



Assessment on utilization of instructional strategies for Physics teaching among government secondary school Teachers in Oyo state

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Abstract

The study examined the assessment on utilization of instructional strategies for Physics teaching among government secondary school Teachers in Oyo state. A descriptive survey research design was adopted. The population of the study consists of all government senior secondary school physics teachers in Oyo state during the 2021/2022 academic session. 343 (Male 189: Female 154) physics teachers makes up the sample size of the study. The sample size was arrived at by using a descriptive design. A researcher-designed questionnaire titled “Methods Used for Teaching Senior School Physics Questionnaire (MUTSSPQ)”. was used, the reliability coefficient of the instrument 0.67 was obtained. Data were analysed using mean and rank order to answer research question while t-test and Analysis of Variance (ANOVA) were employed to test the hypothesis at significance level of 0.05. Findings revealed that discussion method, demonstration method, assignment method, Physical laboratory method, simulation method and cooperative method were always used while analogies and Anecdotes, science at home, guided discovery problems, competitive method, dramatization method, brainstorming, Socratic Method, lecture method, think-pair-share and peer method were sometimes used. It was concluded that the methods used by senior school Physics teachers regardless of gender and educational qualifications are similar. It was recommended that encouragement of the utilization of appropriate and inductive teaching methods is paramount for the effective teaching of physics at the senior secondary education level.

Keyword: teaching method; physics teacher; senior school

Introduction

Physics instruction involves more than just putting formulas on a whiteboard. By creating a learning environment where students may explore and comprehend how the physical world functions and connect challenging scientific topics to their everyday lives, it entails assisting students in developing new perspectives on the world (Vosniadou, 2019). The senior school physics curriculum is designed to equip students with the knowledge and competencies required to address challenges and make informed decisions in their daily lives. To thrive in a rapidly advancing scientific and technological society, students must possess knowledge, problem-solving acumen, creative thinking, and critical reasoning (Haruna & Hassan, 2017). Consequently, preparing students for the demands of everyday existence becomes paramount. However, Physics education has not always been carried out effectively, particularly in developing nations like Nigeria (Rosli & Phang, 2021). Many students in underdeveloped nations attempt to memorize solely mathematical formulas instead of developing the requisite conceptual knowledge while solving Physics issues, which leads to a woefully inadequate learning outcome in Physics (Bansal & Ramnarain, 2023). As a result, researchers such as (Ali, 2023; Gudyanga & Jita, 2019) have linked students' poor learning outcomes in Physics to the teaching method used by Physics teachers, (Asyari et al., 2022). According to these studies, some Physics teachers begin problem-solving exercises by writing formulae and manipulating mathematical equations to arrive at the solution without providing interpretation and explanations of Physics. Teachers emphasize active student participation in order to develop students' understanding during Physics problem-solving activities in a well-organized classroom instructional setting (Samormob & Phusawisot, 2020). Physics teachers have a challenging task since teaching Physics involves a lot of foundational tasks and the use of numerous instructional methods. The delivery of materials from the teacher to the students is known as a teaching method. It is a comprehensive design with methodical steps that incorporate a particular delivery method for the training (Goga & Şerban, 2018). When teaching Physics, teachers employ a variety of methods such as Inquiry Method



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(Acar & Tuncdogan, 2019), The Laboratory Method (Cevikbas et al., 2023), Simulation Method (Jones & Barrett, 2017), Discussion Method (Rajaguru & Park, 2021), Lecture Method, (Nordmann et al., 2021), Dramatization Method (Kauts (2021; Uguma & Obiekezie 2018) and Role Play Method (Goga & Şerban, 2018) just to mention a few, depending on the subject and the needs of the students, a variety of methods of instruction might be used. Each method has its strengths and weaknesses, and the effectiveness of each method depends on various factors such as the students' prior knowledge, the teacher's expertise, and the availability of resources. Different attitudes and cognitive styles that the students have in response to the subject being covered are the cause of the different teaching methods (Nja et al., 2019). According to Collet and Nakawa, (2022), there is a strong correlation between teaching methods, student personalities, and learning preferences. Therefore, Cervin-Ellqvist et al., (2020) explains that ineffective learning will occur if the teaching methods is not in line with the students' abilities and learning pace. A teaching method serves as a conduit for conveying instructional content from educators to learners. In the context of physics education, it becomes crucial for physics instructors to possess a profound understanding of effective methodologies to impart knowledge to their students. The significance of teaching methods is underscored by the insights provided by Edward and Approach is a comprehensive strategy with a systematic approach to delivering the materials' contents. Students who are studying physics benefit from engaging instruction that encourages critical thinking. Students that participate actively during the Physics instructional process as a result of the use of proper teaching strategies are better equipped to understand physics concepts. When teaching physics, teachers employ a variety of methods to effectively captivate students within the classroom environment and cultivate their critical thinking abilities (Haruna & Gurjiya 2022), educators have at their disposal an array of instructional approaches (Asysyifa et al., (2019). The choice of teaching methods is contingent upon the specific concept to be conveyed and the students' individual interests. Numerous methodologies have proven to be efficacious tools for enriching students' grasp of physics. Araujo and Matos (2017); Hussain et al., (2011), in their studies analysed two specific teaching approaches in teaching physics. Uwizeyimana et al., (2018) conducted a study across five secondary schools in the Rusizi District of Rwanda, focusing on exploring the impact of teaching approaches on effective physics learning. Chinyere and Ifeanchio (2013) sampling, a cohort of 190 physics and mathematics students from the first-year class in two coeducational senior high schools. Murphy et al., (2022) categories four distinct preferred teaching methods. According to research, instructors' thoughts and judgments on their teaching method competences and skills are influenced by their gender (Eichler et al., 2023). Studies conducted by (Aziz & Butt, 2022; Enang 2022; Murphy et al., 2022) on influence of teachers' gender on their chosen teaching methods did not reveal any significant gender disparities. Alnahdi and Schwab, (2023); Öz, (2022) in their studies submitted that Female teachers evidently outperformed male teachers in practices and attitudes. While studies conducted by Amedu (2015) reported that male teachers outperformed their female teachers.

In a study conducted by Koirala et al., (2020) shows that higher qualification teachers, as well as trained teachers, have more techniques and skills of teaching, using methods, materials, evaluation scheme, feedback and other extra activities than the lower qualification and untrained teachers. The educational qualification of secondary school teachers does not affect their teaching competency (Ahmad & Khan, 2016). In another study of Pratibha (2017) opined that teachers' educational qualification and sex did not affect the overall teaching competency of teachers whereas teachers' educational qualification and sex had a significant influence on some aspects of teaching competency. It is against this background that it is important to examine the assessment on utilization of instructional strategies for Physics teaching among government secondary school Teachers and its influence on the moderating variables (gender, qualification and experience).

The methods and processes involved in imparting and acquiring knowledge of physics have generated significant debate among stakeholders. Many teachers, though, are ill-equipped to experiment with teaching physics in ways other than the conventional ones. Additionally, there have been several complaints that using a single method to teach various physics concepts prevents students from developing the necessary problem-solving skills in the classroom. As a result, students have been seen having difficulty understanding physics concepts, which gives rise to 'poor academic performance in physics and has been largely attributed to the methods used in physics classroom instructional delivery. Few studies have examined different teaching strategies such as the traditional teacher-centered method (Uwizeyimana et al., 2018), peer instruction and modelling instruction (Araujo & Matos, 2017) Scientific scientific inquiry vs. traditional lecture (Hussain et al., 2011). However, none of the aforementioned studies used a large population, were conducted in Oyo State, or took cognizance of the interventions of gender, teaching qualifications, or experience. Hence, it is worthwhile to assess the utilization of instructional strategies for physics teaching among government secondary school teachers in Oyo State, looking at such intervening variables as gender, teaching qualification, and experience.



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Objectives of the study:

1. Investigate the most common choice of instructional strategy among physics teachers in oyo state.
2. Assess the extent at which choice of instructional strategy have effect on male and female physics teachers in oyo state.
3. Examine the extent at which choice of instructional strategy have effect on teachers' qualification in oyo state.
4. Determine the extent at which choice of instructional strategy have effect on teachers' experience in oyo state.

Research Questions:

1. Which is the most common choice of instructional strategy among physics teachers in oyo state?
2. To what extent does choice of instructional strategy have effect on male and female physics teachers in oyo state?
3. To what extent does choice of instructional strategy have effect on teachers' qualification in oyo state?
4. To what extent does choice of instructional strategy have effect on teachers' experience in oyo state?

Hypotheses:

1. There is no significant difference between choice of instructional strategy on male and female physics teachers in oyo state.
2. There is no significant difference between choice of instructional strategy on teachers' qualification in oyo state.
3. There is no significant difference between choice of instructional strategy on teachers' experience in oyo state.

Methodology

This study adopted a descriptive survey research design. This aimed at describing the methods that are being used for teaching Physics at the secondary school level. This survey type was appropriate for this study as it enable the researcher to have a direct contact with the sample population that has the characteristics relevant to this work (Haruna, 2010). The use of descriptive design of survey type allowed the researcher to analyze facts and helps the researcher in developing an in-depth understanding of the research problem.

Population of the study consists of all Physics teachers in Senior Secondary schools across Oyo State during the 2021/2022 academic session. The specific focus was on public Physics teachers within the educational zone, Oyo State. 343 (Male189: Female154) physics teachers sampled makes up the sample size of the study. The sample size was arrived at by using purposive sampling technique.

A researcher-designed questionnaire was used for data collection in this study and titled "Methods Used for Teaching Senior School Physics Questionnaire (MUTSSPQ)". The questionnaire was split into sections A, B and C. Section A was used to gather the demographic data of the teachers such as gender, teaching qualification, and experience. Section B contained 25 items structured in a four-response-type of *always, sometimes, rarely and never* was used to gather data on the methods used for teaching senior school Physics. Section C contained glossary of teaching methods, in which the respondent was ask to indicate in the space provided, other teaching methods they used for classroom instructional delivery from the list of methods listed under glossary section.

To ensure the validity of the instrument, the drafted questionnaire was given to three (3) lecturers from the Department of Science Education, Faculty of Education, University of Ilorin, for the content validity of the instrument and the content validity index of 0.75 was obtained. The instrument was administered on 30 Physics teachers outside the proposed sampled population twice within an interval of three weeks using test re-test method, while Pearson's product-moment correlation was used to compare the two sets of scores. Thus, the reliability coefficient of 0.67 was obtained. The permission was sought from the authorities of the selected schools. The research assistants underwent an orientation to familiarize them with the study's objectives and the proper procedure for administering it to the participants. The approach employed for distributing the questionnaire copies in the selected schools was replicated for the collection process upon completion. To uphold ethical standards, the respondents were informed about the study's purpose, and the researchers assured them of the strict confidentiality of their responses. Upon the conclusion of the data collection exercise, genuine expressions of gratitude were conveyed to the authorities of the secondary schools that participated in the study. Top of Form Bottom of Form. The data gathered were subjected to descriptive and inferential analysis using mean and rank order to answer research question one, while t-test and Analysis of Variance (ANOVA) were employed to test the hypotheses at a significance level of 0.05.



Results

Table 1: Provide a Simple Descriptive Title for the Table

S/N	Gender	Frequency	Percentage
	Male	189	55.1
	Female	154	44.9
	Total	343	100.0

(Field Work, 2023)

Table 1 shows that out of 343 Physics teachers sampled for this study, 189 (55.1%) of them were males while 154 (44.9%) were females. Thus, the majority of Physics teachers sampled were males.

Table 2: Distribution of Participants by Qualification

S/N	Qualifications	Frequency	Percentage
	NCE	38	11.1
	BSc.	56	16.3
	BSc. (Ed.)	137	39.9
	M.Sc. / M.Ed.	69	20.1
	Others	43	12.5
	Total	343	100.0

(Field Work, 2023)

Table 2 reveals that 38 (11.1%) of the Physics teachers sampled for this study were NCE holders; 56 (16.3%) were B.Sc. holders; 137 (39.9%) were B.Sc. (Ed.) holders; 69 (20.1%) were M.Sc./ M.Ed. holders while 43 (12.5%) of the participants bagged other certificates. Thus, majority of the Physics teachers sampled for this study were BSc. (Ed.) holders.

Table 3: Distribution of Participants by Years of Teaching Experience

Teaching Experience	Frequency	Percentage
1 – 5years	68	19.8
6 – 10years	215	62.7
More than 10years	60	17.5
Total	343	100.0

(Field Work, 2023)

Table 3 displays that 68 (19.8%) of the Physics teachers sampled were within 1 – 5years of teaching experience; 215 (62.7%) of them had taught for between six and ten years. while 60 (17.5%) of the Physics teachers had spent more than 10years in teaching service. Hence, majority of the Physics teachers sampled had taught for between six and ten years. To respond to the study questions, descriptive statistics of mean and rank were employed. The participants' responses on methods used for teaching Senior School Physics were subjected to item-by-item analysis of mean owing to the four-response format of the questionnaire's questions. Therefore, items whose mean scores closed to 1.0, 2.0, 3.0 and 4.0 were remarked as 'never', 'rarely', 'sometimes' and 'always' used respectively.

Research Question 1

Which is the most common choice of instructional strategy among physics teachers in Oyo state?

Table 4: Descriptive Statistics of Most Common Choice of Instructional Strategy Among Physics Teachers

S/N	Most Common Choice of Instructional Strategy Among Physics Teachers	Mean	Rank	Remark
4	Discussion Method	3.79	1 st	Always Used
9	Demonstrations	3.77	2 nd	Always Used
10	Assignment Method	3.72	3 rd	Always Used
1	Physical Laboratory Method	3.71	4 th	Always Used
3	Simulation Method	3.68	5 th	Always Used



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13	Cooperative Method	3.57	6 th	Always Used
16	Analogies and Anecdotes	3.38	7 th	Sometimes Used
25	Science at home	3.27	8 th	Sometimes Used
24	Guided Discovery Problems	3.13	9 th	Sometimes Used
12	Competitive Method	3.04	10 th	Sometimes Used
6	Dramatization Method	2.78	11 th	Sometimes Used
18	Brainstorming	2.65	12 th	Sometimes Used
7	Socratic Method	2.61	13 th	Sometimes Used
5	Lecture Method	2.59	14 th	Sometimes Used
14	Think-Pair-Share Method	2.57	15 th	Sometimes Used
19	peer teaching	2.52	16 th	Sometimes Used
20	Computation thinking method	2.34	17 th	Rarely Used
15	Story-Telling	2.21	18 th	Rarely Used
8	Field Trip/Excursion Method	2.06	19 th	Rarely Used
22	Science Quiz	1.79	20 th	Rarely Used
11	Resource Persons Method	1.43	21 th	Never Used
23	Fishbone	1.39	22 nd	Never Used
21	Reward discovery	1.37	23 rd	Never Used
2	Virtual Laboratory Method	1.31	24 th	Never Used
17	ICT Enabled Learning	1.28	25 th	Never Used

As revealed in Table 4, items ranked 1st, 2nd, up to 6th were always used for teaching Senior School Physics. This implies that discussion method, demonstration method, assignment method, Physical laboratory method, simulation method and cooperative method were *always* used for teaching Senior School Physics in Oyo State, Nigeria.

Also, items ranked 7th to 16th were *sometimes* used for teaching Senior School Physics. Thus, analogies and Anecdotes, science at home, guided discovery problems, competitive method, dramatization method, brainstorming, Socratic Method, lecture method, think-pair-share and peer methods were sometimes used for teaching Senior School Physics in Oyo State, Nigeria.

However, items ranked 17th to 20th and 21st to 25th were *rarely* and *never* used respectively for teaching Senior School Physics. Hence, computation thinking method, story-telling, field trip/excursion method and science quiz were *rarely* used while resource persons method, fishbone, reward discovery, virtual laboratory method and ICT Enabled Learning were *never* used for teaching Senior School Physics in Oyo State, Nigeria

Hypothesis 1

There is no significant difference between choice of instructional strategy on male and female physics teachers in oyo state.

Table 5: t-test Statistics Showing the Difference in the Choice of Instructional Strategy on Male and Female Physics Teachers

Gender	No	Mean	S. D.	Df	t-value	Sig	Remark
Male	154	69.103	5.172	341	0.584	0.560	NS
Female	189	68.624	5.245				

*Insignificance at $p > 0.05$

Table 5 shows that the t-value 0.584 was attained with a p-value of 0.560 when computed at 0.05 alpha level. As a result of the p-value of 0.560 being higher than 0.05 alpha level, the null hypothesis one is retained. Therefore, no statistically significant difference existed in the methods used for teaching Senior School Physics based on gender.

Give a brief description of the statistics in Table 2 and show whether the analysis really tested the null hypothesis 1 or not. Explain whether the hypothesis should be rejected or retained.

Hypothesis 2

There is no significant difference between choice of instructional strategy on teachers' qualification in Oyo state.

Table 6: ANOVA Summary of the difference in the choice of instructional strategy for teaching Physics based on teaching qualifications



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	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	511.347	4	127.837	2.271	.061
Within Groups	19026.834	338	56.292		
Total	19538.181	342			

Table 6 shows that the F -value of 2.271 with a p -value of 0.061 was obtained when computed at 0.05 alpha level. The null hypothesis two is preserved while the p -value of 0.061 has a significance level above 0.05. This suggests that there aren't any statistically significant differences between the methods used for teaching Senior School Physics and teaching qualifications.

Hypothesis 2

There is no significant difference between choice of instructional strategy on teachers' experience in Oyo state.

Table 7a: ANOVA Summary of the difference in the choice of instructional strategy for teaching Physics based on teachers experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	379.754	2	189.877	3.370	.036
Within Groups	19158.427	340	56.348		
Total	19538.181	342			

As revealed in Table 7a, the F -value of 3.370 with a p -value of 0.036 was obtained when computed at 0.05 alpha level. Given that the p -value of 0.036 is below 0.05 alpha level, the null hypothesis three is not retained. Consequently, this suggests that there was a statistically significant difference in the methods used for teaching Senior School Physics based on teaching experience ($F_{(2, 342)} = 3.370, p < 0.05$). After establishing a substantial difference between the means, which was shown in Table 7a, additional testing was done on the different combinations of means to determine the source of the discrepancy. The test was run at 0.05 alpha levels using Duncan's Post Hoc method. A statistical method called the Post Hoc is utilized to identify which of the many groups genuinely contributes to the difference. As shown in Table 7b, the difference seen in Table 7a was primarily caused by teachers with less than six to ten years of experience, who had the highest mean score (70.60), followed by those with experience of more than ten years (69.63), and those with less than one to five years of experience (68.06). As a result, teachers with 6 to 10 years of experience usually employ a variety of methods as opposed to those with more than 10 years and 1 to 5 years of experience.

Table 7b: Duncan's Post Hoc Pair-wise Comparisons of the Difference in the Choice of Instructional Strategy for Teaching Physics based on Teachers Experience

Teaching Experience	N	Subset for alpha = 0.05	
		1	2
1 - 5years	68	68.0605	
More than 10years	60		69.6333
6 - 10years	215		70.6029
Sig.		.177	.405

Means for groups in symmetrical subsets are shown.

4. Sample size using the harmonic mean is 83.278.

5. The size of the groups varies. The group sizes' harmonic mean is employed. Type I error rates are not assured.

Discussion of Findings

Findings from this study revealed that discussion method, demonstration method, assignment method, Physical laboratory method, simulation method and cooperative method were *always* used for teaching Senior School Physics in Oyo State, Nigeria while analogies and Anecdotes, science at home, guided discovery problems, competitive method, dramatization method, brainstorming, Socratic Method, lecture method, think-pair-share and peer methods were *sometimes* used for teaching



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Senior School Physics in Oyo State, Nigeria. Since there is more to teaching physics than just putting formulas on a chalkboard, it entails applying variety of modern teaching methods that are prone to craft a setting for learning where students can investigate and comprehend how the physical world functions and aiding in the development of new perspectives among students. The paradigm of teaching physics has changed from a passive to an active production and interpretation of events. In order to create effective learning programs, teachers must learn to value the concepts that students bring to the classroom and comprehend the mechanisms through which conceptual change takes place. This conclusion is consistent with that of Tong et al., (2022), who found that students taught physics using the inductive method by their teachers demonstrated superior skills than those who were taught using the deductive method. On contrary, Tufail and Mahmood (2020) assert that secondary school science teachers prefer lecture and discussion methods for science teaching and are less interested in using the inquiry method and science project-based learning in their classrooms.

However, computation thinking method, story-telling, field trip/excursion method and science quiz were *rarely* used while resource persons method, fishbone, reward discovery, virtual laboratory method and ICT Enabled Learning were *never* used for teaching Senior School Physics in Oyo State, Nigeria. This finding corroborates Yuanyuan (2022) who revealed that teachers found it difficult to integrate suitable teaching methods in delivering their lessons. All the recommended teaching methods in Physics aim at a succession of well-structured experiences, ensuring that learning occurs as an activity while the student's mind is actively engaged. Methods like experimenting, inquiry, and conversation are typical of these. To ensure that learning occurs in the learners, physics teachers must adequately plan their lessons and provide excellent guidance. In the same vein, the outcomes of this study substantiate Huang (2022) as well as Blazar and Kraft (2016) whose study showed that there are a number of hindrances affecting teachers' integration of multiple teaching methods required for effectiveness of classroom instructional practices.

Also, findings obtained from this study revealed that no statistically significant difference existed in the methods used for teaching Senior School Physics based on gender. This indicates that male and female teachers used similar methods for teaching Senior School Physics. Gender is variable that plays an important role in teaching and learning. It alludes to the advantages and societal characteristics that are associated with gender. Distinct men and women in various countries are given distinct roles, attributes, and behaviors that are socially and culturally formed. This finding negates Hwang and Fitzpatrick (2021) whose study submitted that female teachers use integrated different teaching method in teaching than their males counterpart. This result is in line with Maqsood et al., (2018) whose study indicated that there is a significant difference between male and female teachers' methods of classroom management.

Given the influence of gender on teachers' usage of varieties of teaching methods, male teachers' methods appear to be less intrusive than those of female ones. Studies comparing the method of instruction, competencies and skills of instructors who are compared according to their genders provide a variety of outcomes in the literature. According to certain research, instructors' attitudes and impressions of their methods of instruction abilities and competences are influenced by their gender. This agrees with Shakir and Adeeb (2014) whose study provide evidence that the methods, abilities, and competences used by male and female teachers do not differ significantly. Previous studies have compassed the effectiveness of male instructors' lessons compared to those of female ones.

In addition, findings of this study showed that based on the teachers' qualifications, there were no statistically significant differences in the methods taken to teach senior school physics. This implies that Physics teachers regardless of their educational qualifications adopt comparable teaching methods in classroom instructional delivery in Oyo State, Nigeria. Enhancing the qualifications of Physics teachers through training has remained a focal point within global education systems. This emphasis is rooted in the perceived significance of robust training, as championed by Robinson, in shaping teacher performance. Undoubtedly, the effectiveness of teachers is intricately linked to the advancement of educational objectives that align with broader societal aspirations and challenges. Indeed, the outcomes of this study diverge from those of Hafeez (2021), who assessed the work performance of trained and untrained teachers and found that trained teachers exhibited superior performance. In contrast, Mueller's study (2022), which delved into the comparative efficacy of trained and untrained teachers, revealed no discernible variance in performance.

Furthermore, the findings of this study unveiled a noteworthy statistical discrepancy in the methods employed for teaching Senior School Physics, contingent upon the teachers' teaching experience. Therefore, teachers who were within 6 – 10years of experience always make use of a number of methods than those who had spent more than 10years and 1- 5years. The profile of teachers' experience has been attributed to their familiarities with skills or fields of knowledge acquired over years of actual classroom teaching practice which presumably resulted in superior understanding or mastery of the subject content and methods of instructional delivery. Hence, experience is knowledge or proficiency acquired by participation in or



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exposure to an event, issue, or topic to teaching given the years spent in teaching service. This study's findings substantiate studies such as Adedayo and Owolabi (2021) and Yasin (2021) all which submitted that use of various approaches for imparting instruction in their topic is influenced by their educational background and teaching experience.

Conclusion

It was concluded that the teaching methods always used by senior school Physics teachers are discussion method, demonstration method, assignment method, Physical laboratory method, simulation method and cooperative method. It also concluded that the methods used by senior school Physics teachers regardless of gender and educational qualifications are similar. However, discrepancy existed in the methods used by teachers due to their teaching experience. As a result, Physics teachers' profile of experience has been helpful in assisting them to familiarize with and integrate more methods into teaching given the skills or fields of knowledge acquired over years of classroom teaching practice which presumably resulted in superior understanding or mastery of the subject content and methods of instructional delivery.

Recommendations

Based on the findings of this study, the following recommendations are proffered;

1. Encouragement of the utilization of appropriate and inductive teaching methods is paramount for the effective teaching of physics at the senior secondary education level.
2. Physics educators should consistently strive to incorporate a diverse range of teaching methods. These varied methodologies will foster a comprehensive understanding of Physics among students.
3. Eradicating gender disparities within the teaching profession is imperative. The promotion of gender equality among teachers is crucial for integrating contemporary teaching methods into the physics curriculum effectively.
4. The Ministry of Education should bolster policies that ensure a balanced distribution of experienced teachers and discourage the clustering of novice teachers in high-demand schools. This measure aims to prevent students from facing a revolving door of less experienced teachers, who, on average, might be less effective compared to their more seasoned counterparts.
5. Organizing conferences, workshops, and seminars for in-service Physics teachers, regardless of their qualifications or experience, is essential to enhance their knowledge and skills in implementing diverse teaching methods. This initiative will contribute to elevated quality in teaching and learning the subject at the senior school level.

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