It is therefore recommended that conceptual effort show be made by Government and stakeholders in the education sector in Ekiti state to:

- [i] Provide adequate instructional materials for effective teaching and learning of basic science and technology in Ekiti state secondary schools
- [ii] Encourage professionalism in teaching by organising in-service training, workshops and seminars for teachers in Ekiti state secondary schools
- [iii] Give additional orientation to both teachers and students on instructional materials production and utilization so as to enhance their performance in the teaching and learning process.

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