

EFFECT OF FIELD-TRIP TEACHING METHOD ON STUDENTS' RETENTION AND ACADEMIC PERFORMANCE IN AGRICULTURAL SCIENCE IN SENIOR SECONDARY SCHOOLS IN SOUTHERN SENATORIAL ZONE OF KADUNA STATE, NIGERIA

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Abstract

Study investigates the effect of field-trip teaching method on students' retention and academic performance in agricultural science in senior secondary schools in southern senatorial zone of Kaduna state. Survey research design was used for the study. Two objectives, two research questions and two hypotheses were used for the study. The population for this study is 18,370 SS2 students and 27 government secondary schools. The sample size for the study is 391 this was determine using Taro yamen formula. Proportionate stratified random sampling technique was used in selecting both the school and students. 13 schools were randomly selected from the senior secondary schools in Southern Senatorial Zone using hat drawn to select both the schools and the students (SS11) offering agricultural science. The instruments use for data collection was a questionnaire title: Field-trip teaching method on students' retention and academic Performance Questionnaire (FTMSRAP) The instrument was validated by expert in the field of measurement and evaluation and two experts from agricultural education section, department of vocational and technical education, Ahmadu Bello University, Zaria. The instrument was trial tested using 30 students in Zaria. The data collected and analysed using Cronbach alpha method which give a reliability co-efficient of 0.76. Decision rule was that any statement having a mean of 2.50 and above was considered Agree while the mean score rating of below 2.50 was considered as Disagree. Mean and standard deviation was used to answer research questions one and two; while chi-square was used to test the null hypothesis at .05 level of significance. From the result, the following findings were made: Field trip teaching method enhances retention level of agricultural science students and also field trip teaching method on level of performance of agricultural science has a positive effect on students. Base on the findings of the study it was concluded that field-trip teaching method enhance retention level of agricultural science students, students performed better when field-trip teaching method is applied. It was therefore recommended that field trip teaching method should be applied when teaching agricultural science for better retention by students.

Keyword: Field-trip, Teaching method, Retention, Academic performance and Agricultural science.

Introduction

Measuring students' academic performance in agricultural science are usually carried out within the school and outside the school. Within the school, such exercises include, assignments, farm practice and fieldwork supervised by the agricultural science teacher, teacher made tests, terminal examinations, continuous assessment and so on. The outcome of the assessment is upgraded and reported by the teachers as part of their progress report. According to Ogbuluijah, (2017) however, observed that in pursuit of better and satisfactory student performance in Agricultural science in Nigerian Secondary Schools examination, West African Examination Council agricultural science should be supplemented by visits to well established government and private experimental and commercial farms, agricultural research institutes and other institutions related to agriculture. Such visits are packaged in various names such as field trips, excursions, tours etc. Organized and guided agricultural field trips according to Onyeabor, Botril & Amadi (2016) is a visit to farms, agricultural institutions and the like, either for pleasure, education, recreation or others.

Field trip therefore, is an outdoor or field work or learning exercise undertaken by teachers and students in certain aspects of a subject, to give students the opportunity to acquire knowledge. It may refer to as trips to various places to obtain information directly by seeing things as they really are (Obeka 2018). Field trips can connect school work with the world, making it tangible and memorable. A field trip stimulates questions and ideas at the beginning or end of a unit. Field trip also provides an experimental "text" for students to study and interrogate. Field-trip does provide learning opportunity that cannot be experienced in the classroom rather it provides real life context for the material being learned (Abdul, Oyeronke & Adunni (2015). Ideas can make more sense and be remembered better if students can actually see where and how it works or take place in reality. Field trips do not only teach one idea, but many. A field trip to a vegetable farm, for example, can bring disparate topics together, such as photosynthesis, the scientific method, how to collect data, plants insects, part of flower, soil erosion and many more. However, field trip is not the only method/ strategy for effective teaching and learning of different concepts in Agricultural Science but geared towards the training of the individual through child centred learning for maximum self and societal

development. There are some strategies like problem solving, inquiry, questioning teaching strategy, discovery approach, concept mapping etc. All these approaches could be used for teaching different concepts to make learning more effective, meaningful and relevant in Agricultural science concepts using field trip teaching.

Teaching methods according to Daluba, (2016) are the approaches, ways and strategies that a teacher adopts in conducting his lesson to a successful end. Teaching methods are the ways of teaching which involves a series of teacher directed activities that result to pupils' learning. Teaching methods comprise of principles and strategies used for instruction (Daluba, 2016). Teaching methods are the tools apply by a teacher in arriving at a set goal and objectives. And when objective is well defined there is the possibility that students' retention would be achieved.

Retention is the ability to preserve and later remember information or knowledge gained after learning (Bichi 2018). It takes place while learning is coded into memory. Thus, appropriate coding of incoming information provides the index that may be consulted so that retention takes place without an elaborate search in the memory lane (Oyedokun 2020). The nature of the material to be coded contributed to the load of retention materials related to the quality of retention in terms of their meaningfulness, familiarities, concreteness and image involving characteristics (Adeniyi 2019). According to Bichi (2018), it is widely accepted that the longer the period of non-use of retained material, the greater the probability of decay. A retention interval is the time that elapses between a test of original learning and that of a retention test, thus knowledge retention is defined as the proportion of knowledge retained by individuals after a specific retention interval. Research has, in general, proposed three main principles pertaining to knowledge retention: Firstly, knowledge retention generally falls to 75-89% of its original level after a relatively short period of time; Secondly, retention rate decreases over time as a finding of the length of retention interval in a relatively linear manner; Thirdly, all performances regardless of their individual levels of performance have similar knowledge retention rates. It on this note, Denga (2017) opine that academic performance is an important parameter in measuring success in student examination results as one of the major goals of schools. The author added that learning is said to occur if there is a positive change in behaviour or performance which is a result of experience and practice, and which makes

individual face later situations differently. Agricultural science teachers for example uses different types of methods to ensure good academic performance at the end of the course content.

In Nigerian, agricultural science has been recognized as a core curriculum subject. This is because Agriculture remains an important sector of the Nigerian economy since it has a high potential for absorbing unemployed and underemployed persons; provide raw materials for industries; provide food and at the same time generate foreign exchange for the country (Egbule, 2014). Agricultural science is one of the core vocational curricular subjects taught at both junior and senior secondary school in Nigeria. The author also describes agricultural science education as a broad multidisciplinary field that deals with the selection, breeding and management of crops and domestic animals for economic production. Agricultural science is therefore designed to inculcate the necessary skills for the practice of agriculture for effective citizenship and contribution to food security for national sustainability. It is a subject taught in secondary schools as a means for self-reliance and preparation for further studies. Therefore, secondary students are those who are admitted into the lower or upper Basic schools for the purpose of acquiring knowledge (Ngbongha et al, 2023). Alawa and Dijeh (2014) viewed Secondary school's students as individuals who have not completed their secondary education and are not admitted into higher institution of learning. Because secondary school served as the basis to which other educational foundation is played it is expected that there acquired the real knowledge that will enhance their practicability after school hence the study.

Statement of the Problem

The mean and manner students learn is greatly influenced by how they are taught. By the instructors. Agricultural science curricula have implemented a wide variety of teaching methods which fit different niches within the Agricultural classroom (Abdulhamid 2017). Some methods of teaching are completely out of phase with background and local environments of the learners. The author added that for teaching to effective in agricultural science it should be centred on certain factors such as what to teach, when to teach and how to teach. The teacher does not only teach the most relevant, meaningful and useful materials for specific students, he must also recognize and adopt a good and well-researched method of teaching that guarantees better understanding and also stimulates and motivates the students in Agriculture. However,

the Agricultural Science teachers do not discriminate, in the method they use: they teach all aspect by lecture method (Okafor 2015), this may be one reason for poor performance of students in this subject.

In Kaduna state, data collected from information supplied by the Education Resource Centre show that students' performance in the subject at both internal (terminal school examination) and external (WASSCE and NECO) examinations has remained consistently poor. In 2020, statistics showed that majority (43.87%) of students that sat for agricultural science failed with only 23.48% passed. In 2021, majority (53.46%) of the students that sat for agricultural science failed while (15.51%) passed. In 2022, majority (35.42%) of the students that sat for the agricultural exams failed with only (35.01%) passed (WAEC, 2022). The researcher preliminary investigation reveals that field trip has not been recognised as a method of teaching as such teachers hardly used it. And this has resulted to mass failure witness in agricultural science examination that has led to a decline in students' academic performance. The researcher personal investigation also reveal that most students are not aware that field trip teaching method enhances better academic performance. Because students learn better by what they see and touched it is therefore, necessary for teachers of agricultural science to try another method of teaching (field-trip) to ascertain it effectiveness among secondary schools' students in Southern Senatorial Zone of Kaduna State.

Purpose of the Study

The objective of the study is to examine the effect of field-trip teaching method on retention and students' academic performance in agricultural science in senior secondary schools in Southern Senatorial zone, Kaduna state. Specific the study examines;

1. the effects of field trip teaching method on retention level of agricultural science students.
2. to ascertain the effects of field trip teaching method on the academic performance of agricultural science students.

Research Questions

The following research questions were raised to guide the study:

1. What are the effects of field trip teaching method on retention level of agricultural science students?

2. What is the effect of field trip teaching method on level of performance of agricultural science students?

Research Hypothesis

The following null hypotheses were formulated and tested at .05 level of significant.

1. There is no significant effect of field trip teaching method on retention of agricultural science students.
2. There is no significant effect of field trip teaching methods on academic performance of agricultural science students.

Methodology

The research design for this study was survey design. The population for this study comprised all the SSII Agricultural science students in the 20123 and 2024 academic session in Southern Senatorial zone made up of 18,370 students. The total number of government senior secondary schools offering Agricultural science in Southern Senatorial zone were twenty-seven (27) schools. The sample size for the study is 391 this was determine using Taro yamen formula. Proportionate stratified random sampling technique was used in selecting both the school and students. Thirteen schools were randomly selected from the senior secondary schools in Southern Senatorial Zone using hat drawn to select both the schools and the students (SS11) offering Agricultural science. In ensuring that everyone has equal chance of being selected, numbers (1-391) were written on pieces of paper folded and mixed thoroughly and then put into a plate. Students were asked to pick the numbers, and only those that picked number (1-391) were used for the study. The instruments use for data collection was a questionnaire title: Field-trip teaching method on students' retention and academic Performance Questionnaire (FTMSRAP) The instrument used in the study was validated by expert in the field of measurement and evaluation and two experts from Agricultural Education section, Department of Vocational and Technical Education, Ahmadu Bello University, Zaria. The instrument was trial tested using 30 students in Zango Kataf. The data collected and analysed using Cronbach alpha method which give a reliability co-efficient of 0.76. The respondent, were required to rate the questionnaire on a four-point scale of Strongly Agree=4, Agree=3, Disagree=2 and Strongly Disagree=1 respectively. Decision rule was that any statement having a mean of 2.50 and above was considered Agree while the mean score rating of below 2.50 was considered as Disagree.

Mean and standard deviation was used to answer research questions one and two; while chi-square was used to test the null hypothesis at .05 level of significance.

Results

Research Question 1: What are the effects of field trip teaching method on retention level of agricultural science students?

Data for answering the research question 1 and test hypothesis 1 are presented on the table below

Table 1: Mean and Standard Deviation on the effects of field trip teaching method on retention level of agricultural science students.

S/N	Items	Mean	SD	Remark
1	Field trip Provide hands-on real-world experience	2.80	1.08	Agreed
2	Field trip enhanced knowledge acquisition	3.03	.998	Agreed
3	Field trip assist to improve retention	2.90	1.09	Agreed
4	Field trip enhances motivation and interest of students to learn	2.88	1.06	Agreed
5	Field trip encourage active learning	3.09	.958	Agreed
6	Field trip enhances skill development	2.71	1.06	Agreed
7	Field trip enhance social interaction and rapport which improve retention	3.02	.998	Agreed

Table one indicated that all the respondents agree on the items with a mean score of 3.03 to 2.71 which is above the bench mark of 2.50 for agree with a standard deviation of .958 to 1.06 showing that the responses are not far apart from the mean.

Null Hypotheses 1: There is no significant effect of field trip teaching method on retention of agricultural science students.

Table 2: Chi-Square Test of Goodness-of-Fit of the effect of field trip teaching method on retention of agricultural science students in Southern Senatorial zone, Kaduna state.

Response option	Fo	Fe	Alpha level	Df	χ^2_{α}	Asymp. Sig	Remark
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SA	53	97.8					
A	69	97.8	0.05	3	59.772 ^a	.000	S, R
D	122	97.8					
SD	147	97.8					
Total (N)	391						

Keys: N-total number of respondents, Fo- observed frequency, Fe- expected frequency, df- degree of freedom, $\chi^2\alpha$ - chi-square calculated value, Asymp. sig- asymptotic significance value (p-value), S-significant, R-rejected.

Data presented in Table 2 shows a p-value of .000 which is less than the alpha value of 0.05 at 3 degrees of freedom. This implies that the test is significant, meaning that there is significant effect on field trip teaching method on retention of agricultural science students in Southern Senatorial zone, Kaduna State. The null hypothesis is therefore rejected.

Research Question 2: What is the effect of field trip teaching method on level of performance of agricultural science students?

Data for answering the research question 2 and test hypothesis 2 are presented on the table below.

Table 3: Mean and Standard Deviation on the effects of field trip teaching method on performance level of agricultural science students.

S/N	Items	Mean	SD	Remark
1	It encourages higher test score	2.64	1.08	Agreed
2	It increases academic performance by enhancing knowledge retention	2.43	1.12	Disagreed
3	It increases their level of engagement thereby improving their performance	2.60	1.08	Agreed
4	It helps to developed skills which improve their performance	2.69	1.04	Agreed
5	Because it is a real experience the chances of performance are high	2.56	1.15	Agreed

Table three shows that all the respondents agree that the effect of field trip teaching method on level of performance of agricultural science has affected the students positively with a mean score of 2.56 to 2.69 above the cutup point for agree and a standard deviation 1.15 to 1.08 except for item 2 which mean is below the bench mark of 2.50 for agree.

Null Hypotheses 2: There is no significant effect of field trip teaching methods on academic performance of agricultural science students.

Table 4: Chi-Square Test of Goodness-of-Fit of the effect of field trip teaching method on retention of agricultural science students in Southern Senatorial zone, Kaduna state.

Response option	Fo	Fe	Alpha level	Df	$\chi^2\alpha$	Asymp. Sig	Remark
SA	83	97.8	0.05	3	3.621 ^a	.353	S, R
A	101	97.8					
D	100	97.8					
SD	107	97.8					
Total (N)	391						

Keys: N-total number of respondents, Fo- observed frequency, Fe- expected frequency, df- degree of freedom, $\chi^2\alpha$ - chi-square calculated value, Asymp. sig- asymptotic significance value (p-value), S-significant, R-rejected.

Data presented in Table 4 shows a p-value of .353 which is less than the alpha value of 0.05 at 3 degrees of freedom. This implies that the test is significant, meaning that there is significant effect on field trip teaching method on academic performance of agricultural science students in Southern Senatorial zone, Kaduna State. The null hypothesis is therefore rejected.

Discussion

Table 1 shows that all the respondents agree that field trip teaching method enhances retention level of agricultural science students with a mean score of 3.03 to 2.71 which is above the bench mark of 2.50 for agree with a standard deviation of .958 to 1.06 showing that the responses are not far apart from the mean, On the other hand a chi-square with a p-value of .000 which is less than the alpha value of 0.05 at 3 degrees of freedom. This implies that the test is significant, meaning that there is significant effect on field trip teaching method on retention of agricultural science students in Southern Senatorial zone, Kaduna State. The null hypothesis is therefore rejected. This study is very significant in the sense that it has been able to demonstrate the usefulness of field trip in the learning of agricultural science. According to Obeka, (2018) who said that of students in teaching and learning is more effective when students are able to touch and see things real on the field. While Ogbulujah, (2017) opined that students can only see things real when field trip is added as part of the course as this would multigate students an increase their level of retention in agricultural science.

Table 2 also reveal that the effect of field trip teaching method on level of performance of agricultural science has affected the students positively with a mean score of 2.56 to 2.69 above the cutup point for agree and a standard deviation 1.15 to 1.08 except for item 2 which mean score is below the bench mark of 2.50 for agree and a chi-square p-value of .353 which is less than the alpha value of 0.05 at 3 degrees of freedom. This implies that the test is significant, meaning that there is significant effect on field trip teaching method on academic performance of agricultural science students in Southern Senatorial zone, Kaduna State. The null hypothesis is therefore rejected. This in agreement with Alawa and Dijeh (2014) who said that the field trip teaching method increase students' academic performance in view of the fact that it play a real picture in the mind of the student. According to piaget developmental theory of learning, asserted that for a child to know and construct knowledge the mind must be organize to see reality and acts upon it. Therefore, since field trips provide the most realistic means for meeting organisms in their actual environment by observing, identifying, classifying and even manipulating helps the students in their academic performance (Denya, 2017). On the other hand, Adeniyi (2018) opine that students performed better in a subject that involved their participation such as seeing, feeling, touching and making contributions.

Conclusion

Based on the finding of the study, the following conclusions were drawn: -

1. Field-trip teaching method enhance retention level of agricultural science students.
2. Students performed better when field-trip teaching method is applied.

Recommendations

Based on the findings of this study, the following recommendations were made; thus;

1. Field trip teaching method should be applied when teaching agricultural science for better retention by students.
2. Field trip teaching method in agricultural science should be made compulsory by the ministry of education for better performance of students in the subject.

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