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SENIOR SECONDARY SCHOOL PHYSICS STUDENTS' RATING OF THEIR TEACHERS' EFFECTIVENESS IN ILORIN METROPOLIS, KWARA STATE.

G. I. ADENIYI & A. O. AKANBI

Abstract

This study investigated the senior secondary school physics students' rating of their teachers' effectiveness in Ilorin Metropolis Kwara State. The research was a descriptive of the survey type. The sample for the study is three hundred (300) SS2 physics students with 188 male and 122 female students. Purposive sampling technique was used as well as researcher's designed rating scale entitled "Physics Teachers' Effectiveness Rating Scale" (PTERS) to elicit response from the students. Three research questions and two research hypotheses were formulated to guide the study. Frequency count and percentages were used to answer research question one. Pearson Product Moment Correlation Statistics was used to test hypothesis one while t-test analysis was used to test hypothesis two. The result of the findings showed that the students rated their physics teachers to be ineffective. It also indicated that there was a positive but weak correlation between physics teachers' effectiveness and their students' performance in physics with correlation coefficient ($r = 0.12$). This means, there is no significant correlation between physics teachers' effectiveness and the students' performance in physics. The findings equally showed that there was no significant difference in the rating of physics teachers' effectiveness by male and female students ($t_{cal} = 0.08 > 0.05$). It was concluded that physics teachers' effectiveness is capable of affecting students' performance in physics. Based on these findings, it was recommended that Physics teachers should give adequate examples during lessons and be punctual to in classes. They should give extra lessons to students aside school hours, make use of other teaching material apart from physics textbooks and should endeavour to relate physics concepts to real life situations.

Keywords: Teachers' effectiveness, Physics students rating, Physics teachers, Ilorin metropolis

INTRODUCTION

Physics is one of the pure science subjects that deal with those fundamental questions on the structure of matter and the interactions of the basic constituents of nature. Ezebuio (2004) defines Physics as the study of matter in relation to energy. Physics provides the theory behind technology and it is the foundation of fields of theoretical and applied knowledge. Physics education is aimed at training students to acquire proper understanding of the basic principles of science, as well as its application (Omosewo, 2012). It is also aimed at developing in students the appropriate scientific skills and attitudes as a pre-requisite for future scientific activities (Gambari, 2010).

Physics is considered as the most challenging and difficult area within the field of science, and attracts fewer students than Chemistry and Biology (Daramola, 1985). Physics is perceived as a difficult subject for students in secondary schools and it has been determined that the goals of science and technology are never fully realised because applications of physics concepts are needed in these fields (Omosewo, 2009). Students do not like science lesson and most have no preference for science, particularly physics (Boylan, 1996; Mattern and Schau, 2002; Rivard and Straw, 2000). Based on this, many researchers have attempted to find out the causes of students' poor performance in science subjects including Physics. Problems identified include:

- i. poor instructional strategies (Olorukooba, 2007);
- ii. Abstract nature of science concepts (Nsofor, 2006; and Shehu, 2006);
- iii. Lack of qualified teachers (Biodun, 2004);
- iv. Poor infrastructure and inadequate laboratory facilities (Oyekan, 2011);
- v. Teacher-centred instruction (Bajah, 2000);
- vi. None-availability and utilization of instructional materials (Gambari, 2010) and
- vii. Students' attitude to science (Olushola and Rotimi, 2012).

In the study conducted by Oludipe (2004), it was observed that both male and female students were positively disposed to physics, but that male students performed better than female students in physics. Abdul-Raheem (2012) showed that male students performed better than female in West African Examinations Council (WAEC) result for 2003-2008 in South-West, Nigeria. Bolaji (2012) also reported that male students performed better than female students in Electricity Concepts' Test (ECT). Therefore, helping students to develop interest towards physics should be considered an important measure in science education which is mainly the work of the teacher.

Teachers are role models for students because they act like a channel through which knowledge is passed unto the students. It is, therefore, necessary for teachers to show good qualities because first impression matters much to these students. It is unfortunate that many physics teachers do not realise that the way they handle the teaching of physics as a subject, the way they behave and interact with the physics students could produce major effect on the students' performance (Kuoye, 2010). Teaching is one of the most challenging jobs. It requires broad knowledge of the subject matter, the curriculum and the pedagogical innovations; enthusiasm, a caring attitude and a love for learning; classroom management techniques and a desire to make a difference in the life of young people (Rosenthal, 2002). Abdullahi (1991) and Ibitoye (1998) have tried to determine what effective teaching is, what methods and dispositions a teacher must possess to be effective. They had revealed that the best place to locate the answer to the question of effective teaching is to ask students who are being taught.

Kuoye (2010) noted that the amount of learning that occurs is as a result of good teaching. Therefore, those who learned more give their teachers higher ratings. Abifarin (1999), defined teachers effectiveness as the ability to cover a set goal which is measured by the teachers' education, commitment, attitudes, experience and behaviour in teaching while Ibitoye (1998) and Abdullahi (1991) stated that teachers' effectiveness is the ability to combine skillfully in a given situation the right teachers' behaviour and instructional activities towards student's academic progress or achievement. In the study conducted by Aghurwhe (2013) on the effects of teachers' effectiveness on students' academic performance in public secondary schools in Delta State, Nigeria. The results showed that effective teachers produced better performing students.

According to Bassey (2012), students' rating of former teachers' characteristics and their academic performance showed that students' academic performance in Social Studies summative evaluation differed significantly on the basis of their rating of teachers' instructional practices and interpersonal relationship respectively. Therefore, teachers' effectiveness in a subject may be a major determinant of students' performance in the subject. Ineffective teaching in secondary schools physics arises probably from the content of the subject, teaching methods, teaching-learning environment and teachers' behaviour. The study of Physics in the world has contributed to the technological advancement and innovation and in spite of its advantages and as one of the most essential subjects required for scientific and technological development (Omosewo, 2009). The secondary school students' rating of effectiveness of their Physics teachers is amazing and as few students now opt for

physics at all levels and their performance in it is not very encouraging. In Nigerian secondary schools, the number of students that enrol for Physics is fewer than other science subjects (Omosewo, 2012).

In addition, Ibitoye (1998) showed that of all educational problems facing most of the developing countries today especially Nigeria, the most pertinent has to do with the active performance of teachers in education. Since the impartation of any educational programme or innovation to the students operate through the teachers. Maximizing the teachers' effectiveness is thus a primary means of educational development and as such, the inadequacy in the supply of effective teachers becomes the core of educational problems.

Abdullahi (1991) investigated the teachers' effectiveness on students' achievement in mathematics using variables of teachers' instructional activities, qualification and experience. The result showed that there was significant difference in teachers' instructional activities and experience. It was suggested that poor achievement of students in Mathematics can be improved if only the qualified and experienced teachers handle Mathematics at senior school level but such teachers need to be adequately provided with relevant instructional facilities.

In another study, scholars such as Kuoye (2010); and Olushola and Rotimi (2012) noted that the reason for poor performance of students in Physics can be traced to ineffective teaching that could be as a result of the methods used in teaching, the subject itself, inadequate classroom management skills and facilities in teaching Physics. Thus, adequate teachers' preparation and planned classroom management techniques may help to achieve a better performance of students in Physics and hence, increase the effectiveness of the teacher.

Statement of the Problem

Most of the studies reviewed investigated the teachers' effectiveness on students' achievement in different subjects such as Mathematics and Social Science subjects. Therefore, it is equally important to verify whether teachers' effectiveness will affect students' performance in Physics too and this is the gap this study is out to fill.

Research Questions

The following questions were answered in this study:

1. What is senior secondary school physics students rating of their teachers' effectiveness?
2. Is there any correlation between senior school students' rating of their teachers' effectiveness and their performance in Physics?
3. Is there any difference in the rating of Physics teachers' effectiveness by male and female students?

Research Hypotheses

The following research hypotheses were formulated and tested in this study:

- H₀₁:** There is no significant correlation between senior school students' rating of their teachers' effectiveness and their performance in Physics.
- H₀₂:** There is no significant difference in the senior school students' rating of their Physics teachers' effectiveness by male and female students.

Methodology

This is a descriptive research of the survey type. All senior secondary school students in

Ilorin formed the population of this study and a total of three hundred (300) Physics students in both public and private schools in Ilorin were selected for the study with 122 female and 188 male students. Purposive sampling technique was used to select the schools and students that participated in the study, as only teachers who have been teaching the same students from SS1 to SS2 were considered in this sample. The research instrument for this study was a researcher designed rating scale entitled "Physics Teachers' Effectiveness Rating Scale" (PTERS) which was adapted from the work of Ibitoye (1998). The instrument has two sections. Section A has to do with bio-data of the respondents while section B consists of 20 structured rating items which sought information on the teachers' effectiveness in the areas of subject mastery, teaching methods, preparation and presentation, punctuality and attendance in the class, interpersonal relation etc. The twenty (20) structured statements was rated with 'fair' being 0-69% and 'Good' being 70% and above. A proforma was used to collect students' scores in Physics. Data collected was used to find out how students rate their physics teachers' effectiveness and the correlation that exist between students' rating of their teachers' effectiveness and students' performance. In establishing the reliability of the research instrument, a pilot study was conducted using 20 physics students of three different schools who did not take part in the study during main field data collection at an interval of three weeks using test - retest method and the scores were analysed using Pearson Product Moment Correlation Statistics. The reliability scores yielded 0.84 which is considered good. Hence, the result demonstrates that the instrument is a reliable measuring instrument and can be used for the research. The researcher visited the selected schools and sought for permission from the school authorities and the physics teachers before administering the rating scale to students. The researcher explained to the respondents where necessary. The completed rating scale was collected and proforma was used to collect their results. The researcher ensured the school principals endorse a copy of the rating scale before leaving the school. Research question one was answered using descriptive statistics of frequency count and percentage as noted in the responses from the students to ensure variability. This was done with the use of Statistical Package for social science (SPSS) version 16.0. Research hypothesis one was tested using Pearson Product Moment Correlation Statistics while research hypothesis two was analyzed using t-test. The hypotheses were tested at 0.05 level of significance.

Results

Demographic Analysis of the Respondents

The demographic data collected include name of schools and gender. The demographic characteristics of the students completing the research instrument (rating scale) are shown in table 1-2 below:

Table 1: Analysis of Respondents from Schools

S/N	NUMBER OF RESPONDENTS FROM SCHOOLS	FREQ.	%
1	SCHOOL A	21	7.0
2	SCHOOL B	17	5.7
3	SCHOOL C	24	8.0
4	SCHOOL D	60	20.0
5	SCHOOL E	137	45.7
6	SCHOOL F	41	13.6
	TOTAL	300	100

Table 2: Distribution of Respondents Based on Gender

S/N	GENDER	FREQ.	%
1.	Male	188	62.7
2.	Female	122	37.3
Total		300	100

Research Question I: What is senior school physics students rating of their teachers' effectiveness?

Table 3: Analysis and Results on Physics Teachers' Effectiveness

S/N	Rating Items	Fair freq (%)	V. Fair Freq (%)	Good freq (%)	V. Good Freq (%)	Eff %	Remark
1.	My physics teacher gives adequate examples during lesson.	14 (5)	78 (26)	130 (43)	78 (26)	69	IE
2.	My Physics teacher prepares and organizes his/her lesson adequately.	18 (6)	48 (16)	105 (35)	129 (43)	78	E
3.	My physics teacher's approach to teaching gives room for easy understanding of Physics.	24 (8)	64 (21)	115 (38)	97 (32)	70	E
4.	My Physics teacher attends lessons punctually.	110 (37)	44 (15)	97 (32)	49 (16)	48	IE
5.	My Physics teacher gives extra lessons to students after school hour.	119 (40)	51 (17)	97 (32)	33 (11)	43	IE
6.	My Physics teacher promotes a comfortable learning environment.	19 (6)	52 (17)	122 (41)	107 (36)	77	E
7.	My Physics teacher makes use of teaching materials apart from textbooks..	93 (31)	62 (21)	44 (15)	101 (34)	49	IE
8.	My Physics teacher gives enough explanation when responding to Students' questions in class.	17 (6)	52 (17)	124 (41)	107 (36)	77	E
9.	My Physics teacher uses variety of teaching approaches in teaching physics lessons.	15 (5)	61 (20)	105 (35)	119 (40)	75	E
10.	My Physics teacher encourages us to express our opinions during Physics lesson.	32 (16)	72 (24)	86 (29)	110 (37)	66	IE
11.	My Physics teacher encourages me to show interest in Physics lessons.	21 (7)	64 (21)	123 (41)	92 (31)	72	E
12.	My Physics teacher encourages me to participate in class discussion.	16 (5)	48 (16)	120 (40)	116 (39)	79	E
13.	My Physics teacher presents Physics lessons with enthusiasm.	16 (5)	37 (12)	104 (35)	143 (48)	83	E
14.	My Physics teacher encourages me to ask questions during Physics lessons.	34 (11)	69 (23)	80 (27)	117 (39)	66	IE
15.	My Physics teacher makes the class practical and Participatory.	65 (22)	51 (17)	68 (23)	116 (39)	61	IE

Table cont'd

Analysis and Results on Physics Teachers' Effectiveness cont'd

SN	Rating Items	Fair freq (%)	F. Fair Freq (%)	Good Freq (%)	F. Good Freq (%)	Ef f (%)	Remark
16.	My Physics teacher ensures clear presentation/ explanation of Physics concepts in the class.	47 (16)	48 (16)	109 (36)	96 (32)	68	IE
17.	My Physics teacher presents Physics lesson at an appropriate pace and sequence.	40 (13)	50 (17)	104 (35)	106 (35)	70	E
18.	My Physics teacher provides feedback on assignments/tests/ examinations that helped me learn from mistakes.	53 (18)	69 (23)	110 (37)	88 (29)	66	IE
19.	My Physics teacher explains the situations under which topic discussed could be applied.	38 (13)	51 (17)	86 (29)	125 (42)	71	E
20.	My Physics teacher grades my assignments/tests/examination according to prescribed standards by WAEC and NECO.	12 (4)	30 (10)	106 (35)	152 (51)	86	E

The responses of students with respect to how they rated their Physics teachers' effectiveness as contained in 20 items showed that their teachers are ineffective.

Research Question Two

Do senior school students rating of their teachers' effectiveness correlate with their performance in physics?

Research Hypothesis One

H₀₁: There is no significant correlation between senior school students' rating of their teachers' effectiveness and their performance in physics.

Table 4: Analysis and results of correlation between students' scores in physics and effectiveness of their physics teachers.

Items	Score	Grading
Score		.124*
Pearson Correlation	1	
Sig. (2-tailed)		.032
N	300	300
Grading		1
Pearson Correlation	.124*	
Sig. (2-tailed)	.032	
N	300	300

*.Correlation is significant at the 0.05 level (2-tailed).

There is no significant correlation between senior school students' rating of their teachers' effectiveness and their performance in physics. Therefore, from table 4, the Pearson moment correlation was 0.12 which indicated that, there is a positive correlation which is weak (negligible) between students' rating of their teachers' effectiveness and the students' performance in physics. However, based on this, hypothesis one is retained, that is, there is no significant correlation between senior school students' rating of their teachers' effectiveness and their performance in physics.

Research Question Three

Is there any difference in the rating of physics teachers' effectiveness by male and female students?

Research Hypothesis Two

There is no significant difference in the senior school students' rating of their physics teachers' effectiveness by male and female students.

Table 5: Analysis and results of t-test for difference between male and female responses.

Group	N	$\bar{X}$	SD	t-cal value	Df	sig. (2-tailed)
Males	188	51.51	6.70	1.749	289	0.081
Females	112	52.97	7.41			

Significant at 0.05 alpha level (2- tailed).

Table 5 shows the results of t-test comparison of students rating of their Physics teachers' effectiveness by male and female students. The result revealed that there is no significant difference in the senior school students' rating of their Physics teachers' effectiveness by male and female students ($t = 1.749$, $df = 289$, $p > 0.05$). Hence, the null hypothesis two which says that there is no significant difference in the senior school students' rating of their Physics teachers' effectiveness by male and female students is hereby retained.

Discussion of Findings

The result of the findings based on respondents from schools sampled showed that physics teachers are not effective. Out of the twenty (20) rating items, eleven (11) items were rated to be effective with percentage of 55% which in this study is referred to as ineffective rating. The ineffectiveness of physics teachers could be traced to the poor performance of students in physics, which means physics teachers have not been carrying students along with adequate examples during physics lessons, they have been going late or absconding their classes which may reduce topical coverage of the subject. It further showed that physics teachers have not been using adequate teaching materials except textbooks. This might make the subject to look abstract. They have not been making the physics lessons practical and participatory for students to be involved. It therefore means that most physics lessons in the sampled schools is teacher-centred and is affecting the academic performance of physics students. This study is in line with the finding of Agharuwhe (2013) on effects of teachers' effectiveness on students' academic performance in public secondary schools in Delta State, Nigeria which showed that students that performed better are those that rated their teachers to be effective whereas those who performed poorly are those that rated their teachers to be ineffective.

Furthermore, the finding revealed that, there is positive correlation between physics teachers' effectiveness and students' performance in physics. This simply implies that, as teachers improve on their effectiveness, the performance of students would likely improve. Meanwhile, the correlation between teachers' effectiveness and the performance of the students in physics is weak. This may be as a result of the poor performance of students in physics examinations and could also be traced to teachers' ineffectiveness and some other factors on the part of the students such as lack of interest and so on. This finding is in line with those of Akiri and Nkechi (2009); and Ibitoye (1998) on teachers' effectiveness and students' performance. The studies reported that, teachers' effectiveness is a predicting factor on students' achievement. In addition to this, is the study conducted by Kuoye (2010) which showed that lack of interest on the part of students is one of the factors that contribute to poor academic performance of students in physics.

Similarly, this study indicated that, there is no significant difference in the rating of physics teachers' effectiveness between male and female students in the sampled schools. This finding disagrees with Bolaji (2012) that male students performed better than female students in physics but agrees with the finding of Andile and Makgato (2006) on gender and academic performance of college physics students which revealed that there was no statistical significant difference in rating of their teachers by female and male students.

Conclusion

The following conclusions were drawn from this study: Students rated their physics teachers to be ineffective. Physics teachers' effectiveness is capable of affecting students' performance. As physics teachers improve on their effectiveness, the performance of physics students would likely improve. Aside teachers' ineffectiveness, there may be some factors that can make students to perform poorly in physics. No significant difference was noticed in rating of physics teachers' effectiveness by male and female students.

Recommendations

The following recommendations are made based on the findings of this study:

- i. Physics teachers should give adequate examples to students during physics lessons so that the students will understand the concepts in view.
- ii. Physics teachers should be punctual in classes to ensure wider coverage.
- iii. Physics teachers should give extra lessons to students' aside school hours, so that enough time can be devoted to the teaching of physics concepts and the practical aspect.
- iv. Physics teachers should encourage the students to ask questions. This will make the students to participate and arouse their interest in the learning of physics
- v. Teachers should make use of other teaching materials apart from physics textbooks such as real objects, models, demonstration kits and so on
- vi. Physics teachers should endeavour to relate physics concepts to real life situations so as to avoid abstractness of the subject matter.
- vii. Physics teachers should not be gender bias. Equal academic task should be given to both male and female students.

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