Relevance of Field Trips Teaching and Learning Physics In Secondary Schools in Port Harcourt Metropolis Rivers State Nigeria

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Abstract
The study was carried out to investigate relevance of field trips teaching and learning of physics in Port Harcourt metropolis. Four research questions and four hypotheses guided the study. A set of structured questionnaires formed the research instruments. The questionnaires were administered to the students and teachers (respondents) from the target population. For data analysis, the research questions were analyzed using mean and standard deviation, while the hypotheses were tested with z-test statistics. It was found that field trips encourage effective learning, provide experiences and learning, provide practical approach and promote required qualities among the students. It is recommended that field trips be incorporated in the teacher's activities of the senior secondary school curriculum of physics. The students should be guided by the concerned teachers to write a report after each field trip, this in a way will enhance their writing skill and increase their intellectual abilities. Every student have specific qualities, with the help of field trips, it can promote leadership, socialization, unity, self-confidence, discipline and organization qualities among student. Once gender is not a determinant to students' performance in physics, teachers should put more effort on equal distribution of attention to both male and female. Teachers should expose students to practical works through field trips as a method of teaching which will promote and encourage social interaction, active engagement in learning, self-motivation, discovery learning, learning by doing and learning by experience. Frequent supervision of schools should be carried out by the appropriate authority to check whether the curriculum is duly followed to enable students have the required objective. Government should provide sufficient funds and resources to schools to encourage proper arrangement of field trips. The curriculum developers should develop curriculum that mandate the use of field trips teaching in secondary schools across the country.

Introduction

One of the key science subjects studied in the Secondary Schools is Physics. It is a Science about, matter in relation to energy. The curriculum is designed to produce educated individuals, some of whom may not take to the study of physics in their professional pursuits. However, in whatever profession they finally find themselves, it is hoped that the physics education they acquired in Secondary School will be of value to the totality of their education.

The purpose of education is to develop the knowledge, skill or character of students. Thus, education is the process of learning and knowing, which is not restricted to school or textbooks. Education is important for an individual life. It is a major aspect of development of any modern society. The value of education is evident at every stage of education whether at primary, secondary and higher education. Since students are the main beneficially of secondary education therefore, they require not only quality education but also effective and

latest means of learning to have a better knowledge, and have a command on what they are learning so they can apply the knowledge in their future lives also. For this purpose, different sort of activities such as seminars, discussions, presentations, workshops and field trips are essential at this level. Meanwhile, schools lacking the basic equipment could be engaged in industrial visitations through community resources and field trips (NERDC, 2007). The mission of field trip is to enhance learning and academic success by providing activities and programs for the students by allowing community resource persons to share their skills, knowledge and expertise. Field trips give learners opportunity to be active learners instead of passive or mere recipients of knowledge which have been the major hindrance to effective learning and teaching (Yusuf, 2006).

Wikipedia the free reference book depicts that a field trip or excursion is a voyage by a gathering of individuals to a place far from their typical condition. The reason for existing being to give understudies understanding outside their regular exercises and to permit them have true encounters. As per Youth learn activity "field trips are an awesome method to convey energy enterprise to learning".

Golden D. Walker portrays that with the accessibility of learning materials on the web, a few educators and understudies may address why field trips are required any longer. Field treks can be troublesome and hard to compose and administer, yet they do give learning openings that can't be knowledgeable about the classroom. They are an extraordinary method to convey troublesome data. Through field trips the vast majority of the ideas and marvels might be effortlessly arranged, comprehended and acclimatized and with the assistance of this, great arrangement of vitality and time of both the educators and understudies can be spared.

Field trips are additionally useful for the educators to characterize, build up, related and organize precise ideas, translations and thanks and empower him to make adapting more concrete, compelling, fascinating, helpful, important and substantial (Aggarwal, 2003).

Field trips is a journey to places outside the classroom to make important perception and getting some particular data (Ajewole, 2007). Field trips is a method for stretching out the classroom lessons to different parts of the earth by removing understudies from the classroom to learn in any excursion site (Achimugu, 2006).

From every one of the definitions, take note of that field trips give the understudies the chance of getting science process abilities, for example, perception, control, distinguishing proof, characterization, estimation, recording, imparting, expectation, understanding, examination, speculation and reaching determination which are imperative for science inquire about.
Since field trips strategy for instructing is utilized to gather direct data over the span of examination, this will empower both the educators and understudies to make important and beneficial learning both on field and in schools.

Field excursions can be utilized as an opportunity to gather information for later investigation to produce fine art and animate discourses both on location and back at schools in classes and workshops (Omosewo, 2009).

Field trips are an interactive method of teaching which give both male and female students equal opportunity to widen their practical and cultural experience by varying their learning environments. Thus, no evidence of superiority is expected to be noticed in the academic

performance based on gender, if both males and females are exposed to learning experiences equally (Amosa, 2013).

Field trips when appropriately utilized in teaching and learning of physics makes leaning more concrete, real, immediate and permanent (Achinmugu, 2006). However, to achieve maximum benefit from this teaching method, it is very important for the teacher to ensure proper planning and implementation.

Statement of the Problem

In most of our Secondary Schools, both students and teachers of sciences in particular physics complain of difficulties in getting on with the subjects, mostly those topics involving practical or hands-on activity. Students claim that the subject or probably the topic is very vast and often they do not cover much before they write their examinations. Surprisingly, students' academic performance in science particularly in the physics subject is nothing to write home about as seen from previous results. Adebayo (2011) opined that the failure rate of students in physics in the May/June West African Senior Secondary School Certificate Examination (WASSCE) was a reflection of the disconnection between teacher and their pupils, hence the need for a new approach to bridge the gap in classroom learning.

A study which investigated factors that predict performance in Secondary School physics in Ebonyi North, Onah & Ugwu (2010) found that performance in physics at this level depended on gender, teacher qualification and laboratory facilities. Some students claim that they do not have the necessary practical needed for their understanding of the topic or subject. Many still complain that their physics teachers do not know how to handle or teach the subject. Franzer, Okebukola & Jegede, (2005) stressed that a professionally qualified science teacher no matter how well trained would be unable to put his ideas into practice if the school setting lacks the equipment and materials necessary for him or her to translate his competence into reality.

The physics teachers on their own part argue that most of the secondary schools lack necessary laboratory equipment for effectives teaching of the subject or topic. Many students lack interest in the subject. Obioha (2006) observed inadequate laboratory facilities and shortage of physics teachers. Olorukoba (2007), Adebayo (2011), & Omole (2011) also observed inappropriate teaching strategies. Adesoji (2008) says the wide spread poor performance have been attributed to negative attitude towards physics by senior secondary students. All these claims and opinions from the teachers and students need to be addressed, hence, the need for this study.

Purpose of the Study

The main purpose of the study is to state the relevance of field trips teaching and learning of physics in secondary schools in Port Harcourt metropolis. Specifically, the study sought to:

1. Determine if field trips teaching encourage effective learning.
2. Ascertain if field trips provide experiences and learning among students.
3. Determine if field trips provide practical approach for the students.
4. Ascertain if field trips promote required qualities among the students.

Research Questions

The following research questions were drawn up to guide the study:

1. What is the extent which field trips encourage effective learning?
2. To what extent does field trips provide experiences and learning among the students?

3. What is the extent which field trips provide practical approach for the students?
4. To what extent does field trip promote required qualities among students?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significant difference in the mean opinions of the students and teachers about the extent which field trips encourage effective learning.
2. There is no significant difference in the opinions of the students and teachers about the extent which field trips provide experiences and learning among students.
3. There is no significant difference in the opinion of students and teachers about the extent which field trips provide practical approach for the students.
4. There is no significant difference in the opinion of the students and teachers about extent which field trips promote required qualities among students.

Significance of the Study

The students stand to benefit from the result of the study if the relevant resources for the teaching and learning of physics are made available in the schools. The teachers will consider the study useful since it will make them have the idea of field trips in the teaching of the subject. The state government will consider the study useful in that it will give them an idea of the relevance of proper teaching and learning of the subject. Researchers will consider the study useful as a result of the experience that will be derived from it owing to the ideas that will be unfolded. The secondary schools board will consider the study to be of immense benefit as it will serve as a springboard from where other ideas can emanate.

Scope of the Study

The research work is restricted to the perceived relevance of field trips teaching and learning of physics in Secondary Schools in Port Harcourt metropolis; which are encouraging effective learning, providing experiences and learning among students, provision of practical approach for the students and promotion of required qualities among the students.

Theoretical Framework

Papert (1993) an educational psychologist opined that learning should involve the use of visualization techniques. In his developmental theory of learning, he said that any visual delivery system capable of supporting learner interactivity while at the same time facilitating interconnectivity of images and symbols has the potential to become an extremely powerful educational tool because of the symbolic and connotative aspects of semantic learning (Bourne, Dominowski, Loftus & Healy, 1986).

Blair, Jones & Simpson (1975) defined learning as any change in behavior which is as a result of experience, and which causes people to face later situation differently. Learning is a complex phenomenon influenced by academic ability, learning style, learning environment, content, delivery method and attitude towards the course content and the instructional strategy (Billings & Cobb, 1992). The teachers' challenge is in the application of the appropriate learning process to bring about the desired change in the student.

We can learn through any of our five senses, but the three most valuable are vision, hearing and touch (Bransford, Brown & Cocking, 1999).Theorists and practitioners claim that learners have a preference for one learning style over another. Visual learners learn best by watching, while auditory learners learn best by verbal instruction and kinesthetic learners learn best by manipulation. Because of the demands of the profession, teachers often resort to the instructional style that requires the least time and preparation, namely lecture and

discussion. Although these may be valuable approaches to teaching and learning, they fail to take advantage of other modalities and disenfranchise students whose primary modality is visual or kinesthetic (Bransford et al, 1999).

According to the old Confucus' saying in Ajeyalemi (2011:4) I hear and I forget, I see and 1 remember, 1 do and I understand. This implies that when students are exposed to learning by seeing and doing during instruction they understand the learning task faster and apply it in the world of work.

Hooper & Hannafin (1988) recommended a number of empirically design guidelines for emerging interactive technologies. Each guideline is based upon research and theory in learning, instruction or media development. The guidelines are the following:

1. Integrate strategies that facilitate meaningful learning.
2. Relate instructional content to students' prior experience. When students relate new knowledge to existing knowledge and experiences, students' learning is made easier and comprehension of the new material is improved (Jonassen& Grabowski, 1993).
3. Using orienting activities (problems, questions, pre-tests, demonstrations, overviews and behavior objectives) that help prepare learners for instruction by retrieving relevant information from long term memory to be encoded with new information.

One of the goals of education is to produce independent learners capable of managing their own learning environments; learner productivity improves with independence (Stein, 1975).

Demonstration and laboratory experiences have always been considered essentials for the reinforcement and understanding of physics concepts. Visualization of phenomena through such techniques as demonstrations, simulations, models, real-time graphs and video is an important component of learning physics, and these techniques can contribute to students' understanding of physics concepts by attaching mental images to these concepts.

According to Honey & Moeller (1996), laboratory experiences provides students with the important experience of meeting nature as it is rather than in idealized form and with the opportunity to develop their skills in scientific investigation and inquiry. Laboratory experiences that utilize hands-on enquiry have been considered one of the most effective methods for learning science and developing the higher order thinking skills necessary to do science (Hofstein, Navon, Kipnis & Mamlok-Naaman, 2005). They found that students in such courses generally had better attitudes towards learning science and scientists; better higher level intellectual skills such as critical and analytical thinking, problem solving, creativity and process skills, as well as a better understanding of scientific concepts when compared with students in courses that do not utilize hands-on inquiry. They also argued that laboratory experiences that utilize various forms of visualization techniques would provide excellent opportunities for students not only to develop the understanding and reinforcement of physics concepts, but also to develop scientific investigation and inquiry skills at the same time. Incorporating visualization techniques into the laboratory would provide an excellent opportunity for students to become involved in the active process of learning science (Honey & Moeller, 1996).

As an experimental science, physics utilizes the scientific method to formulate and test hypotheses that are based on observation of the natural world. The goal of physics is to use the results of these experiments to formulate scientific laws usually expressed in the language of mathematics, which can then be used to predict other phenomena. Exploratory research has revealed the reason associated with students' attitudes towards physics courses and

methods of teaching (Normah and Salleh, 2006). They have highlighted that they take pleasure in physics course if the students know how to plan and implement the strategies of solution to the questions through teaching methods.

Researchers (Ajayi, 2000; Ajayi 2007) revealed that physics teaching- learning outcome over the years were influenced by some factors, which include poor teaching, lack of learning materials, learners' attitude, government policy, parental background, lack of learners' readiness, poor management style, and lack of adequate qualified teachers. The type of science taught in schools and the depth of physics curriculum covered in secondary schools most often determine the kind of scientists, technologists, engineers and doctors produced in a society (Akpan, 2008). Historically, physics has been taught at the high school and college level primarily by the lecture method together with laboratory exercises aimed at verifying concepts taught in the lectures (Odu, 2010). These concepts are better understood when lectures are accompanied with demonstration, hands-on experiments, and questions that require students to ponder what will happen in an experiment and why. Students who participate in active learning for example with hands-on experiments learn through self-discovery. By trial and error they learn to change their preconceptions about phenomena in physics and discover the underlying concepts. Unfortunately, owing to the abstract and counter-intuitive nature of many of the elementary concepts in physics, together with the fact that teaching through analogies can lead to did ask alogenic confusions, the lecture method often fails to help students overcome the many misconceptions about the physical world that they have developed before undertaking formal instruction in the subject (Morrison, 2006).

Methodology

Area of the Study

Port Harcourt metropolis is located between latitude $4^{0}45^{1}$N and latitude $4^{0}55^{1}$N and longitude $6^{0}55^{1}$E and longitude $7^{0}05^{1}$E in Rivers State. It is a city in Niger Delta region of Nigeria. The city lies at the mouth of Bonny River in Rivers State. It is located at about 25km from the Atlantic Ocean and is situated between the Dockyard Creek/Bonny River and the Amadi Creek. It lies at an average altitude of about 12m above sea level. Port Harcourt metropolis spans over two local government areas (LGAs) i.e. Port Harcourt and Obio/Akpor.

There are schools, companies, banks, markets, clinics, hospitals, churches, sports complex, stadium, hotels and restaurants, relaxation centres and residential areas in its environ. The inhabitants are into different occupations and professions such as teaching, fish farming, trading, banking, administration. Also are engineers, politicians, medical Doctors, drivers, men and women who are engaged in other commercial and business activities.

Design of the Study

The study employed a descriptive survey design. Creswell (2012) describes survey design as a design in which the researcher administers a questionnaire to a sample or to the entire population of people for the purpose of describing attitudes, opinions, behaviors, or characteristics of the population. In the present study, the researcher administered a questionnaire to a sampled of teachers and students to describe their opinions concerning the extent field trip enhance teaching and learning of Physics in secondary schools in Port Harcourt Metropolis. Based on this, the descriptive survey design was considered appropriate.

Population of the Study

The population of this research comprised of 43 physics teachers and 775 physics students of senior secondary two (SS2). This number comprised of physics teachers and students from 35 public senior secondary schools in Port Harcourt and Obio/Akpor Local Government areas that make up Port Harcourt Metropolis. (Source: Rivers State Ministry of Education; Department of planning, research and statistics, 2018).

Sample and Sampling Techniques

The sample for the study was 388 physics students and 43 physics teachers. All the physics teachers were employed for the study due to the manageable size. 50 % of the students were sampled using simple random sampling technique. This amounted to a sample size of 388 physics students.

Research Instrument

The instrument used for this study was a questionnaire titled "Relevance of Field Trip to Teaching and Learning Physics Questionnaire (RFTTLPQ) which was developed by the researcher based on literature review. The instrument has five sections. Section A sought information about the category of respondent (Teacher or student). Section B consisted of 8 items and sought information about the extent field trip enhance effective learning among students. Section C consisted of 8 items and sought information about the extent field trip provide experiences and learning among students. Section D consisted of 8 items and sought information about the extent field trip provide practical approaches for students. Section E consisted of 8 items and sought information about the extent field trip promote required qualities among students. Sections B to E were rated on a four point rating scale of Very High Extent (VHE) with 4 points; High Extent (HE) with 3 points; Low Extent (LE) with 2 points and Very Low Extent (VLE) with 1 points. The respondents were expected to tick on the option that best described their agreement with the questionnaire item (See Appendix 1).

Validation of the Instrument

The research instrument was faced validated by the supervisor and two other experts in the field of study. Corrections and criticisms were made before the instrument was finally administered.

Reliability of the Instrument

The test-retest reliability approach was used to obtain data from at least ten percent of the samples. The result of the tests was processed using the Pearson Product Moment Correlation (PPMC) and a reliability coefficient of 0.85 was obtained, this guaranteed the reliability of the instrument.

Administration of Instrument

The researcher employed the services of three (3) research assistants to administer the instruments to the respondents. A total of 388 copies and 43 copies of instrument were administered to students and teachers respectively. However, 350 copies of total administered to students were retrieved while 35 of the total administered to teachers were retrieved. These were used for data analysis.

Data Analysis Techniques

The research question was analyzed using mean. A criterion mean of 2.50 was used. The hypotheses were tested at 0.05 level of significance using Z-test.

Results

Research Question 1

What is the extent which field trips encourage effective learning?

Table 1: Mean responses on extent fieldtrips encourages effective learning

S/N	Items	Teachers (N = 35)			Students (N = 350)		
		M	S.D	RMK	M	S.D	RMK
1	Provide self-experience and observation to increase knowledge	3.31	0.90	HE	2.87	1.08	HE
2	Promote interaction between students and teachers	2.71	1.10	HE	3.04	1.08	HE
3	Guide to face future challenges and hindrances	2.74	1.09	HE	2.86	1.09	HE
4	Develop more interest in learning among students	3.34	0.84	HE	2.79	1.06	HE
5	Enable students overcome learning difficulties	2.74	1.17	HE	2.59	1.10	HE
6	Provide opportunity to show individualities	2.66	1.16	HE	2.86	1.04	HE
7	Satisfy psychological needs of the students	3.23	0.88	HE	2.77	1.08	HE
8	Give students awareness of professional skills	3.03	1.12	HE	2.76	1.11	HE
	Grand mean	**2.97**	**1.03**	**HE**	**2.82**	**1.08**	**HE**

Field data (HE = High Extent; RMK = Remark)

Table 1 shows the mean responses of teachers and students regarding the extent fieldtrips encourages effective learning. A grand mean of 2.97 for teachers and 2.82 for students indicate that both teachers and students perceive fieldtrip encourages effective learning to a high extent.

Research Question 2

To what extent does field trips provide experiences and learning among the students?

Table 2: Mean responses on extent fieldtrips provide experience and learning

S/N	Items	Teachers (N = 35)			Students (N = 350)		
		M	S.D	RMK	M	S.D	RMK
1	Promote importance of historical places and cultural heritage.	3.03	1.12	HE	2.80	1.09	HE
2	Give awareness to students about facilities available within the society.	2.86	1.14	HE	2.89	1.08	HE

3	Give students opportunity to adopt various techniques of learning.	2.63	1.09	HE	2.89	1.05	HE
4	Help in social training of students	2.89	1.16	HE	2.86	1.06	HE
5	Give opportunity language learning	2.71	1.18	HE	2.96	1.03	HE
6	Expand students world view	2.84	1.14	HE	2.80	1.08	HE
7	Encourage educational targets and prestige	3.46	0.89	HE	2.96	0.99	HE
8	Adapts students to new learning environment.	3.20	0.99	HE	3.08	0.96	HE
	Grand mean	**2.95**	**1.09**	**HE**	**2.91**	**1.04**	**HE**

Field data (HE = High Extent; RMK = Remark)

Table 2 shows the mean responses of teachers and students regarding the extent fieldtrips provide experience and learning. A grand mean of 2.95 for teachers and 2.91 for students indicate that both teachers and students perceive fieldtrip provide experience and learning to a high extent.

Research Question 3

What is the extent which field trips provide practical approach for the students?

Table 3: Mean responses on extent fieldtrips provide practical approach for students

S/N	Items	Teachers (N = 35)			Students (N = 350)		
		M	S.D	RMK	M	S.D	RMK
1	Enable student visit industry and workshops to discuss the impacts to Nigerian economy	3.09	1.07	HE	2.80	1.08	HE
2	Help students show better performance in studies	2.77	1.14	HE	2.74	1.06	HE
3	Enable students prepare a report after field trips thus, influencing students' manner of writing.	2.69	1.02	HE	2.69	1.14	HE
4	Assist students to select specific field of study	2.98	1.21	HE	2.69	1.07	HE
5	Enrich the curriculum	2.74	0.85	HE	2.79	1.11	HE
6	Enable C.V building	2.91	1.15	HE	2.91	1.07	HE
7	Enable students learn about local culture	2.80	1.16	HE	2.84	1.05	HE
8	Enable students have better thinking	2.74	1.12	HE	2.78	1.09	HE
	Grand mean	**2.84**	**1.09**	**HE**	**2.78**	**1.08**	**HE**

Field data (HE = High Extent; RMK = Remark)

Table 3, shows the mean responses of teachers and students regarding the extent fieldtrips provide practical approach for students. A grand mean of 2.84 for teachers and 2.78 for

students indicate that both teachers and students perceive fieldtrip provide practical approach for students to a high extent.

Research Question 4
To what extent do field trips promote required qualities among students?

Table 4: Mean responses on extent fieldtrips promote required quality among students

S/N	Items	Teachers (N = 35)			Students (N = 350)		
		M	S.D	RMK	M	S.D	RMK
1	Promote cooperation and unity among students	2.77	1.11	HE	2.76	1.11	HE
2	Increases self confidence in students	2.71	1.07	HE	2.70	1.12	HE
3	Promote discipline among students	2.26	1.04	LE	2.35	1.14	LE
4	Develop leadership qualities among students	2.34	1.16	LE	2.39	1.03	LE
5	Allows team building	3.20	0.80	HE	2.83	1.05	HE
6	Allow students meet new people and make new friends	3.31	0.83	HE	2.64	1.11	HE
7	Increase students motivation	3.09	0.98	HE	2.85	1.07	HE
8	Enable students build self-esteem	2.77	1.11	HE	2.81	1.06	HE
	Grand mean	**2.81**	**1.01**	**HE**	**2.67**	**1.09**	**HE**

Field data (HE = High Extent; RMK = Remark; LE = Low Extent)

Table 4, shows the mean responses of teachers and students regarding the extent fieldtrips promote required quality among students. A grand mean of 2.81 for teachers and 2.67 for students indicate that both teachers and students perceive fieldtrip promote required quality among students to a high extent.

Testing of Hypotheses
Hypothesis 1: There is no significant difference in the mean opinions of the students and teachers about the extent which field trips encourage effective learning.

Table 5: Z-test on the extent fieldtrips encourages effective learning

Groups	N	M	S.D.	Z-cal	Z-crit	Decision
Teachers	35	2.97	1.03	0.82	1.96	Accepted
Students	350	2.82	1.08			

Field data

Table 5 shows the result of z-test for the extent field trips encourage effective learning. As shown, calculated value of Z (Z-cal) is 0.82. The critical value of Z (Z-crit) is 1.96. Since the calculated value is less than the critical value, the null hypothesis was accepted. This implies that there was no significant difference in the mean opinion of teachers and students regarding the extent field trips encourage effective learning.

Hypothesis 2
There is no significant difference in the opinions of the students and teachers about the extent which field trips provide experience and learning among students.

Table 6: Z-test on the extent fieldtrips provide experience and learning

Groups	N	M	S.D.	Z-cal	Z-crit	Decision
Teachers	35	2.95	1.09	0.21	1.96	Accepted
Students	350	2.91	1.04			

Field data

Table 6 shows the result of z-test for the extent field trips provide experience and learning among students. As shown, calculated value of Z (Z-cal) is 0.21. The critical value of Z (Z-crit) is 1.96. Since the calculated value is less than the critical value, the null hypothesis was accepted. This implies that there was no significant difference in the mean opinion of teachers and students regarding the extent field trips provide experience and learning among students.

Hypothesis 3: There is no significant difference in the opinion of students and teachers about the extent which field trips provide practical approach for the students.

Table 7: Z-test on the extent fieldtrips provide practical approach for students

Groups	N	M	S.D.	Z-cal	Z-crit	Decision
Teachers	35	2.84	1.09	0.31	1.96	Accepted
Students	350	2.78	1.08			

Field data

Table 7 shows the result of z-test for the extent field trips provide practical approach for students. As shown, calculated value of Z (Z-cal) is 0.31. The critical value of Z (Z-crit) is 1.96. Since the calculated value is less than the critical value, the null hypothesis was accepted. This implies that there was no significant difference in the mean opinion of teachers and students regarding the extent field trips provide practical approach for students.

Hypothesis 4: There is no significant difference in the opinion of the students and teachers about extent which field trips promote required qualities among students.

Table 8: Z-test on the extent fieldtrips promote required qualities among students

Groups	N	M	S.D.	Z-cal	Z-crit	Decision
Teachers	35	2.81	1.01	0.78	1.96	Accepted
Students	350	2.67	1.09			

Field data

Table 8 shows the result of z-test for the extent field trips promote required qualities among students. As shown, calculated value of Z (Z-cal) is 0.78. The critical value of Z (Z-crit) is 1.96. Since the calculated value is less than the critical value, the null hypothesis was accepted. This implies that there was no significant difference in the mean opinion of teachers and students regarding the extent field trips promote required qualities among students.

Summary of Findings

1. Field trip encouraged effective learning to a high extent. Teachers and students did not differ in their opinion regarding the extent field trip encouraged effective learning.
2. Field trip provide experience and learning to a high extent. Teachers and students did not differ in their opinion regarding the extent field trip provide experience and learning.
3. Field trip provides practical approach for students to a high extent. Teachers and students did not differ in their opinion regarding the extent field trip provide practical approach for students.
4. Field trip promotes required quality among students to a high extent. Teachers and students did not differ in their opinion regarding the extent field trip promote required quality among students.

Discussion of Findings

Research question one sought to find out the extent field trip encourage effective learning. The finding indicated that field trip provide self-experience and observation to increase knowledge; promote interaction between students and teachers; guide students to face future challenges and hindrance; develop more interest in learning among students; enable students overcome learning difficulties; provide opportunities to show individualities; satisfy psychological needs of the students and gives students awareness of professional skills to a high extent. The test of hypothesis one revealed that there was no significant difference in the mean responses of teachers and students regarding the extent field trip encourages effective learning. This finding agrees with the finding of Estawul, Sababa & Filgona (2016) who carried out a study to investigate the Effect of Fieldtrip Strategy on Senior Secondary School Students' academic achievement in Geography in Numan Educational Zone, Adamawa State, Nigeria. Estawul, Sababa and Filgona found that there was statistically significant difference in the academic achievement of students taught geography using fieldtrip strategy and conventional method.

Research question two sought to find out the extent field trip provide experiences and learning among the students. The finding indicated that field trip promote importance of historical places and cultural heritage; gives awareness to students about facilities available within the society; gives students opportunity to adopt various techniques of learning; help in social training of students; provide opportunity for language learning; expands students world view; encourage educational targets and adapts students to new learning environment to a high extent. The test of hypothesis two revealed that there was no significant difference in the mean responses of teachers and students regarding the extent field trip provide experiences and learning among the students. This finding agrees with the finding of Ogbuluijah (2014) who carried out a study to investigate the effects of Students' Agricultural field trips on their performances in agricultural science in selected secondary schools in Rivers State. Ogbuluijah found that field trip enhanced knowledge on agricultural processing methods, improves farm product utilization and contributes to species improvement and genetics and also students' performance.

Research question three sought to find out the extent which field trips provide practical approach for the students. The finding indicated that field trip enables student visit industry and workshops to discuss the impacts to Nigerian economy; helps students show better performance in studies; enable students prepare a report after field trips thus, influencing students' manner of writing; assist students to select specific field of study; enrich the curriculum; enable C.V building; enable students have better thinking and Enable students

learn about local culture to a high extent. The test of hypothesis three revealed that there was no significant difference in the mean responses of teachers and students regarding the extent field trip provide practical approach for students. This finding agrees with the finding of Agboola & Abe (2017) carried out a study to compare the effects of inquiry-based and field-trip instructional strategies on primary school pupils' performance and retention in and attitude to basic science in Ekiti State, Nigeria. Agboola and Abe found that field trip enhanced pupils' retention and attitude in Basic Science.

Research question four sought to find out the extent which field trips promote required quality among students. The finding indicated that field trip promotes cooperation and unity among students; increases self confidence in students; allows team building; allows students meet new people and make new friends; increases students motivation and enable students build self-esteem to a high extent. However, the teachers and students perceived that field trip promotes discipline among students and develop leadership qualities among students to a low extent. The test of hypothesis four revealed that there was no significant difference in the mean responses of teachers and students regarding the extent field trip promote required quality among students. This finding agrees with the finding of Patrick (2010) carried out a study to determine the effects of field experiences on students' knowledge of process of science and biology achievement. Patrick found that students exposed to field trip performed better than students not exposed field trip.

Conclusion

Based on the findings of the study, it is concluded that field trips teaching and learning of physics in secondary schools has great potentials in enhancing effective teaching and learning of physics in Port Harcourt metropolis. The government of Rivers State should on her part intensify efforts in ensuring that secondary schools within the state embark on field trips. This would undoubtedly promote effective teaching and learning as well as increasing self confidence among students.

Recommendations

The following recommendations are made based on the findings of the study;

1. Field trips be incorporated in the teacher's activities of the senior secondary school curriculum of physics.
2. After each field trip the students should be guided by the concerned teachers to write a report about the trip since it will enhance writing skill as well as increase intellectual abilities.
3. Every student has specific qualities with the help of field trips, it can promote leadership, socialization, unity, self-confidence, discipline and organization qualities among students.
4. Once gender is not a determinant to students' performance in physics, teachers should put more effort on equal distribution of attention to both male and female.
5. Teachers should expose students to practical works through field trips as a method of teaching which will promote and encourage social interaction, active engagement in learning, self-motivation, discovery learning, learning by doing and learning by experience.
6. Frequent supervision of schools should be carried out by the appropriate authority to check whether the curriculum is duly followed to enable students have the required objective.
7. Curriculum developers should develop curriculum that mandate the use of field trips teaching in secondary schools across the country.

8. Government should provide sufficient funds and resources to schools to encourage proper arrangement of field trips.'

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QUESTIONNAIRE ON RELEVANCE OF FIELD TRIPS TEACHING AND LEARNING OF PHYSICS IN SECONDARY SCHOOLS IN PORT HARCOURT METROPOLIS.

INSTRUCTION

PLEASE TICK (√) UNDER THE APPROPRIATE BOX

SECTION A

Status of Respondents

a. Students of senior secondary two (SS 2) ☐

b. physics teachers ☐

c. Sex of respondent: Male ☐ Female ☐

d. Age ☐

e. Qualification ☐

INSTRUCTION FOR COMPLETING SECTION B

For each of the under listed statement tick under the column that best represent your degree of agreement or otherwise based on the four point likert scale as follows:

Very High Extent	(VHE)	4 points
High Extent	(HE)	3 points
Low Extent	(LE)	2 points
Very Low Extent	(VLE)	1 point

SECTION B

Table 1: Shows the responses of students on the extent field trips encourage effective learning?

S/N	Extent field trips encourage effective learning	VHE	HE	LE	VLE
1	Provide self experience and observation to increase knowledge				
2	Promote interaction between students and teachers				
3	Guide to face future challenges and hindrances				
4	Develop more interest in learning among students				
5	Enable students overcome learning difficulties				
6	Provide opportunity to show individualities				
7	Satisfy psychological needs of the students				
8	Give students awareness of professional skills				

Table 2; shows responses of students on how field trips provide experience and learning among the students.

S/N	Experience and learning among students	VHE	HE	LE	VLE
1	Promote importance of historical places and cultural heritage.				
2	Give awareness to students about facilities available within the society.				
3	Give students opportunity to adopt various techniques of learning.				
4	Help in social training of students				
5	Give opportunity language learning				
6	Expand students world view				
7	Encourage educational targets and prestige				
8	Adapts students to new learning environment.				

Table 3; shows responses of students on how field trips provide practical approach

S/N	Provision of practical approach	VHE	HE	LE	VLE
1	Enable student visit industry and workshops to discuss the impacts to Nigerian economy				
2	Help students show better performance in studies				
3	Enable students prepare a report after field trips thus, influencing students' manner of writing.				
4	Assist students to select specific field of study				
5	Enrich the curriculum				
6	Enable C.V building				
7	Enable students learn about local culture				
8	Enable students have better thinking				

Table 4: shows the responses of students on how field trips promote required qualities among students

S/N	Promote required qualities among students	VHE	HE	LE	VLE
1	Promote cooperation and unity among students				
2	Increases self confidence in students				
3	Promote discipline among students				
4	Develop leadership qualities among students				
5	Allows team building				
6	Allow students meet new people and make new friends				
7	Increase students motivation				
8	Enable students build self-esteem				

SECTION B

Table 1: Shows the responses of teachers on the extent field trips encourage effective teaching

S/N	Extent field trips encourage effective learning	VHE	HE	LE	VLE
1	Provide self-experience and observation to increase knowledge				
2	Promote interaction between students and teachers				
3	Guide to face future challenges and hindrances				
4	Develop more interest in learning among students				
5	Enable students overcome learning difficulties				
6	Provide opportunity to show individualities				
7	Satisfy psychological needs of the students				
8	Give students awareness of professional skills				

Table 2; shows the responses of teachers on how field trips provide experience and learning among the students

S/N	Experience and learning among students	VHE	HE	LE	VLE
1	Promote importance of historical places and cultural heritage.				
2	Give awareness to students about facilities available within the society.				
3	Give students opportunity to adopt various techniques of learning.				
4	Help in social training of students				
5	Give opportunity language learning				
6	Expand students world view				
7	Encourage educational targets and prestige				
8	Adapts students to new learning environment.				

Table 3; shows the responses of teachers on how field trips provide practical approach

S/N	Provision of practical approach	VHE	HE	LE	VLE
1	Enable student visit industry and workshops to discuss the impacts to Nigerian economy				
2	Help students show better performance in studies				
3	Enable students prepare a report after field trips thus, influencing students' manner of writing.				
4	Assist students to select specific field of study				
5	Enrich the curriculum				
6	Enable C.V building				
7	Enable students learn about local culture				
8	Enable students have better thinking				

Table 4: shows the responses of teachers on how field trips promote required qualities among students

S/N	Promote required qualities among students	VHE	HE	LE	VLE
1	Promote cooperation and unity among students				
2	Increases self confidence in students				
3	Promote discipline among students				
4	Develop leadership qualities among students				
5	Allows team building				
6	Allow students meet new people and make new friends				
8	Increase students motivation				

Appendix B
Raw Data

Research question 1									
S/N	Items	Teachers (N = 35)				Students (N = 350)			
		VHE	**HE**	**LE**	**VLE**	**VHE**	**HE**	**LE**	**VLE**
1	Item1	20	7	7	1	134	90	74	52
2	Item2	11	9	9	6	166	74	67	43
3	Item3	11	10	8	6	130	96	68	56
4	Item4	19	10	5	1	109	118	65	58
5	Item5	13	7	8	7	92	96	87	75
6	Item6	11	9	7	8	121	108	73	48
7	Item7	16	13	4	2	108	115	64	63
8	Item8	17	7	6	5	118	94	74	64
Research question 2									
S/N	Items	Teachers (N = 35)				Students (N = 350)			
		VHE	**HE**	**LE**	**VLE**	**VHE**	**HE**	**LE**	**VLE**
1	Item1	17	7	6	5	118	107	63	62
2	Item2	14	8	7	6	134	92	74	50
3	Item3	9	11	8	7	126	112	61	51
4	Item4	15	7	7	6	121	113	61	55
5	Item5	12	9	6	8	135	112	58	45
	Item6	14	10	6	7	116	105	71	58
	Item7	23	7	3	2	132	107	77	34
	Item8	18	9	5	3	143	123	52	32
Research question 3									
S/N	Items	Teachers (N = 35)				Students (N = 350)			
		VHE	**HE**	**LE**	**VLE**	**VHE**	**HE**	**LE**	**VLE**
1	Item1	18	5	9	3	116	108	66	60
2	Item2	13	7	9	6	108	100	86	56
3	Item3	7	17	4	7	116	82	80	72
4	Item4	20	7	5	8	100	105	82	63
5	Item5	7	14	12	2	124	88	78	60
6	Item6	16	5	9	5	135	100	64	51
7	Item7	13	9	6	7	123	97	82	48
8	Item8	12	8	9	6	115	108	63	64

Research question 4									
S/N	Items	Teachers (N = 35)				Students (N = 350)			
		VHE	**HE**	**LE**	**VLE**	**VHE**	**HE**	**LE**	**VLE**
1	Item1	11	12	5	7	121	87	79	63
2	Item2	10	11	8	6	108	100	70	72
3	Item3	5	9	11	10	82	63	100	105
4	Item4	8	7	9	11	58	108	98	86
5	Item5	14	15	5	1	113	118	64	55
6	Item6	17	14	2	2	103	90	84	73
7	Item7	14	14	3	4	126	95	78	51
8	Item8	12	9	8	6	111	119	63	57