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INFLUENCE OF INSTRUCTIONAL MATERIALS ON STUDENTS' ACADEMIC PERFORMANCE IN JUNIOR SECONDARY SCHOOLS' INTEGRATED SCIENCE IN ODEDA LOCAL GOVERNMENT, OGUN STATE

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Abstract
This study aimed at investigating the effects of use of instructional materials on students' academic performance in junior secondary school's Integrated Science. The study adopted a pretest-posttest quassi-experimental design. The population of the study comprised of all Junior Secondary Schools students of Odeda Local Government, Abeokuta, Ogun State while a sample of 30 JSS 2 students of integrated science took part in the study. Data collected were analysed using simple percentage and mean. Findings of the study revealed that learning is made easy with the aid of instructional materials among others. Based on this finding, it was recommended among others that there should be a policy formulation that will ensure adequate provision for instructional materials both foreign and local.
Keywords: Instructional material, Teaching, Learning, Laboratory apparatus.

Introduction
Man raises questions and answers in order to give meaning to events in nature. These meanings are associated with certain objects distinct from others depending on the attributes of such objects and events. For example, when a solution of common salt and water is heated to dryness, the salt particles are left behind. The question raised is where has the water gone? Another example is when students of integrated science are exposed to a topic such as saving your energy and evaluation carried out. The failure rate of students regarding this question may be high. What could be the reason for students' failure regarding this question? The answer is not farfetched, simply because in an attempt to answer such questions, more questions are raised and answered in a systematic manner. This act of systematic collection of information in order to give meaningful explanation to happenings and events in nature could be referred to as science. The same science was defined by Abidoye and Abidoye, (2023) as a field of study concerned with discovering and describing the world around us by observing and experimenting.

Meanwhile, integrated science is one of the disciplines in science and it is the first form of science a student comes across in schools. Many reasons have been advanced to justify its inclusion in the school curriculum. These include its role in removing the traditional subject boundaries between various scientific disciplines in favor of broad ideas that transcend all basic sciences (Busari and Sobowale, 2018). Research findings such as Esiobu, (2005); Afuwape and Olatoye, (2004); have however, shown that secondary school students exhibit dwindling interest in science subjects. Similarly, studies such as Doublegist, (2014), showed that students' academic achievement in integrated science has continued to decline. While advancing reasons for students' lack of interest and poor performance in sciences (integrated science inclusive), Oludipe, (2011*)* listed the following; lack of qualified teachers, lack of practical works, insufficient time allotted for Integrated Science on the school time-table, poor method of

teaching among others. In view of this, a number of steps were taken to address the ugly situation such as recruitment of more qualified teachers to handle the subject in schools but all to no avail as students' achievement has not significantly improved.

In addition, observations of integrated science classes in most of our schools revealed that most teachers of integrated sciences relied on few or no instructional materials at all in their teaching. This they are doing with the belief that they can force knowledge into the empty brain of their students. This has a potential of making learning of integrated science to become unpleasant and superficial in nature. The subject thus becomes a source of constant fear for students. By implication, such teaching cannot be said to be effective in any way at all.

Effective teaching of any subject will not only stimulate students' interest in the subject but also enhances their academic achievement in the examinations. For effective teaching of sciences, the use of instructional materials by teachers in their teaching cannot be pushed aside. Instructional materials are the different teaching aids which a classroom teacher employs to facilitate his or her teaching for the achievement of the stated objectives. Okenyi, (2022) conceptualized instructional materials as essential education tools for an enriched teaching and learning process, as they make classroom activities practical, real, motivating and attractive for both teachers and pupils. Similarly, Jonavsky and Brooks (2021) perceived instructional materials as any form of tool or device employed by the teacher for orderly and logical presentation of classroom lessons to learners. This in effect may lead to enhanced pupils' academic achievement, as it results to active and effective participation in the classroom for both learners and instructors. Similarly, Owoeye (2016) emphasized that the availability of relevant educational resources greatly contributes to academic achievement. Perhaps, this explains why instructional materials according to Olayinka, (2016) are considered essential and significant tools needed for teaching and learning of school subjects. They promote teachers' efficiency and improve students' performance. They also make learning more interesting, practical, realistic and appealing.

Succinctly put, instructional materials are put into use by teachers to promote the effectiveness of instructions. However, in a clear departure from this view, Orji (2011) and Ekpe (2010) in their different studies are of the opinion that instructional materials are not necessarily important if the learners are intelligent and the teachers have good mastery of the subject matter. They strongly believed that involving learners in classroom activities is what matters most as it makes teaching learners centered. From the foregoing, there appears to be a strong argument on the place of use of instructional materials on the teaching and learning of integrated science which has eventually necessitated the need for this study using integrated science students in junior secondary schools in Odeda Local Government area of Ogun State.

Statement of the Problem

Integrated Science is not only a core subjects at both primary and junior secondary school levels in Nigeria but also a gateway for further studies in sciences at higher level of education. This implies that students' success or failure in it determines the extent to which a student will be able to face challenges of scientific nature in future. Meanwhile, earlier reports such as Doublegist, (2014) revealed a decline in students' performance in the subject. Efforts at addressing it without taking the use of instructional materials into consideration actually proved abortive. This is because some topics in integrated science have been identified to pose serious challenges when it comes to comprehension by students. Such topics cannot be successfully taught without the incorporation of instructional materials to make the lesson practical and more concrete.

Habitually, teachers of integrated science have been found teaching without using the available instructional materials and as such, students perform poorly in both internal and external examinations. It is on the basis of this problem that this study is interested in finding out the extent to which the use of instructional materials will affect the performance of students in integrated science in selected secondary schools in Odeda Local Government area, Ogun State.

Research Hypotheses

The following null hypotheses were raised to guide the study:

i. There is no significant difference in the academic performance of integrated science students taught with the use of instructional materials and their counterparts taught without the use of instructional materials.
ii. There is no significant difference in the educational performance of male students of integrated science after being taught with instructional materials.
iii. There is no significant difference in the educational performance of female students of integrated science after being taught with instructional materials.

Research Design

The study adopted a pretest-posttest quasi-experimental design since the study aimed at establishing a cause- and –effect relationship. The mean scores of the tests were contrasted to test each of the hypotheses.

Treatment Procedure

The participating students were first pre-tested after which they were separated into two groups viz., the experimental and control groups. While the experimental group was taught a unit of instruction in integrated science with the use of appropriate instructional materials, the control group was taught devoid of the use of instructional materials. Each group had three sessions of two hours per week for three weeks to complete the unit. At the end of the third week, an achievement test marked Integrated Science Achievement Test (ISAT) consisting of ten (10) multiple choice objective questions was administered simultaneously on the students from both groups.

Results

Pre-Testing the Participating Students

The pre-testing stage of the study aims at assessing the ability of the participating students to learn which expectantly will help in determining if the partakers have the essential knowledge to profit from the instructions.

Table 1: Achievement Scores of 30 JSS II Students during the Pre-Test

Mark Obtainable	**10**									
Marks Obtained /10	1	2	3	4	5	6	7	8	9	10
Frequency	-	10	3	6	2	4	4	1	-	-
No of Passes (%)	11(36.7%)									
No of Failure (%)	19(63.3%)									
Mean Score /10	4.10									

Finding

Table 1 above revealed that the highest score in the test is 8 and it was only one candidate representing 3.33% that had it. Four (4) candidates apiece representing 13.3% scored 7 and 6; while 2 candidates (6.66%) had 5/10. Majority of the participants i.e. 19 representing 63.3% scored between 1 and 4 marks. This is no doubt a dismal performance which in the opinions of

the researchers can be attributed to the newness of the researcher(s) in the school, the inability of the teacher (permanent) to cover fully areas under study, students' lack of interest to participate or their not being actively involved in the teaching-learning process.

Testing of Hypothesis

Ho_1: There is no significant difference in the academic performance of integrated science students taught with the use of instructional materials (experimental) and their counterparts taught without the use of instructional materials (Control group).

Table 2: Relationship between the Achievement Scores of Students in Experimental and Control Groups

Marks Obtainable	10										No Passes (%)	No of Failure (%)	Mean Score
Marks Obtained	1	2	3	4	5	6	7	8	9	10			
Control Grp (Freq)	-	1	2	4	2	2	2	1	1	-	8 (53.3%)	7 (46.7%)	5.13
Exp Grp (Freq)	1	-	1	3	-	-	3	5	2	-	10(67.7%)	5 (33.3%)	6.93

Findings:

It could be deduced from Table 2 above that the two groups at first generally performed better as compared to their performance in the pretest. This is evident from the much higher mean scores of 5.13 and 6.93 in the control and experimental groups respectively in the posttest. This is relatively higher than the 4.10 mean score in the pretest. This is attributable to the students' adjustment to the new teacher's style of teaching, modes of instruction and probably new environment.

It could also be deduced from the table that students in the experimental group performed relatively better than their counterparts in the control group. A pointer to this is the substantial higher mean score of 6.93 for those in experimental group as compared to 5.13 for those in the control group. The better performance of students taught with instructional materials (experimental group) is further evident in the higher percentage of 67.7% relative to 53.3% of those taught without instructional materials.

Ho_2: There is no significant difference in the educational performance of male students of integrated science after being taught with instructional materials.

Table 3: Relationship between the Achievement Scores of 15 Male Students in Experimental and Control Groups

Marks Obtainable	10										No Passes (%)	No of Failure (%)	Mean Score
Marks Obtained	1	2	3	4	5	6	7	8	9	10			
Exp. Grp (Freq)	-	-	1	2	-	-	2	3	1	-	6 (66.7%)	3 (33.3%)	6.4
Control Grp (Freq)	-	-	1	3	-	1	1	-	-	-	2(33.3%)	1(66.7%)	4.3

Findings

A cursory look at Table 3 above indicated that the male students in the experimental group recorded a mean score of 6.4 while their counterparts in the control group had a mean score of 4.3. This is further confirming the veracity of the use of instructional materials in the teaching and learning of integrated science as it improves the students' performance greatly.

Table 4: Relationship between the Achievement Scores of 15 Female Students in Experimental and Control Groups

Marks	10	No Passes	No of Failure	Mean

Obtainable											**(%)**	**(%)**	**Score**
Marks Obtained	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**			
Exp Grp (Freq)	**-**	**1**	**-**	**1**	**-**	**-**	**1**	**2**	**1**	**-**	**4(66.7%)**	**2(33.3%)**	**6.33**
Control Grp (Freq)	**-**	**1**	**2**	**1**	**2**	**-**	**1**	**1**	**1**	**-**	**5(55.6%)**	**4(44.4%)**	**5.11**

Findings

It is obvious from Table 4 above that female students in the experimental group also did well in contrast to their counterparts in the control group. Those taught with instructional materials did not only record 66.7% pass but also had a mean score of 6.33 while their colleagues in the control group recorded 55.6 % pass and had a mean score of 5.11.

Discussion

From the results of this study, it could be clearly stated that students taught with instructional materials were found to be of improved academic performance compared to their counterparts taught without the use of instructional materials. One can therefore boldly say that instructional materials play a significant role in boosting the academic achievement of students. This is in line with the finding of Abubakar, (2020) in his work titled impact of instructional materials on students' academic performance in physics, in Sokoto State. This is not farfetched from the fact that advances in technology have brought instructional materials especially the projected and electronic materials to the forefront as the more radical tools of globalization and social development which have affected class teaching-learning situation. Such technological innovation by way of networked and non-networked projected and non-projected, visual, audio, audio-visual electronic material is important landmark in knowledge transfer and high academic performance. Corroborating this assertion, Omosewo in Adalikwu and Iorkpilgh (2013) submitted that when encouraging students to learn, it shouldn't be through eyes and ears alone, they should as well be encouraged to use their hands to manipulate apparatus.

This study also established that the male students in the experimental group have better statistically significant mean scores and greater achievement than the male students in the control groups. This finding agrees with the opinion of Atanda and Jaiyeoba (2011) who opined that availability and adequacy of instructional materials enhance effective learning and better performance of students. Similarly, a statistically significant difference was found between the achievement mean scores of female students in the experimental and control groups which is in line with that of Onasanya and Omosewo (2011) who reported that female students that were taught with the use of instructional materials performed better than others taught without any material.

Conclusion

Based on the findings of this study, it could be concluded that the use of instructional materials in the teaching and learning of integrated science has potentials to improve students' academic performance. Thus, in schools where relevant instructional materials are available, adequate and utilized, students' performance improve remarkably unlike in schools where the instructional materials are not available and not utilised.

Recommendations

On the basis of the findings of this study, it is hereby recommended that:

1. Teachers of integrated science should adopt the use of instructional materials in their classes. This hopefully will encourage students' active participation in classrooms.
2. Efforts should be made to ensure fair distribution of instructional materials to all schools. Hopefully, this will make the teaching and learning of integrated science very effective.

3. Stakeholders in education including the State and Local Governments and the Private sector should contribute both materially and financially in the provision of relevant instructional materials for teaching integrated science.
4. Efforts should be made by teachers of integrated science to keep on improvising instructional materials where there are inadequate instructional resources.

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