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Availability of Instructional Materials and Interest of Secondary School Students in the Study of Physics in Oredo Local Government Area of Edo State, Nigeria

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Abstract: The study investigated the relationship between the availability of instructional aids and students' interest in studying physics in secondary school. This research used physics students in public senior secondary schools in Oredo local government area of Edo State, Nigeria. The specific purpose of the study was to find out the instructional aids available for teaching physics in secondary schools. It also investigated whether deploying these materials in teaching physics influenced secondary school students' interest in learning different physics topics. The study utilized the correlation design. The population comprised all secondary school II students who offered physics in public senior secondary schools in Oredo local government area of Edo state with a total number of 1.223. Out of the population, 123 physics students, that is 10%, were selected using the simple random sampling technique, forming the study sample. The instrument used for this study was a questionnaire which elicited the respondents' biodata, a checklist of instructional aids for teaching physics and items designed to measure students' interest. Mean, percentage, standard deviation and Pearson product-moment correlation were used to analyze the data generated. Findings showed that most of the instructional materials needed by the teacher for effective teaching of physics were available but needed to be fixed; the students used for the study had a high level of interest in learning the different topics in physics. However, it found that there was no significant relationship between the availability of instructional aids and students' interest in studying physics in public senior secondary schools in the area of study. As a sequel to the findings of the study, it was recommended that government and school administrators provide teachers with instructional materials relevant to teaching physics in senior secondary schools in Edo State; teachers should regularly deploy instructional materials when teaching physics in senior secondary schools in Edo State. Finally, teachers are encouraged to design simple instructional aids that could be used as alternatives for teaching relevant topics in physics in senior secondary schools in Edo State without standard teaching devices.

Keywords: Availability, instructional materials, interest

1. Introduction

Interest is one of the internal factors individuals consider when making career choices. Okumu (2018) states that interest is a set of characteristics, "likes and dislikes," which differentiate people in an occupation from other occupations or careers. Similarly, Uitto et al. (2011) say interest refers to "likes and dislikes or aversions". Discussing personal interest as a factor in career choice. Kuss et al. (2015), Gokuladas (2010), and Bojuwoye and Mbanjwa (2006) state that a high percentage of young people have their career decision-making influenced by personal interest. Interest refers to an individual's preference where a choice must be made. Egbochuku (2008) agreed with the above definition and went further to classify interest as follows: expressed interest, manifest interest, tested interest, and inventoried interest. It is believed that the stronger the interest expressed by an individual for a career, the easier for the person to actualize their aspirations. Alutu (2017) observes that expressed interest could be unstable, especially during childhood

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and early adolescence. Denga (1987) presents the following as examples of expressed interest statements: "I like solving mathematics problems; mathematics is boring to me; I like working with people; I would like to be a medical doctor; I hate working with machines" (p. 187). It is in response to the observed unstable nature of expressed interest that gives rise to inventoried interest in which psychometricians assess people's career interests using interest instruments. Commenting on interest inventory, Thorndike and Hagen (1977) state that items usually "take one of two contrasting forms- a categorical response of liking, indifference, or dislike, or a choice between alternative situations or activities" (p. 403). Thus, in addition to intellectual ability, interest propels learners to chart a career path in which they have satisfaction. The guidance counsellor must be aware of these variables and guide adolescents properly to meet the nation's technological goals, which can only be achieved through the agency of the school.

The school is an important institution which can provide career and vocational pathways for students. Offering scientific and technological Education is a response to the needs of the nation, considering that the nature of such courses would provide practical knowledge and skills of vocational and technological efficiency and problem-solving in daily life (Oviawe et al., 2017; Sağocak et al., 2013). It calls for a strong science education at the post-primary level of Nigeria's education system. Science education has been acknowledged as the bedrock for any nation's economic and technological development. Nations all over the world, including Nigeria, are striving hard to develop technologically and scientifically since the world is turning scientific and the proper functioning of lives depends greatly on science (Ogabuanya et al., 2018). The National Policy on Education states that science education aims to produce scientists who would be actively involved in technological and national development (FRN, 2004). It further stresses that the government shall popularize the study of science (including physics) and the production of an adequate number of scientists to inspire and support national development.

Despite these declarations of government on the relevance of science education, physics, which is germane to technology, has yet to be well subscribed to by students at the senior secondary level. This can be attested to by low enrolment in physics and poor performance of students at the senior school certificate examination. These have raised serious concerns among stakeholders in Education in Nigeria. One possible cause of this ugly trend in physics could be attributed to students' lack of interest in science, especially physics (Djudin, 2018; Esiobu, 2005; Okonkwo, 2000). The Nigerian Education and Research Development Council (NERDC, 2005) identified physics as one of the most difficult subjects in the senior secondary school curriculum. This claim was supported by Owolabi (2004), who observed that the performance of Nigerian students in ordinary-level physics examinations was generally poor. This could be attributed to teaching factors, such as poor laboratory facilities, the inability of physics teachers to communicate ideas clearly to the students and the non-availability of learning facilities in schools (Kabwos et al., 2020; Ruhyana & Aeni, 2019). National Teachers' Institute (NTI, 2007) noted that physics, as a science subject, is activity-oriented and should be taught with guided discovery methods. This is highly resource-based. This suggests that the mastery of physics theories can only be fully achieved with the use of instructional learning materials since the abstract nature of the theories will result in students' poor performance in the subject.

From the literature reviewed above, it is obvious that instructional materials are sine qua non to effective teaching and learning in the Nigerian school system. One basic concern of the researchers was the level of availability and adequacy of these instructional aids arising from poor funding of education in Nigeria. This concern prompted Yeboah et al. (2019); Onasanya and Omosewo (2011); and Adeniran (2006) to stress the need for teachers to develop instructional aids locally to serve as alternatives to standard materials that are hardly available.

Learning Physics has always been arduous for many senior secondary school students in Nigeria. This could be attributed to factors such as a lack of professional physics teachers, a lack of interest on the part of the students and a lack of instructional materials, including near-empty physics laboratories (Sorge et al., 2019). It has been observed that some of the teachers who teach physics at the secondary school level are not professionals because they need to possess an educational background. Hence, they need to gain what it takes to motivate the students to be interested in the subject (Crouch et al., 2018). Similarly, even the few professional teachers teaching the subject do not have access to instructional materials that could stimulate the interest of the students in the subject because such instructional aids are non-existence in most schools.

Physics laboratories are not spared this ordeal since they exist in name and not in practice in many schools. They need more and equipment for teaching physics effectively. Most teachers have no choice but to teach students abstractly, making it difficult for the average students to understand the subject (Deacon & Hajek, 2011). This poor background in physics produces a hang-over effect that predisposes students to feelings of dislike for science and technology at higher levels of Education (Omuh et al., 2017). Thus, poor handling of the subject tends to confirm students' fear that physics is difficult. It is believed that for teachers to communicate the meaning of concepts in physics to the learners, teachers should apply methods and materials that foster experiential learning rather than teaching the students theoretically.

Therefore, it would not be out of place to speculate that the use of appropriate teaching methods, together with the application of instructional aids, could arouse the interest of students in learning physics (Ramma et al., 2017). One begins to wonder how available such instructional materials are in secondary schools. This is the motivation for this research work. Therefore, the thrust of this study, stated in a question form, is whether the availability and use of instructional materials stimulate the interest of senior secondary school students in learning physics?

Thus, this study would enrich the existing body of knowledge and provide data for future researchers. Generally, this study aimed to examine the availability of instructional materials for teaching physics in secondary schools. Specifically, this study sought to examine 1) available instructional materials for teaching physics; and 2) the level of interest of secondary school students in physics.

For this study, the following questions were raised: 1) which instructional materials are available for teaching physics in secondary schools? and 2) what is the level of interest of secondary school students in learning different physics topics?

The following null hypothesis was formulated and tested at 0.05 alpha level of significance: There is no significant relationship between the level of availability of instructional materials and student's interest in the topics of physics.

The purpose of this study was to determine the availability of instructional aids in increasing SS II students' interest in learning Physics in selected public secondary schools in the Oredo local government area of Edo State, Nigeria. Variables investigated were the availability of instructional materials and students' level of interest in learning physics.

2. Literature Review

Physics is the science of studying physical objects and substances of natural sources such as light, heat and measurement. It is a science subject that students often find difficult because it is abstract. Teaching physics in schools could have been more encouraging as teachers teach the topics in the abstract. That is why instructional materials are needed to facilitate students' learning of the subject (Stephen, 2015). In achieving accurate results, practically, both in the teaching and learning of physics, the availability of the right teaching aids is of great importance. With the right instructional materials, such as a thermometer for measuring temperature, and a microscope for viewing very small objects and organisms, the students may be able to grasp the full scope of the concepts in the subject. Instructional materials help teachers to meet individual differences of the learners in the class by using different teaching aids that suit the different senses of the learners (Nartey, 2018). Instructional materials are used to supplement verbal explanations of different concepts or descriptions so that the lesson can be real to the students. When the teacher uses these materials during physics lessons, they can appeal to both sight and hearing senses, making learning concrete and less abstract.

The absence of instructional materials in teaching physics could make the lesson very uninteresting and may further discourage learning, leading to poor or low academic performance. All branches of physics deal inevitably with difficulties whose solutions are often envisaged to benefit humanity (Desnita & Susanti, 2017). Unfortunately, some secondary school students are barely interested in the subject because they need help understanding some of its topics. Instructional materials are vital in the teaching-learning process because what students hear can easily be forgotten, but what they see and touch cannot easily be forgotten and lasts longer in their memory (Yeboah et al., 2019).

Some of the empirical researches related to this current study were reviewed in this section. Abdullahi (2004) investigated the relationship between teaching facilities and students' performance in chemistry. This study was conducted to find teaching facilities available to teachers in teaching chemistry in senior secondary schools. It also investigated if the availability of teaching facilities had any impact on students' performance in chemistry at the secondary school level (Wieman & Holmes, 2015). The study was guided by two research questions and two null hypotheses. A survey design was adopted for the study, while the instrument used for data collection was a questionnaire. To analyze the data generated, the researcher applied the t-test. Results of the study revealed that students who were taught using adequate instructional facilities did better than students in schools with inadequate or without chemistry laboratories. He concluded that students with hands-on experience in the chemistry laboratory would perform better in the subject than those exposed to theoretical classes. The above assertion is supported by Ihejiamaizu and Ochui (2019), who found that students taught using instructional aids performed better in learning biology.

Also, Arop et al. (2015) studied the effect of instructional aids on teaching and learning among students in junior secondary schools. The subject of interest to the researchers was basic science, and the area of study was Cross River State in Nigeria. Their interest was to find out if the application of instructional materials in teaching basic science would affect junior secondary school students' learning of the subject. The design of the study was quasi-experiment. Two research questions and two corresponding null hypotheses were raised to guide the study. Two hundred forty students responded to the study and were randomly selected from four schools. Simple random sampling was used to select the schools and the subjects from the Biase Local Government Area of the state. A 20-item instrument entitled "Diffusion Achievement Test" (DAT) with a reliability coefficient of 0.86 was developed by the researchers for data collection. Pre- and post-test data were analyzed using the mean, standard deviation and independent t-test statistics. From the analysis, it was found that the respondents taught basic science with instructional aids performed better in the subject than subjects who were not taught with instructional materials. It was recommended that teachers of basic science should deploy teaching aids with the sole purpose of helping the students to learn better. The finding of these researchers was supported by Kigwilu and Akala (2017), who investigated the influence of resource deployment in implementing the curriculum. The result of their study revealed that the respondents rated highly the influence of the application of instructional materials on the implementation of curriculum.

In a related development, Ugwuanyi (2013) studied the resources available, their adequacy and utilization for teaching physical Education effectively to secondary school students in Enugu State. The study was designed to examine the teaching resources available to physical education teachers, how adequate the resources were and the level of utilization of these resources for teaching the subject in the area of study. A descriptive survey design was adopted for the study, while the population was 275 physical education teachers in secondary schools in the area of study. The study sample was one hundred three physical education teachers drawn from 35 secondary schools. The researcher developed two instruments titled "The Availability and Adequacy of Physical Education Resources Checklist" (AAPERC) and the "Utilization of Physical Education Resources Questionnaire" (UPERQ) with coefficients of .80 and .60 respectively, and these were used for data collection. Data generated were subjected to Chi-square and ANOVA statistics. One major finding was that of all the facilities needed for teaching the subject, all the schools studied had football pitches, but only some had other essential facilities such as volleyball and basketball courts and athletic tracks. Arising from the findings, the study recommended that principals and physical education teachers should be made to attend workshops to enable them to learn how to construct these basic facilities in their schools.

Similarly, Odo (1995) researched the Nsukka education zone of Enugu state, Nigeria, where he investigated the application of instructional aids in teaching economics students in senior secondary school. A survey design was adopted for the study while the population consisted of all economics teachers in the education zone. Sixty-five economics teachers constituted the sample for the study. The instrument used for data collection was the questionnaire, and the data generated were analyzed with the mean and t-test statistics. The results of the analysis revealed that many senior secondary schools in the education zone lacked the instructional aids needed for effectively teaching economics in order to help the students learn the subject better. It was also found that most economics teachers in the zone could not improvise by locally producing teaching aids that could be used for teaching the subject without standard teaching aids.

On their part, Akin-Taylor and Abayomi (2008) investigated the available sports resources in colleges of Education as predictors of athletes' sports performance. This study was conducted in the South –West Geo-Political zone of Nigeria. The survey research design was used for this study. Four hundred subjects participated in the study, forming the study sample. Participants consisted of lecturers in physical education, coaches, sports administrators, and athletes drawn from colleges of Education in the area of study. Data were collected using a questionnaire, and the data generated were analyzed using the chi-square statistics. The results found that sports resources were germane to the performance of athletes in any sporting programmes in colleges of Education.

3. Methodology

The research design for this study is a correlational survey. This design studies the relationship between the two fundamental variables, which are the independent and dependent variables. In this study, the independent variable is the availability of instructional materials, while the dependent variable is students' interest. The design was chosen because there was no need to manipulate any variable under study.

The population for the study comprised all secondary school II students offering physics in public senior secondary schools in Oredo local government area of Edo state with a total number of 1.223. The sample used for the study was 123 SS II students offering physics in public senior secondary schools. Random sampling without replacement was used to compose the sample size, giving every subject equal opportunity to be selected for this study. At the end of the sampling process, six schools were selected, out of which 123 respondents were randomly selected, 10% of the population of 1.223 physics students in senior secondary schools in Oredo local government area of Edo State.

A carefully structured instrument titled "Availability of Instructional Materials and Learning Interest Questionnaire" (AIMLIQ) was administered to the respondents to gather the data for this study. The instrument was developed by the researchers and comprised three sections, A, B and C. Section A was meant for the subjects to provide information on their biodata. Section B was a checklist of materials required for teaching physics. In contrast, section C had thirty-three (33) items generated to show the interest of physics students in various topics in physics. The subjects needed to place a tick on the appropriate column that reflect their opinions on each item. This instrument was designed on a five-point Likert scale of Very high extent (5), High extent (4), Undecided (3), Low extent (2), and Very low extent (1). Responses were elicited on how available instructional aids were about students' interest in learning physics in senior secondary schools in the area of study.

The researchers developed the questionnaire, the instrument used for data collection. Two experts, one in educational psychology and one in measurement and evaluation, validated the questionnaire. These experts were from the department of education, Benson Idahosa University, Benin City, Nigeria. The validation was necessitated by the researchers' desire to ensure the face and content validity of the instrument. The validators incorporated suggestions in the instrument before administering it to the respondents.

Section C of the questionnaire was subjected to a reliability test. Thirty copies of the questionnaire were filled out by 30 students who were not meant to participate in the study. The Cronbach alpha statistic was used to analyze generated data, yielding a coefficient of 0.82. Since the coefficient was high, the instrument was considered good for eliciting responses from the subjects.

The researchers personally administered the questionnaire to the respondents. After obtaining all the necessary permission from the principals, the instrument was explained to the students, and thereafter, the respondents completed the questionnaire, and the copies were collected on the spot so that they would not be misplaced or mutilated.

Analysis of data collected was performed using the frequency count (F), mean ($\bar{x}$), percentage (%), standard deviation (SD) and Pearson correlation (r) statistics. While the research questions were answered with mean and standard deviation, the null hypothesis was tested using the r statistic at a .05 significance level.

4. Results

Research Question 1: Which instructional materials are available for teaching physics in secondary schools?

Table 1 shows that 37% of the respondents indicated that vernier callipers were available. Also, 37% of the respondents indicated that vernier callipers were available but not functioning, while 63% of the respondents indicated that vernier callipers were not available; 50% of the respondents affirmed that resistors were available, while 14% of the respondents indicated that these resistors were available and functioning. Similarly, 37% of the respondents noted that resistors were available but not functioning while 49% of the respondents noted that resistors were not available; 35% of the respondents noted that Rheostats were available, 35% indicated that rheostats were available but not functioning while 65% of the respondents indicated that rheostats were not available. 13% of the respondents noted that circuit boards were available, 13% indicated that circuit boards were available but non-functioning, while 87% indicated that circuit boards were not available. 40% affirmed that they were available but non-functioning, while 60% of the respondents noted that multimeters were unavailable. 52% of the respondents noted that voltmeters were available, 5% noted that voltmeters were available and functioning, 47% of the respondents indicated that voltmeters were available but not functioning while 48% of respondents noted that voltmeters were not available in the schools.

Table 1: Frequency and percentage of availability of instructional materials

S/N	Instructional materials	Available		Available and functioning		Available and non-functioning		Not available	
		F	%	F	%	F	%	F	%
1	Vernier calipers	45	37	0	0	45	37	78	63
2	Resistor	62	50	17	14	45	37	61	49
3	Rheostat	43	35	0	0	43	35	80	65
4	Circuit board	16	13	0	0	16	13	107	87
5	Multimeter	49	40	0	0	49	40	74	6
6	Voltmeter	64	52	6	5	58	47	59	48
7	Triangular prism	53	43	52	42	1	1	70	57
8	Pins	88	72	18	15	70	57	35	28
9	Rectangular prism	61	50	45	37	17	13	61	50
10	Magnets	73	59	24	20	49	40	61	50
11	Turning fork	16	13	0	0	16	13	107	87
12	Vibration generator	43	35	0	0	43	35	80	65
13	Pendulum bob	102	83	35	29	67	54	21	17
14	Laser apparatus	32	26	0	0	32	26	91	74
15	Special rubber gloves	34	28	12	9	23	19	88	72
16	Electric furnaces	24	20	10	8	15	12	98	80
17	Hydraulics	75	61	27	22	48	39	48	39

Based on Table 1, 43% of the respondents noted that a triangular prism was available, 52% noted that a triangular prism was available and functioning, and 1% noted that a triangular prism was available but not functioning. In comparison, 57% noted that a triangular prism was not available. 72% of the respondents noted that pins were available, 18% noted that pins were available and functioning in the school, and 57% noted that pins were available but non-functioning. In comparison, 28% noted that pins were unavailable in the school. Also, 50% of the respondents noted that a rectangular prism was available, 37% of the respondents noted that a rectangular prism was available and functioning in their school, 13% noted that a rectangular prism was available but non-functioning, while 50% of the respondents noted that rectangular prism was not available. 59% of the respondents indicated that magnets were available, 20% indicated that magnets were available and functioning, 40% noted that magnets were available but not functioning, and 50% noted that magnets were not available. 13% of the respondents stated that turning forks were available, and 13% noted that turning forks were available but non-functional in their school. In comparison, 87% of the respondents indicated that turning forks were unavailable. 35% of the respondents noted that vibration generators

were available, 35% stated that they were available but not functioning in their schools, and 65% agreed that they were not.

Meanwhile, 83% of the respondents indicated that pendulum bobs were available, 29% indicated that pendulum bobs were available and functioning, and 54% noted that pendulum bobs were available but not functioning. In comparison, 17% indicated that pendulum bobs were not available. 26% of the respondents indicated that laser apparatus was available in their schools, 26% of the respondents indicated that laser apparatus was available but not functioning, while 74% of the respondents indicated that laser apparatus was not available in their schools. 28% of the respondents noted that special rubber gloves were available, 9% noted that special rubber gloves were available and functional in their schools, and 19% noted that special rubber gloves were available but non-functioning. In comparison, 72% indicated that special rubber gloves were not available. 20% of the respondents noted that electric furnaces were available, 8% indicated that electric furnaces were available and functioning, and 12% noted that electric furnaces were available but non-functioning.

In comparison, 80% of the respondents noted that electric furnaces were unavailable. In the same vein, 61% of the respondents noted that hydraulic was available, 22% indicated that hydraulic was available and functioning, and 39% indicated that hydraulic was available but non-functioning. In comparison, 39% noted that hydraulics clusters were unavailable in their school. It was concluded that most of the instructional materials for teaching physics were available but needed to be fixed.

Research Question 2: What is the level of interest of secondary school students in learning different physics topics?

Table 2 revealed that, out of the eight topics used to test students' interest in physics among secondary school students, it was observed that they had a high level of interest in four (4), namely, mechanics, electricity, magnetism and electronics; a moderate interest in three (3) topics, namely, optics (light), sound waves, and quantum physics and a low interest in only one namely, thermodynamics. The sampled students had a high level of interest in learning the different topics in physics.

Table 2: Mean and standard deviation of level of interest in learning different aspects of physics

S/N	Topics/Level of Interest	N	Mean	SD	Remark
26	Mechanics	123	3.38	1.545	High
27	Electricity	123	3.28	1.550	High
28	Magnetism	123	3.01	1.480	High
29	Optics (Light)	123	2.74	1.482	Moderate
30	Sound waves	123	2.78	1.513	Moderate
31	Electronics	123	3.11	1.537	High
32	Quantum Physics	123	2.59	1.436	Moderate
33	Thermodynamics	123	2.44	1.472	Low

Hypothesis 1: There is no significant relationship between the availability of instructional materials and students' interest in the topics of physics.

Table 3 showed no significant relationship (-0.06) between the availability of instructional materials and students' interest in studying physics. There was only a 0.4% relationship between the availability of instructional materials and students' interest. The null hypothesis could be retained since the p-value (.20) was higher than 0.05. Thus, there was no significant relationship between the availability of instructional materials and student's interest in studying physics.

Table 3: Pearson correlation on the relationship between availability of instructional materials and student's interest in the study of physics

Variable	fx	SD	R	R^2	Sig. (2-tailed)	Decision
Availability	2.52	1.38	-0.06	0.40	.20	Accept Ho
Interest	3.28	1.54				

5. Discussion

Research question 1, as shown in Table 1, found that most of the instructional materials for teaching physics were available but needed to be fixed. This finding agreed with Uwameiye (2016), who found inadequate instructional materials for teaching and learning garment-making trade in public secondary schools in Edo state, Nigeria. Existing but moribund teaching aids cannot make learning experiential for learners, and hence, the attendant consequence would be a lack of interest in students and poor performance in the subject. The finding of this study did not support Abdullahi (2004), who investigated the relationship between teaching facilities and students' performance in chemistry. This study

was conducted to find teaching facilities available to teachers in teaching chemistry in senior secondary schools. It also investigated if the availability of teaching facilities impacted students' performance in chemistry at the secondary school level. Results of the study revealed that students who were taught using adequate instructional facilities did better than students in schools with inadequate or without chemistry laboratories. He concluded that students with hands-on experience in the chemistry laboratory would perform better in the subject than those exposed to theoretical classes. Different from Abdullahi's study, no significant relationship was found between the availability of instructional materials and student's interest in the study of physics. The finding of this study did not support the results of studies conducted by Ihejiamaizu and Ochui (2019), Widayanti et al. (2019), Kigwilu and Akala (2017), and Sulisworo et al. (2017).

The summary of research question 2, Table 2 revealed that, out of the eight topics used to test students' interest in physics among the secondary school students, it was observed that they had a high level of interest in four (4), namely, mechanics, electricity, magnetism and electronics; a moderate interest in three (3) topics, namely, optics (light), sound waves, and quantum physics and a low interest in only one namely, thermodynamics. Based on the results of research question 2, the sampled students had a high level of interest in learning the different topics in physics. This contradicted the result of a meta-analysis of research by Hassan and Ibrahim (2018), in which they found a persistent low interest in students in studying sciences in the past five years. The interest shown by learners in this study could be the product of the desire of many Nigerian students to make careers in science and technology and not necessarily because of the application of instructional materials in teaching the subject, as the tested null hypothesis did not find a significant relationship between the availability of instructional materials and students' interest in the study of physics. Thus, the results of this study did not support Arop et al. (2015), who indicated that the application of instructional materials motivated students to learn. The result of this study also disagreed with the work of Onasanya and Omosewo (2011) as they found support for the application of instructional aids for teaching students in physics as tools for motivating them to learn the subject.

6. Conclusion

The study revealed that many of the instructional materials needed to teach physics are only available in some schools and are non-functional where they are available. Indeed, it is unfortunate that the learning environment does not promote the learners' interest. A positive change in students' attitude to the learning of physics and other subjects is envisaged if relevant instructional materials are available and learning is made experiential for the students. This will likely attract students' interest in physics and the attendant improvement of students' performance in the subject.

Arising from the findings of this study, the following recommendations were made. Through the Ministry of Education, the government should make a policy to make instructional materials available in schools to teach physics to make learning experiential for learners. Principals should ensure that instructional materials supplied to their schools are good and functional for the learners' benefit. Physics teachers should use available instructional materials regularly when teaching the subject to senior secondary school students in Edo State. Where instructional materials are not available, physics teachers are encouraged to source materials locally to teach to inspire physics students to learn the subject with less stress.

The results of this research have contributed to knowledge by challenging school proprietors to create an enabling environment for the learning of science and, indeed, all subjects by investing in instructional aids and facilities to make learning easier, interesting and experiential to learners at the secondary school level knowing that science is the bedrock of technological development of any nation. The research findings have also contributed to the existing body of knowledge by providing data for future researchers in teaching and learning.

This study presents some implications for policymakers in education as outlined: 1) government will need to make educational policies that compel school administrators and proprietors to supply instructional aids to schools to effectively teach physics at the senior secondary school level; and 2) physics teachers need to source instructional aids locally to augment the few standard ones available or to serve as alternatives in the absence of standard instructional materials. This is to make learning experiential for physics students rather than teaching them in the abstract, which may compound the problem of the inability of the majority of students to cope with learning the subject.

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