Innovations

Application of novel instructional strategies and learners academic performance in Biology

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Abstract
The paper explored the application of novel instructional approaches and learners' academic performance in Biology. Two research questions guided the paper. The study design was a descriptive survey. The study population involved Biology teachers. The study used two hundred (200) public school teachers as the study sample size purposively chosen. The study instrument was the questionnaire. The findings demonstrated that the biology instructors/teachers have awareness and applied novel instructional approaches. The study findings and conclusions suggested that regular refreshers seminars and workshops be organised by the school authorities where various experts and resource persons will be invited to abreast instructors of the novel instructional approaches that can enhance learners' academic performance achievement.

Keywords:1. *Teaching Strategies 2. Biology 3.Learners 4.Academic Achievement*

Introduction

Biology is part and a fundamental science that involves the study and investigation of living things; it attempts to fathom the full diversity and variety of life and the assortment of related levels. The philosophy or way of thinking of biology is essential because the knowledge and its information help improve the quality of life. It helps with tackling numerous cultural difficulties identifying with well-being, food lack, destitution, crop creation, natural preservation, and so on forth. Also, in actuality, biology is vital for individual growth and development; thus, is necessary to be informed with the most recent instruction and learning of the subject in all cases. Using relevant and various novel

learning and instructional approaches and assessment practices will give this investigation/study footing. While trying to guarantee that biology is result-situated in the delivery process or sequence in schools, Akubuilo (2004) instructed that students-centred instructional approaches like a demonstration, cooperative learning, think and doapproaches; will help the learning of the subject to meet the expected targets.

The general change in science syllabus and prospectus emerging from knowledge eruptions and recent fads in science development brought about qualitative science instructing in schools. From the scope of realities in science instruction as set by Okebukola (2005), unmistakably, the subject in Nigeria is confronted with various issues that request dire consideration. Such issues, among others, include the failure of students to take part in complex critical thinking exercises and the capacity to relate school information and knowledge to tackling and solving issues in reality or real life and their working environment. Hence, the need to resolve these concerns with the goal that students can live progressively in modern times of science, innovation and the acquiring of pragmatic or applicable capabilities and abilities to contribute thoughtfully to the turn of events and live in and society (FRN, 2013).Buseri (2010) asserted that to consolidate with the fast scientific and logical progression requires the presence of effective, learned, all-around prepared, and skilful educators/instructors who are ingenious in completing their obligations and responsibilities. However, the unending helplessness and poor accomplishment of students in science disciplines have led to a hypothesis that most science educators in Nigeria secondary schools likely do not utilise the various types of instructional methods and approaches to deal with some particular challenges related to science teaching/instructing of science (Ogbeba, 2009).

Certain here is that educators or teachers are proficient in science content yet not in pedagogical aspects, affecting students' performance. According to Ezeliora (2004), more often than not, science is instructed to the students utilising the customary or conventional methods as opposed to innovative or novel instructional methods. The need for innovative or modern instructional methods and procedures of instruction in biology is borne out that various circumstances, teaching styles, and students' intellectual preparation demands distinctive instructional methods.

In this manner, an instructor who does not know and is not educated regarding an assortment of such instructional methods can neither endeavour to utilise them in any case or use them precisely for understanding purposes. Achor (2008), in his review, considered some instructional methods as students-centredand interest stimulating.

Awareness of and attention to instructional methodologies for the most part form the basis of its utilisation and the proficiency level of any educational system. When an individual knows about the philosophy and content methodology, such an individual can develop the right demeanor that will spike further developed usefulness and productivity (Olumorin, 2008).Instructorsawareness of modern teaching method, the teacher's judgement and choice on the innovative instructional methods/strategies will be founded on the instructors' information on the existence of these instructional strategies. Consequently, aninstructor/teacher who is unawareof these innovative instructional strategies will

neither attempt to utilise them in any case or use them accurately and satisfactorily. The problem of what the issue or challenge is, need to be investigated.

Research Questions

i. Are biology instructors aware of the novel teaching strategies?
ii. Do biology instructors utilise novel instructional teaching strategies in teaching biology?

Literature Review

Novel Teaching Strategies and Learners Academic Performance

Novel teaching instructional strategies/methods are the methodsthat engage and challenge learners, bringing about better learners' interest and motivation, a more profound degree of understanding, and enduring change in the learners' insight of the ideaconcept. Novel instructional methodologies infer the utilisation of more simplified ways to deal with science teaching. They are additionally considered to be a better approach for instruction and learning.Samba et al. (2010) declared that novel instructionalmethods and procedures are practices not present or found in customary or conventional strategies utilised by teachers who might be viewed as a focus of a coordinated change exertion.

As indicated by Abimbola (2009),instruction is the act of assisting learners learning via a suitable organisation, by the instructor, of the inter-connectionsamong the learners' interests, stimulation, the content for learning, instructional resources and methods he or she employs in the instructional process. Aninstructional/teaching methodinvolves a blend of painstakingly thought-out classroom interfaces orcollaborations that could be systematically and deliberately followed toimplement a curriculum content. Babo (2018)asserted that instructional/teaching methods could be grouped on a variety such as expository/lecture method, chalk and talk, and inquiry guided discovery teaching methods. He depicted the conventional chalk and talkor lecture method as that in which the teacher deciphers natural events/peculiarities and the medium through which all information is bequeathedfor the learners. The teacher takes charge of the teaching system and process, the topics conveyed to the class, and the teacher will generally underminefactual and genuine information. The students listen while the teacher delivers the concept; thus, learning is passive. By and large, the regular/conventional methodology is of restricted effectiveness and viability in biology and science teaching, especially in schools, henceforth the necessity for a novel instructional method.

Oludipe and Oludipe (2010) thought that teachers should see the value that changes in the learners' performance should be supported by subsequent changes in the educational programme and instructions. They saw that a considerable lot of the present teachers/educators are in a fix amid changes for which they are not proficiently and professionally ready or prepared. A significant number of today's teachers were taught in the classroom where the job of the learner is to retain information, direct well-regulated and all-around experiments, and test on their capacity to rehash the task or recall the specific facts and information; hence, they think that it is incredibly hard to stray to the

modern teaching procedures and methods trending worldwide.

Oludipe and Oludipe (2010) explored the constructivist teaching method procedures effect on students' scholarly performance.The study found that the students presented with the constructivist methods and procedures had a higher performance than those presented with the lecture procedure and method. They, consequently, reasoned that assuming constructivism is utilised to instruct integrated science students, it will improve scholarlyperformance.Samba, Achor and Ogbeba (2010) evaluated the degree to which teachers in sciences teachers knew about novel/modern teaching methodologies and their utilisation in schools using one hundred and sixty teachers. It was established thatBenue State teachers know these methods, but only a couple of these methods were successfully used.

Methodology

The descriptive research design was employed. The study population covered all biology instructors in Delta State secondary schools. Three hundred teachers selected through the judgemental sampling method made up the study sample size. The instrument for data gathering was the questionnaire, and it was tagged "Application of Teaching Methods Questionnaire" (ATMQ). It consisted of two parts, A and B. A reliability value of 0.76 was obtained after trial testing it with 20 instructors outside the study area. The analysis of data was done employing the Rank method, where 0.60 was employed as the acceptance region and below as the rejection region, respectively.

Result and Discussion

RQ 1

Are biology instructors aware of the novel teaching methods?

Table 1: Ranked responses of Teachers Awareness of Novel Teaching methods

Item number	Item	Score	Rank
1	Study materials	1.00	1
2	Problem Solving	0.90	5
3	Demonstration	0.85	7
4	Classification	0.94	3
5	Cooperative Learning	0.77	9
6	Computer Assisted Instruction	0.89	6
7	Models	0.81	8
8	Team Teaching	0.64	11
9	Socratics Method	0.38	13
10	Active Learning	0.96	2
11	Project-Based Learning	0.74	10
12	Individual Learning	0.63	12

13	Checklist	0.93	4
14	Mind-Map	0.37	14
15	Minimalism	0.29	15

Table 1 exposed that awareness level was in elevation/high in the demonstration, the application/utilisation of study materials, problem-solving, classification, team teaching, cooperative learning, use of models, computer-assisted instruction, active learning, project-based learning, individual learning, and checklist with a score and ranking of 1.00 (1), 0.96 (2), 0.94 (3), 0.93 (4), 0.90 (5), 0.89 (6), and low awareness level in mind-map, Socratic method and minimalism with a score and ranking of 0.37 (14), 0.29 (15) and 0.38 (13) was recorded. Summarily, the finding demonstrates that respondents were mindful of modern/innovative teaching methods utilised in biology instruction/teaching. It corresponds with Olumorin (2008), who reported that as soon as an individual is aware of the principles and content policy, the person can sustain the proper approach, which would prompt increased productivity. Additionally, Akubuilo (2004) found that the existing instructional methods for secondary school biology instruction do not bring out the best outcomes in sciences. Also, Achor (2008) and Akubuilo (2004) upheld the utilisation of different instructional methods by teachers/educators and to accommodate the different styles of instruction.

RQ 2

Do biology teachers utilise novel teaching strategies in teaching biology?

Table 2: Utilisation of Novel Teaching Strategies Ranking

Item number	Item	Score	Rank
1	Demonstration	1.62	6
2	Problem Solving	1.82	3
3	Classification	1.60	7
4	Study Resources/Aids	1.86	1
5	Team Teaching	1.53	9
6	Models	1.46	11
7	Cooperative Learning	1.52	10
8	Computer-Assisted Instruction	1.54	8
9	Active Learning	1.70	5
10	Checklist	1.48	12
11	Individual Learning	1.84	2
12	Mind-Map	1.35	13
13	Project-Based Method	1.74	4
14	Minimalism	1.33	14
15	Socratic Method	1.24	15

Table 2 point out that utilisation was high for study resources/aids, problem-solving, demonstration, classification, team teaching, cooperative learning, use of models, computer-assisted instruction, active learning, project-based learning, individual learning, and checklist with a score and ranking of 1.97 (1), 1.82 (3), 1.60 (7), 1.53 (9), 1.62 (6), 1.52 (10), 1.46 (11), 1.70 (5), 1.74 (4), 1.84 (2),1.54 (8), and 1.48 (12);. In contrast, the level of utilisation was low for socratic method, mind-map, and minimalism method with score and ranking of 1.35 (13), 1.33 (14) and 1.24 (15) respectively. The implication here is that respondents were more disposed to utilising novel instructional strategies/metods as presented in the ranking. The result contradict those of Ogbeba (2009), that reported that most science teachers in Nigeria make use of the lecture strategy to deal science instruction challenges.

Conclusions

The study discovered that awareness and utilization level of biology teachers/tutors was good and they engaged multiplicity of novel/modern teaching methods to improve their teaching to make learning more interesting, challenging, and improve learners' ability to apply school knowledge to real-world problems.

Recommendations

- Schools should make the most up-to-date teaching materials available since this will encourage instructors to use cutting-edge strategies that pique students' interest and lead to improved academic accomplishment.
- The school authorities should hold regular refresher courses in which various experts and resource persons are invited to update instructors on new teaching practices that can improve students' academic progress.

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