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Gender and Extent of Utilization of Available Instructional Resources by Biology Teachers for Teaching Secondary School Biology in Enugu State, Nigeria.

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ABSTRACT
The study investigated gender and extent of utilization of available instructional resources by biology teachers for teaching secondary school biology in Enugu State, Nigeria. Two research questions guided the study and one null hypothesis was tested at 0.05 level of significance. Descriptive survey research design was adopted for the study. The population of the study comprised 552 biology teachers in public secondary schools in Enugu State. A sample size of 417 biology teachers was drawn for the study using multistage sampling procedure. The research developed questionnaires titled "Gender and Extent of Utilization of Available Instructional Resources for Teaching Senior Secondary Schools Biology" (GEUAIR TSSSB). The instrument was validated by five experts, one expert in measurement and evaluation unit of the Department of Educational Foundations, one from Department of Guidance and Counselling, two from the Department of Science Education all from Nnamdi Azikiwe University, Awka and one secondary school biology teacher from Community Secondary School, Amansea. Cronbach alpha was used to determine the reliability of the instrument which yielded coefficient value of 0.77. the researcher together with three research assistants collected data for the study using the direct approach method and 97% return was recorded. Mean and standard deviation were used to answer the research questions while one-tailed independent t-test was used to test the hypotheses at 0.05 statistical level of significance. The findings of the study revealed among others that utilization of instructional resources by male and female biology teachers were to a low extent for teaching secondary school biology in Enugu State, Nigeria. Further results showed that there is no significant difference in the mean ratings of male and female biology teachers in the utilization of instructional resources for teaching biology in secondary schools in Enugu State. Based on the findings, it was recommended among others that school principal is and science professional bodies should collaborate and sensitive male and female biology teachers on the importance of the utilizing the available instructional resources in teaching Biology.
Keywords: Gender, Utilization, Instructional Resources, Biology, Teachers, Teaching

INTRODUCTION

Secondary education system in Nigeria is described by Federal Republic of Nigeria (2022) as a crucial link between primary school, tertiary education and the labour market. Secondary education is of strategic importance to Nigerian development and capacity building process, given the fact that 60% of Nigerian population are made up of students of secondary school age (Lewin, 2019). This apparently underscores the need for improved secondary education that is closely linked to effective school management. The

secondary education is designed to prepare students for higher education and useful living in the society. Secondary education is the second tier of Nigerian education system. The broad goals of secondary education according FRN (2022) shall be to prepare the individual for useful living within the society and higher education.

Science provides a body of knowledge for use in addressing various forms of human, material and environmental problems. Science refers to a system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomenon. Uche and Umoren (2011) were of the view that science is studied and practiced in all parts of the world, including Nigeria.

Nigeria is a developing nation with an increasing demand for science-based skilled manpower. The achievement of this can start with the learning and application of science such as biology, chemistry, basic-science and physics at secondary school level. Among these science subjects, this paper focused on biology. Biology is the science of life as it studies organisms, their interactions with one another and their environments. All living organisms share several key properties such as order, sensitivity or response to stimuli, reproduction, growth, development, regulation, homeostasis and energy. Matazu (2022) was of the view that biology is related to many things in human's daily life, it is a prelinguistic for certification at the senior secondary school level and for admission into the tertiary institution for most science related courses that will pursue careers in science related fields such as medicine, nursing, pharmacy, nutrition, medical laboratory among others.

Biology as a science is a very important aspect in the development of any nation. instruction Resources: Instructional resources have born several nomenclatures from the colonial concepts of apparatus to teaching aid to educational media, educational media to instructional technology, instructional technology to curriculum materials, curriculum materials to its modern nomenclature – instructional materials. Instructional resources according to Effiong and Igiri (2016) are teaching – learning materials that constitute an integral component of classroom instructions which are utilized in dealing out educational information to the learner. They further noted that it makes the lesson real, concrete and effective as learners are motivated to learn at their own pace, rate and convenience. Umaru (2017) summarized instructional resources available for instruction into four major categories.

Visual Aids: These include pictures, maps, charts, graphs, diagrams, chalkboard, sketches, atlas and painting.

Auditory Aids: These include audio recordings, radios, records or cassette tapers and music.

Audio Visual Aids: Such as television, computer programmes, film trips, video recording and projectors.

Printed Materials: These include encyclopedias, textbooks, magazines, journals, newspapers, pamphlets, novel poems, simulation games, government records and publications, almanacs, biographic, editorial cartons and case studies.

Gender Based Stem Education

In the Federal Republic of Nigeria (FRN, 2022) one of the overall philosophies is to "live in unity and harmony as one indivisible, indissoluble, democratic and sovereign nation founded on the principles of freedom, equality and justice". Another cardinal point in Nigeria's philosophy of education is need for equality of educational opportunities to all Nigeria children irrespective of any real or imagined disabilities each according to his ability. The provision of equal access to educational opportunities for all citizens of the country at primary, secondary and tertiary levels either outside or inside as informal schools set up is imperative. In other words, it is critical that all citizens should be provided with equal access and opportunity to education, irrespective of their needs, interests, abilities, sex, socio-economic status, cultural, ethnic or religious backgrounds. The big question is has this been achieved. The females are grossly under represented and many of them are noted to under achieve in science, technology, engineering and mathematics (STEM) education disciplines. Okeke (2007) noted that female under representation and under-achievement in STEM education is historical and has been brought about by several interrelated socio-cultural and interacting school factors which act jointly and singly to suppress female interest, enrolment, participation and achievement in STEM education at various levels of the

Nigeria education system. These factors include sex stereotyping, gender bias in curriculum materials, science teaching strategies used by STEM teachers, low expectation of female students and sexual harassment of females. Dantata (2008) stated that the current gender discrimination and inequality in our social life an education was passed on to us by the British through the use of English language, which has created gender inequality in a bourgeois society where women cannot be seen as independent persons, free and equal in status and virtue with men.

Oloyede (2011) stated that all nations are striving towards equipping individuals to contribute and attain self-reliance through the introduction of various programmers like women in health, women in agriculture, women in science education, women in cooperatives societies, women in entrepreneurship skill acquisition, women in politics, women in empowerment and fundamental human rights etc. However, women are still disadvantaged in all of these opportunities by government in Nigeria. The girl-child access to education has improved yet she lags behind the male-child because of her gender (Dantata, 2008). Dantata further stated that if females are not carried along in education especially STEM education despite the reforms, it will be like a tripod standing on only two legs or a human being trying to walk only with one leg. The chances of success in both cases are almost zero. Then, for STEM education to be sustainable and successful, the female gender must be carried along.

Gender has no any influence on students academic achievement (Akaneme &Ngwoke, 2010). They further stressed, that, the differences in scores seen between two or more schools was due to the classroom overcrowding not because of gender. Generally, individuals have different weaknesses and strength, therefore, resourcefulness in teaching and learning science demands hat the science teaching should focus attention on the assets of particular. Learner and match these against the requirement of the scientific concept under discussion. This approach has the potential of enhancing learners moral, zeal, interest and achievement because it capitalizes on the functional roles of such curriculum element in order to enhance learners understanding, positive feeling will be encouraged, negative attitude toward science will be reduced.

Okorie and Ezeh (2016) stated that the sources of gender differences in educational outcomes have been the subject at considerably study and debate. One particularly contentions issue involves the possible role played by biological differences between males and females. One hypothesis according to Okorie and Eze were that males and female biology teachers have unique biases with respect to how they engage boys and girls in the classrooms. Similarly, cognitive process theories suggest that teachers may subtly communicate that they have different academic expectations of boys and girls. On teaching strategies, studies by Matazu (2022) revealed that male teacher's perception of utilization of instructional resources in teaching is higher than that of the female teachers.

Utilization of instructional resources for science teaching and learning. According to Ngozi and Cliff (2022) instructional resources include those that facilitate teaching and learning activities and consequently the attainment of the lesson objectives. Therefore, one can rightly say that instructional resources are the resources which the teacher uses in teaching in order to make his teaching real and meaningful.

The use of instructional resources depend on what the teacher makes of them. If the biology teacher does not have the knowledge and manipulative skills of using these instructional resources in teaching, the learner will definitely find it difficult to learn. A good biology teacher should possess the skill of designing, developing and utilization of instructional resources to bring meaning to the door posts of the learners when learners come face to face with the teacher through the proper use of instructional materials the lesson is always effective. Most of the instructional resources are available in schools, homes, markets, information centers, libraries and even on the road. For a school to conduct an effective teaching and learning of biology, laboratory equipment and resource materials must be available for the biology teacher who himself must be professionally competent in coordinating the functions of these materials. Research has shown that learning are identified, the objectives well stated, the abilities of the students are matched with the instructional functions of the materials (Miyake, Firedman and Emerson, 2000).

Ngozi and Cliff (2022) identify three ways by which the teacher should prepare for the use of instructional resources, these are by previewing before they brought to the class the teacher has to have a first knowledge by using it on him/her self before the class. First knowledge – the teacher should have a full knowledge of the parts, names of operational level of the intended instructional resources and actual presentation as this is the period the teacher operates and uses these resources in teaching the students.

Purpose of the Study

The study determined gender and extent of utilization of available instructional resources by biology teachers for teaching secondary school biology in Enugu State, Nigeria.

Specifically, it determined,

1. The extent to which biology teachers utilize instructional resources in the teaching of biology in senior secondary schools in Enugu State, Nigeria.
2. The extent of gender on the teachers' utilization of instructional resources in the teaching of biology in senior secondary schools in Enugu State, Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent do biology teachers utilize instructional resources in the teaching of biology in senior secondary schools in Enugu State, Nigeria?
2. To what extent do male and female biology teachers utilize the instructional resources for teaching of biology in senior secondary schools in Enugu State, Nigeria?

Research Hypotheses

The following null hypotheses was tested at 0.05 statistical level of significance.

1. There is no significant difference between the mean ratings of male and female biology teachers on the utilization of instructional resources for teaching biology in senior secondary schools in Enugu State, Nigeria.

RESEARCH METHODS

Descriptive survey design was adopted for this study (Nworgu, 2015). This design is appropriate since the study sought to collect data from respondents in order to investigate gender and extent of utilization of available instructional resources by biology teachers for teaching senior secondary school biology in Enugu State, Nigeria. The population of the study comprised 552 biology teachers in Enugu State, Nigeria. The sample for the study comprised 417 biology teachers drawn using multi-stage sampling procedure.

The instrument for data collection was g structured questionnaire titled "Gender and Extent of Utilization of Available Instructional Resources by Biology Teachers for Teaching Senior Secondary School Biology" (GEUAIRTSSSS B), contained 83 items which measured gender and extent of utilization of available instructional resources. The items of the instrument are structured on a 4-point rating of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE)) weighted 4, 3, 2, and 1 respectively.

The instrument was subjected to face validation by five experts, one expert in measurement and evaluation unit of the Department of Educational Foundations, one from Department of Guidance and Counselling, two from the Department of Science Education all from Nnamdi Azikiwe University, Awka and one secondary school biology teacher from Community Secondary School, Amansea. The reliability of the instrument was ascertained through single administration of copies of GEUAIRTSSSB to 20 biology teachers from Awka education zone of Anambra State, Nigeria, which were outside the study area. Cronbach alpha was used to determine the reliability of the instrument which yielded coefficient value of 0.77. This is in line with Doval, Viladrich and Angu Lo-Brunet (2023) who recommended that a co-efficient (r) of 0.70 and above should be considered high enough to judge an instrument as reliable. The researchers with the help of three research assistants who are biology teachers in State Secondary Schools in Enugu State, Nigeria administered 417 copies of the questionnaire to the respondents through a direct approach. The copies of the questionnaires distributed, duly filled and successfully retrieved were

used for data analysis. Data collected were analyzed using means and standard deviation to answer the research questions. The decision on the research questions were based on range of values obtained from mean scores. Thus, mean scores ranging 3.50 – 4.00 indicates VHE, 2.50 – 3.49 indicates HE, 1.50 – 2.49 indicates LE, and 1.00 – 1.49 indicate VLE respectively. In testing the null hypotheses, if p – value is equal to or less than significant value of 0.05 ($p \leq 0.05$), the null hypothesis was rejected, but if p-value is greater than the significant value of 0.05 ($p > 0.05$), the null hypotheses was not rejected.

RESULTS

Research Questions 1: *To what extent do biology teachers utilize instructional resources for teaching of biology in senior secondary school in Enugu State, Nigeria?*

Table 1: Mean Rating and Standard Deviation Scores on Utilization of Instructional Resources for Teaching Biology.

S/N	ITEMS	Teachers (n =417)		
		$\bar{x}$	SD	Remark
1	Biology laboratory	2.71	1.06	High Extent
2	Refrigerator	2.41	1.05	Low Extent
3	Charts	2.63	1.03	High Extent
4	Beakers	2.45	1.11	Low Extent
5	Burners	2.38	1.10	Low Extent
6	Gas cylinders	2.32	0.98	Low Extent
7	Microscopes	2.54	1.10	High Extent
8	Dissecting Boards	2.47	1.02	Low Extent
9	Hand lens	2.61	1.11	High Extent
10	Dissecting kits	2.41	1.06	Low Extent
11	Mammalian bones	2.30	1.13	Low Extent
12	Jars	2.68	1.07	High Extent
13	Volumetric flasks	2.53	1.08	High Extent
14	Conical flasks	2.57	1.15	High Extent
15	Stop watch	2.60	1.05	High Extent
16	Spring balance	2.35	0.99	Low Extent
17	Micrometer	2.40	1.00	Low Extent
18	Test tubes	2.54	1.04	High Extent
19	Litmus paper	2.63	1.09	High Extent
20	Watch glass	2.56	1.00	High Extent
21	Mortar and pestle	2.57	1.04	High Extent
22	Paraffin wax	2.36	1.00	Low Extent
23	Pipettes	2.45	1.12	Low Extent
24	Graduated cylinder	2.30	1.16	Low Extent
25	Thermometer	2.65	1.11	High Extent
26	Bulbs	2.61	1.04	High Extent
27	Crucibles	2.31	1.05	Low Extent
28	Tripod stand	2.39	1.00	Low Extent
29	Clamp stand	2.28	1.10	Low Extent
30	Retort stand	2.30	1.12	Low Extent
31	Generation	2.43	0.97	Low Extent
32	Incinerator	2.35	1.14	Low Extent
33	Metre rules	2.68	1.05	High Extent
34	Slides	2.51	1.14	High Extent
35	Weighing balance	2.47	1.01	Low Extent
36	Fishes	2.31	1.06	Low Extent
37	Toads	2.57	1.09	High Extent
38	Birds	2.40	1.01	Low Extent
39	Reptiles–snakes, lizards	2.44	1.01	Low Extent

40	Rabbits	2.41	1.03	Low Extent
41	Amphibians–frogs, toads	2.37	1.00	Low Extent
42	Grasshoppers	2.27	1.08	Low Extent
43	Crustaceans	2.43	1.06	Low Extent
44	Millipedes	2.40	1.03	Low Extent
45	Earthworms	2.57	1.15	High Extent
46	Centipedes	2.34	1.04	Low Extent
47	Cockroaches	2.55	1.01	High Extent
48	Sulphuric acid	2.24	1.17	Low Extent
49	Hydrochlonic acid	2.20	1.12	Low Extent
50	Other bases	2.27	1.10	Low Extent
51	Methylamine	2.31	1.01	Low Extent
52	Formaldehyde	2.29	1.02	Low Extent
53	Calcium carbornate	2.32	1.07	Low Extent
54	Sodium chloride	2.25	1.10	Low Extent
55	Ammonium solution	2.17	1.05	Low Extent
56	Jeric chloride	2.29	1.06	Low Extent
57	Paraffin wat	2.33	1.04	Low Extent
58	Ferrous sulphate	2.38	1.02	Low Extent
59	Sucrose	2.41	1.11	Low Extent
60	Dyes	2.57	1.04	High Extent
61	Vingars	2.39	1.06	Low Extent
62	Citrates	2.34	1.09	Low Extent
63	Phenolphthalein	2.25	1.11	Low Extent
64	Fehling solution	2.28	1.07	Low Extent
65	Benedict solution	2.46	1.00	Low Extent
66	Iodine solutionz	2.27	1.05	Low Extent
67	Methylated water	2.55	1.07	High Extent
68	Nose mask	2.71	1.00	High Extent
69	Disposable hand gloves	2.64	1.08	High Extent
70	Water tanks	2.40	0.94	Low Extent
71	Insect nets	2.43	1.10	Low Extent
72	Biology textbooks	2.89	1.06	High Extent
73	Computers	2.41	1.02	Low Extent
74	Instructional television	2.42	1.17	Low Extent
75	Whiteboards	2.61	1.05	High Extent
76	Skeletons (Human, Reptiles, Amphibians)	2.34	1.16	Low Extent
77	Biology software	2.15	1.07	Low Extent
78	Programmed instruction	2.19	0.98	Low Extent
79	Prepared slides	2.39	1.01	Low Extent
80	Ecological instruments	2.37	1.04	Low Extent
81	Aquarium	2.21	1.11	Low Extent
82	Potted plants	2.31	1.06	Low Extent
83	Projector	2.37	1.14	Low Extent
	Cluster Percentage	**2.42**	**1.06**	**Low Extent**

Table 1 shows that the mean ratings of biology teachers for items 1, 3, 7, 9, 12, 13, 14, 15, 18, 19, 20, 21, 26, 33, 34, 37, 45, 47, 60, 67, 68, 69, 72 and 75 were between 2.50 and 3.49 indicating that there was high extent to which teachers utilize instructional resources for teaching of biology. The mean ratings of teachers which were between 1.50 and 2.49 for items 2, 4, 5, 6, 8, 10, 11, 16, 17, 22, 23, 24, 27-32, 35, 36, 38-46, 48-59, 61-66, 70, 71, 73, 74, 76, 77, 78, 79, 80, 81, 82 and 83 indicated that there was low extent to which they utilize instructional resources for teaching of biology.

The pooled standard deviation scores which stood at 1.06 indicated that the mean scores of respondents were clustered and this indicated that a little variation from their responses. The cluster mean of 2.42

which fell within the decision rule of 1.50 – 2.49 indicated biology teachers utilize instructional resources to a low extent in teaching of biology in senior secondary schools in Enugu State.

Research Question 2: *To what extent do male and female biology teachers utilize instructional resources for teaching of biology in senior secondary schools in Enugu State, Nigeria?*

Table 2: Mean Rating and Standard Deviation Scores on Male and Female Biology Teachers' Utilization of Instructional Resources for Teaching of Biology.

S/N	ITEMS	Male Teachers (n =136)			Female Teachers (n=281)		
		$\bar{x}$	SD	Remark	$\bar{x}$	SD	Remark
1	Biology laboratory	2.76	1.05	High Extent	2.68	1.11	High Extent
2	Refrigerator	2.39	1.12	Low Extent	2.47	1.01	Low Extent
3	Charts	2.62	1.10	High Extent	2.57	1.13	High Extent
4	Beakers	2.32	0.98	Low Extent	2.40	1.21	Low Extent
5	Burners	2.41	1.04	Low Extent	2.37	1.15	Low Extent
6	Gas cylinders	2.36	1.00	Low Extent	2.30	1.05	Low Extent
7	Microscopes	2.52	0.93	High Extent	2.55	1.09	High Extent
8	Dissecting Boards	2.42	1.12	Low Extent	2.44	1.03	Low Extent
9	Hand lens	2.65	1.01	High Extent	2.61	1.04	High Extent
10	Dissecting kits	2.35	1.06	Low Extent	2.44	0.93	Low Extent
11	Mammalian bones	2.31	1.01	Low Extent	2.27	1.05	Low Extent
12	Jars	2.67	1.04	High Extent	2.71	1.03	High Extent
13	Volumetric flasks	2.58	1.05	High Extent	2.55	0.99	High Extent
14	Conical flasks	2.58	1.15	High Extent	2.48	1.04	Low Extent
15	Stop watch	2.71	1.05	High Extent	2.69	1.01	High Extent
16	Spring balance	2.25	1.11	Low Extent	2.38	1.02	Low Extent
17	Micrometer	2.43	1.08	Low Extent	2.41	1.01	Low Extent
18	Test tubes	2.51	1.04	High Extent	2.59	1.05	High Extent
19	Litmus paper	2.58	1.14	High Extent	2.71	1.10	High Extent
20	Watch glass	2.66	1.08	High Extent	2.57	1.12	High Extent
21	Mortar and pestle	2.59	1.01	High Extent	2.61	1.05	High Extent
22	Paraffin wax	2.32	1.07	Low Extent	2.41	1.08	Low Extent
23	Pipettes	2.41	1.10	Low Extent	2.46	1.17	Low Extent
24	Graduated cylinder	2.32	1.06	Low Extent	2.41	1.06	Low Extent
25	Thermometer	2.71	1.11	High Extent	2.68	1.09	High Extent
26	Bulbs	2.60	1.08	High Extent	2.64	1.11	High Extent
27	Crucibles	2.29	1.06	Low Extent	2.35	0.91	Low Extent
28	Tripod stand	2.45	1.03	Low Extent	2.47	1.10	Low Extent
29	Clamp stand	2.31	1.05	Low Extent	2.29	0.96	Low Extent
30	Retort stand	2.33	1.08	Low Extent	2.35	1.10	Low Extent
31	Generation	2.41	0.99	Low Extent	2.39	1.00	Low Extent
32	Incinerator	2.39	1.00	Low Extent	2.42	1.02	Low Extent
33	Metre rules	2.70	1.09	High Extent	2.66	1.01	High Extent
34	Slides	2.48	1.11	Low Extent	2.53	1.01	High Extent
35	Weighing balance	2.48	1.01	Low Extent	2.45	1.03	Low Extent
36	Fishes	2.37	1.12	Low Extent	2.28	1.04	Low Extent
37	Toads	2.61	1.08	High Extent	2.63	1.01	High Extent
38	Birds	2.47	1.05	Low Extent	2.44	1.12	Low Extent
39	Reptiles–snakes, lizards	2.48	1.17	Low Extent	2.46	1.10	Low Extent
40	Rabbits	2.45	1.02	Low Extent	2.41	1.08	Low Extent
41	Amphibians–frogs, toads	2.41	1.04	Low Extent	2.43	1.07	Low Extent
42	Grasshoppers	2.30	1.11	Low Extent	2.31	1.11	Low Extent
43	Crustaceans	2.46	1.01	Low Extent	2.46	1.03	Low Extent
44	Millipedes	2.41	1.14	Low Extent	2.47	1.02	Low Extent
45	Earthworms	2.56	1.05	High Extent	2.51	1.07	High Extent

46	Centipedes	2.41	1.02	Low Extent	2.47	1.06	Low Extent
47	Cockroaches	2.51	1.14	High Extent	2.65	1.01	High Extent
48	Sulphuric acid	2.38	1.10	Low Extent	2.22	1.04	Low Extent
49	Hydrochlonic acid	2.16	1.09	Low Extent	2.27	1.03	Low Extent
50	Other bases	2.24	1.10	Low Extent	2.31	1.10	Low Extent
51	Methylamine	2.34	1.07	Low Extent	2.26	1.01	Low Extent
52	Formaldehyde	2.31	1.08	Low Extent	2.30	0.97	Low Extent
53	Calcium carbornate	2.37	1.12	Low Extent	2.40	1.05	Low Extent
54	Sodium chloride	2.31	1.04	Low Extent	2.33	1.07	Low Extent
55	Ammonium solution	2.22	1.08	Low Extent	2.19	1.12	Low Extent
56	Jeric chloride	2.27	1.05	Low Extent	2.30	1.06	Low Extent
57	Paraffin wat	2.30	1.07	Low Extent	2.38	1.05	Low Extent
58	Ferrous sulphate	2.40	1.15	Low Extent	2.43	1.04	Low Extent
59	Sucrose	2.45	1.04	Low Extent	2.48	1.07	Low Extent
60	Dyes	2.47	1.02	High Extent	2.46	1.00	High Extent
61	Vingars	2.41	1.04	Low Extent	2.55	1.08	Low Extent
62	Citrates	2.40	1.11	Low Extent	2.38	1.00	Low Extent
63	Phenolphthalein	2.31	1.11	Low Extent	2.27	1.09	Low Extent
64	Fehling solution	2.25	0.95	Low Extent	2.33	1.11	Low Extent
65	Benedict solution	2.44	0.93	Low Extent	2.41	0.98	Low Extent
66	Iodine solution	2.28	1.09	Low Extent	2.30	1.02	Low Extent
67	Methylated water	2.58	1.01	High Extent	2.54	1.01	High Extent
68	Nose mask	2.68	1.02	High Extent	2.77	1.04	High Extent
69	Disposable hand gloves	2.67	1.01	High Extent	2.64	1.03	High Extent
70	Water tanks	2.45	0.99	Low Extent	2.39	1.02	Low Extent
71	Insect nets	2.33	1.11	Low Extent	2.44	1.04	Low Extent
72	Biology textbooks	2.81	1.05	High Extent	2.88	1.05	High Extent
73	Computers	2.47	1.07	Low Extent	2.38	1.06	Low Extent
74	Instructional television	2.41	1.13	Low Extent	2.44	1.10	Low Extent
75	Whiteboards	2.58	1.06	High Extent	2.62	1.04	High Extent
76	Skeletons (Human, Reptiles, Amphibians)	2.31	1.12	Low Extent	2.35	1.13	Low Extent
77	Biology software	2.17	1.05	Low Extent	2.10	1.10	Low Extent
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79	Prepared slides	2.41	1.10	Low Extent	2.41	0.93	Low Extent
80	Ecological instruments	2.40	1.05	Low Extent	2.39	1.13	Low Extent
81	Aquarium	2.27	1.10	Low Extent	2.23	1.14	Low Extent
82	Potted plants	2.34	0.94	Low Extent	2.31	0.97	Low Extent
83	Projector	2.40	1.10	Low Extent	2.38	1.10	Low Extent
	Cluster Percentage	**2.44**	**1.06**	**Low Extent**	**2.44**	**1.05**	**Low Extent**

Table 2 revealed that the mean scores of both male and female biology teachers for items 1, 3, 7, 9, 12, 13, 15, 18, 19, 20, 21, 25, 26, 33, 37, 45, 47, 60, 67, 68, 69, 72 and 75 fell within the mean range of 2.50-3.49 indicating low extent to which they utilize instructional resources for teaching of biology. Further analysis indicated that the mean scores of the both male and female biology teachers for items 2-6, 8, 10, 11, 16, 17, 22, 23, 24, 27-32, 35, 36, 38-44, 46, 48-59, 61-66, 70, 71 and 73-83 fell within the mean range of 1.50-2.49 indicating that there was low extent of their utilization of instructional resources for teaching of biology with regards to the items. Male biology teachers indicated to a high extent in which they utilize item 14, while their female counterparts indicated to a low extent. On the other hand, female biology teachers indicated to a high extent in which they utilize item 34, while their male counterparts indicated to a low extent

The overall standard deviation scores of 1.05 and 1.05 for male and female biology teachers respectively indicated that their responses are close to the mean, implying that the respondents are homogenous in their responses amongst cluster. The cluster mean of 2.44 and 2.44 obtained for male and female biology

teachers respectively fell within the range 1.50-2.49 which indicated that male and female biology teachers to a low extent utilize instructional resources for teaching of biology in secondary schools in Enugu State

Hypothesis 1

Hypothesis 1: There is no significant difference between the mean rating of male and female biology teachers in the utilization of instructional resources for teaching biology in senior secondary schools in Enugu State, Nigeria.

Table 3: The Summary of t-test Analysis no Significant Difference in the Mean Ratings of Male and Female Biology Teachers in the Utilization of Instructional Resources for Teaching Biology (n= 417)

Group	N	$\bar{X}$	SD	p-value	Df	∞	Remark
Male Biology Teachers	136	2.44	1.06	0.37	415	0.05	Not Significant
Female Biology Teachers	281	2.44	1.05				

Table 3 revealed that the p-value of 0.37 is greater than 0.05 level of significance. Thus, the null hypothesis is accepted. Therefore, there is no significant difference in the mean ratings of male and female biology teachers in the utilization of instructional resources for teaching biology in secondary schools in Enugu State.

DISCUSSION

The findings of the study indicated that biology teachers utilize instructional resources to a low extent in the teaching of biology in senior secondary schools in Enugu State. This agreed with the finding of Onwuachu (2011) study revealed low utilization of material resources in biology teaching as a result of poor mastery of material resources and teachers lack of technicalities in the use of most material resources which result to poor understanding of biology concepts by the students, leading to rote learning inability to apply knowledge to real life situation leading to lack of self-reliance, resulting to high rate of unemployment in Nigeria, the finding of Osakwe (2020) which indicated instructional materials were utilized by teachers to low extent in teaching biology in secondary schools. This also supported the finding of Mukagihana, Nsanganwimana and Aurah (2020) which showed that available biology instructional resources are used at a low level for teaching pre-service biology teachers in private universities. The biology teachers utilize instructional resources to a low extent in teaching of biology in senior secondary schools in Enugu State were refrigerators, beakers, burners, gas cylinders, dissecting boards, dissecting kits, mammalian bones, spring balance, micrometer, paraffin wax, pipettes, graduated cylinder, crucibles, tripod stand, clamp stand, retort stand, generators and incinerator. The possible explanation for this finding could be that some biology teachers could have insufficient skills to utilize the available instructional resources. Biology teachers have been found to low extent utilize instructional resources for teaching probably due to they tend to teach the way they were taught during their training. Consequently, biology teachers could only use the materials they were exposed to during their training. The biology teacher's underutilized instructional resources probably due to they feel that some concepts in the subject do not required to be taught using teaching aids.

Further, result indicated that male and female biology teachers to a low extent utilize the instructional material for teaching of biology in senior secondary schools in Enugu State. This refuted the finding of Wogboroma and Williams (2022) which revealed that male and female teachers utilized most of the available instructional materials in the classroom for teaching of accounting, in public senior secondary schools. Male and female teachers are possibly not professionally trained as to enable them to acquires skills and sound knowledge about how to utilize available instructional resources.

It was also indicated that there is no significant difference in the mean ratings of male and female biology teachers in the utilization of instructional resources for teaching biology in secondary schools in Enugu State. This is consonance with the finding of Bello and Dahiru (2023) which revealed that there was no

significance difference in the perception of male and female teachers on the utilization of instructional resources for the teaching and learning in secondary schools.

CONCLUSION

Based on the findings, it was concluded that most instructional resources are unavailable, underutilized by male and female biology teachers for teaching the subject in secondary schools in Enugu State, Nigeria. Most male and female biology teachers still teach the subject without instructional resources in secondary schools. The available ones in secondary schools were not put into adequate use by biology teachers to teach the subject in secondary schools.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were:

1. Training programmes such as seminars, workshops and conferences be regularly organized by Post Primary School Service Commission for the teachers to upgrade their skills and knowledge to keep them abreast of modern trends in utilisation of the available instructional resources in teaching biology.
2. School principals and science professional bodies should collaborate and sensitize male and female biology teachers on the importance of the utilizing the available instructional resources in teaching biology.
3. The officials of Post Primary School Service Commission should pay periodic visit to male and female biology teachers to monitor the utilization of the available instructional resources in teaching biology.

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