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Effect of School Food Service on Achievement in Health Education among junior secondary school students (JSS) in Orlu Local Government Area in Imo State

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Abstract
The study was carried out to ascertain the effect of school food services on achievement of health education among secondary students in Orlu Local Government in State. To guide the study, two research questions and two null hypotheses were formulated respectively. The population for the study comprised 3850 JSS11 students from 254 state owned secondary school in Imo State in 2023/2024 academic session. A sample size of 154 JSS11 students comprising 72 students each were used in the experimental group and control group respectively. Health Education Achievement Test (HEAT) was developed by the researchers and was used for data collection. Five experts validated the instrument which gave a reliability coefficient of 0.78. Mean and standard deviation for answering the research questions while Analysis of Covariance was used to test the null hypotheses at 0.05 level of significance. The results revealed that students who received school food services in the experimental group performed better than students in control group and there was a significant difference between mean scores of students who partook in-school food services. Thus, school food services have relative effect on students' performance. Based on the findings of the study, it was recommended among others that students should be provided with school food services since it enhances students' academic achievement of health education in the secondary schools..

Keywords: School food, Achievement, Junior secondary school students.

Introduction

Health Education is as old as education it's self in Nigeria, despite it was offered as hygiene and sanitation in primary and secondary schools (Oparah, Fidelis, Mgbeahurike, & Eze-Ufodiama, 2020). Bernard (2021) described Health Education as a process with intellectual, psychological and social dimensions relating to activities which increase the abilities of people to make informed decision affecting their personal, family and community well-being. Health Education be explained as planned interaction that utilizes scientific principles, activities and learning to alter information, attitude, skills and behaviours held by an individual in all the directions of an improved well-being in all the dimensions of health. This implies that knowledge of Health Education is having ideas behind the answer with relationship to the day to day activities of healthy living so as to promote and maintain healthy habits.

In Nigeria, Health Education is offered in junior secondary school classes (JSS1-3). In Nigerian tertiary institutions, health education is usually a three year to five year course planned and organized for the training of skilled and competent health educators. The study

of Health Education therefore opens up a broad way to many other disciplines in life that hold the key to health and healthy lifestyle. Health Education is a programme which is drawn from the biological, environmental, psychological, physical and medical sciences to promote and maintain health and prevent diseases. New Hampshire Department of Education (2018) explained the objectives of health education programme aim at producing highly motivated, conscientious, and efficient health educators; to provide health educators with the intellectual and professional background adequate for their various disciplines; and to enhance health educators' commitment to the teaching profession through encouraging creativity. A Health Educator however, is an instructor who is professionally prepared and possesses knowledge and skills based on theories and research to promote health education and behavioural change in individuals and population at large (Ben-enson and Simone, 2018)

Health Education provides to the students an opportunity to upgrade themselves in the areas of health, conduct research and integrate their training with practices and habits. It also helps learners and health educators to contribute meaningfully to the physical, social, emotional and spiritual development of self, family, community and the nation at large (Oparah, Fidelis, Mgbeaharurike, & Eze-Ufodiama, 2020). New Hampshire Department of Education (2018) and Agbaje and Olanipekun (2008) reported that health education programme boost the economy of an individual, community, state and nation by reducing health care services spending and lost productivity due to preventable diseases and that effective implementation of Health Education programme brings about achievement of expected societal change in the field of economy, production, politics and technology advancement. Kebritchi, Lipschuetz, and Santiague (2017) grouped the problem of effective teaching and learning health education into institutional, instructors-related, learners-related and content-related problems. The authors further explained that institutional problems include budget constraints, instructor professional development and low payment, technical and multimedia support, scare resources and lack of facilities and equipment. Osika, Johnson, and Buteau (2009) opined that another problem of health education is lack of interest of the course (health education) by the teachers and the learners that would not allow effective teaching and learning to take place. Most of the health educators do not possess the effective teaching methods and skills of inculcating the course so as to discourage the learner to develop interest in health education (Falae, 2018). Adara (2013) stated that, when an appropriate teaching strategy is utilized by an incompetent teacher, there is every tendency that achievement and interest of the students in a subject can be affected. Ali (2018) opined that the most important factor for effective learning to take place in a subject is an interesting instructional approach used. As soon as the students' interest is being triggered, they learn effectively and there is every reason for objectives of the subject to be achieved.

Achievement is the extent or degree of attainment of students in tasks, courses, or programs students have achieved mastery of the objectives of the subjects they are exposed to in school Students' achievement connotes performance in school subject as symbolized by a score or mark on a test or extermination (Agbaegbe & Asuquo, 2021). As observed by Okonkwo (2020), the low achievement in school subjects was as a result of students not being well fed or skipping breakfast thus learning in empty stomach. Being hungry during teaching and learning process does not encourage students' participation in classroom activities.

School food service is one of the components of school health services derived from school health programme. It is one of the supportive activities which makes teaching and learning possible and interesting venture. The introduction of the school home grown and feeding system initiated by the Universal Basic Education (UBE, 2010), under the administration of the then Head of States, Chief Olusegun Obasanjo is a step in the right direction to providing qualitative and functional education to the students. Interestingly, the World Health

Organization (WHO) (2016) reported that safe water and nutritional food are planned for, organized and provided for the students and staff within the school environment with the help of health personnel to promote the highest possible level of health of the school children throughout their years of study and also enhance high level of performance. School food services gear towards the health care system which aims at promoting and maintaining the health of school children so as to give them a good start in life and induce the active participation of the students in their academic pursuit for better performance. In some countries schools provide food for their students and play a facilitating role in providing facilities and time for eating whereas in some other countries, no such tradition exists (Okonkwo, 2020).

Good nutrition contributes to the improved well-being of students on their learning ability, thus contributing to academic performance (Blades, 2001). There is however evidence that poor nutrition in the students tends to compromise learning capacity (Tompkins, 2008). Okonkwo (2020) stated that there are a significant number of students who skip breakfast, eat low fruits and vegetables, and consume high quantity of soft drinks. The author further explained that body dissatisfaction and dieting are common and that a substantial number of students in all countries do not meet the current recommended guidelines for quality academic performance and physical activity. The successful operation of food provision in schools is dependent on the involvement of the students, parents, food service operators and some others so as to see that the activity of teaching and learning is improved for better performance on the students. Park (2012) had described school food service as mid-day meal programme (MDM) which is also known as School Lunch Programme. The author stated that in some developing countries like India, school food service has been in operation since 1961 and that the major objective of the service is to attract more children for admission to schools, retain them and to encourage their interest. Consequently, Park (2012) suggested that the school food should be the food that can be prepared in the school easily without any complicated cooking process. Locally available foods should be used in order to reduce the cost of the food, and that menu should be frequently changed to avoid monsotony. This is because there is a significant number of students who do not conform to the standard or current nutritional advice (Maes, 2003). Likewise, school food service which was opined by (Blades, 2001) as a more efficient element in teaching and learning process since good nutrition contributes to the improved well-being of students and their potential learning ability , contributes to better school performance and that poor nutrition or skipping food in school children tends to compromise learning capacity (Tompkins, 2008). Hence this study sought to investigate the effect of school food services on secondary school students' achievement in Orlu local government area of Imo State.

Gender is variable that influences students' academic achievement (Gin, (2011). Some subjects such as sciences are branded masculine while others like home economics and related subjects are branded feminine. This study queries if the non-availability of school food services adopted by most of the Nigerian secondary schools presently accounts for low performance of females in Health Education.

The necessity for education is increasing since there is upsurge to meet up with the developed world in global struggles. Good students' academic achievement in Health Education is needed for progress and improvement in healthy living, maintenance and promotion of good health. Some Health Educators do not mind whether the students took breakfast or not which may likely be a reason for students' low interest on academic achievement in health education. This could be traced to ephemeral attention and concentration of students towards teaching and learning of Health Education in Nigerian secondary schools. A lot of research works have been carried out on provision of school food services to secondary school

students, and scholars have been able to prove the fact that school food services contrary to the non-availability of food services adds a lot of improvement in students' academic achievement secondary school students as it pertains to Health Education. The problem of the study therefore, is stated thus: What is the effect of school food services on secondary school students' academic achievement in Health Education? This present study intends to fill the gap.

Purpose of the study

The purpose of the study was to investigate the effect of school food services on secondary school students' academic achievement in Health Education in Orlu local government area of Imo state. Specifically, the study sought to:

1. ascertain the effect of school food services on secondary school students' academic achievement in Health Education; and
2. ascertain the effect of school food services on male and female secondary school students' academic achievement in Health Education.

Research Questions

The following research questions guided the study:

1. What is the effect of school food services on secondary school students' academic achievement in Health Education?
2. What is the effect of school food service on male and female secondary school students' academic achievement in Health Education?

Hypotheses:

The following null hypotheses were postulated to guide the study and were tested at 0.05 level of significance.

1. School food services have no significant effect on the mean scores of secondary school students' academic achievement in Health Education.
2. School food services have no significant effect on the mean scores of male and female students in Health Education

Methodology

This study adopted a quasi-experimental design. This design was considered appropriate since Nworgu (2006) opined control of extraneous variables as students were categorized into experimental and control groups by balloting. Rigid school time table did not allow the researchers to fully randomize the subjects. The study utilized the non-randomized pretest-posttest control group design involving experimental (group 1) and control (group 2). The two groups as represented in the study were:
Group 1: school food services provision with a total number of 51 students (22 males and 29 females) and
Group 2: non-school food services provision with a total number of 51 students (22 males and 29 females).
Area of the study was Imo State. The population of the study comprised 3850 JSS2 students from the 264 state owned secondary schools in Imo state in 2023/2024 academic session Secondary Education Management Board (SEMB, 2019). The JSS2 students were used for

the study. It was expected that the provision of school food services can encourage and strengthen the students' interests, knowledge and attitude towards learning health education.

One hundred and two JSS2 Health Education students were drawn from two co-educational secondary schools used as the sample size for the study. The two secondary schools were drawn out from the 21 public secondary schools that made up the population of the study using purposive sampling technique. Furthermore, by simple random sampling, two secondary schools were used as experimental group 1 while the other secondary school was used as the control group 11. The experimental Group1 consisted of a total number of 51 students (20males and 31 females) and group 11; 50 students, (22 males and 28 females)

The instrument for data collection was Health Education Achievement Test (HEAT) constructed by the researchers. To ensure validity, the instruments were given to three, one from health education department and two experts in Measurements and Evaluation, Department of Science Education, all from Michael Okpara University of Agriculture, Umudike. The corrections of errors identified were effected before the final production of the instrument. The instrument was used for the pre-test and post-test. A total of twenty (20) Health Education students outside the area of study were used to test the face validity of the instrument. The instrument was administered once and data collected was analyzed using Cronbach Alpha Coefficient of 0.82. Also, the reliability coefficient of the Health Education Achievement Test was ascertained by using split-half method in which the test was administered to JSS2 students (50 students at secondary school, Orlu L.G.A. Imo State). Scores were correlated using Spearman's Rank Correlation Coefficient; a Coefficient of 0.72 was obtained. This was considered high enough to justify the use of the instrument.

Data for the study was collected through pre-test and post-test using both the HEAT. The data collected were analyzed using mean scores and standard deviation to answer the research questions. Hypotheses were tested with the analysis of covariance (ANCOVA) at 0.05 level of significance. ANCOVA was used in order to eliminate the errors which may have occurred due to non-randomization of the subjects.

Procedure:

Health Education Achievement Test (HEAT) was administered to students in both groups and their scripts were collected, marked and recorded by the researchers while the post-test was recorded by the researchers while the post –test was administered at the end of teaching and the scripts were also collected, marked and recorded for analysis. Every right answer in the HEAT carried 2.5 marks which gave a maximum of 100 marks.

The treatment commenced by first, administering the pre-test to both experimental and control groups. The same lesson notes and topics were taught to both groups (experimental and control) by their regular health education teachers. The only difference is that the control groups were taught without serving them the school food for breakfast while the experimental group was served with school food (breakfast) before being taught every morning. The treatment lasted for four weeks after which a post-test was conducted to both groups, their scripts were collected, marked and recorded by the researcher for analysis.

Mean and standard deviation were used to answer the research questions while the hypotheses were analyzed using Analysis of Covariance (ANCOVA) which was tested at 0.05 level of significance. Decision rule for rejecting or accepting hypotheses is SPSS (Statistical Packages for Social Sciences).

Decision Rule: Reject the null hypothesis if the significance value is less than (<) the chosen level of significance ($P<0.05$) otherwise accept.

Results

Table1: Mean and Standard deviation pre-test achievement and post-test achievement scores of students in Health Education class.

Group	N	Pre-test mean	SD	Post-test Mean	SD	Mean effect
Experimental	51	7.78	3.70	12.49	4.69	4.71
Control	51	6.90	2.20	9.84	4.01	2.94
Total	102					

In table 1, the mean achievement score of students who were served with the school food prior to the teaching and learning of health education was 12.49 with a mean effect 4.71, while students taught without being fed with the school food had mean achievement score of 9.84 and a mean effect of 2.94. This implies that school food services had more effect on students' achievement in Health Education.

Table 2: Mean and Standard deviation of pretest and posttest achievement scores of male and female in Health Education

Variables Gender	N	Mean	SD	Mean	SD	Mean effect
Male	42	8.23	4.63	13.00	4.80	4.77
Female	60	7.48	4.09	12.50	4.66	5.02
Total	102					

Source: Field Survey 2023

Results in Table 2 indicated that the pretest mean achievement score for the male was 8.23 with a standard deviation of 4.63 and a post-test mean deviation of 4.80. The difference between score for male students was 4.77. The female students taught health education had a pretest mean achievement score 7.48 with a standard deviation of 4.66. The difference between the pretest and post-test means achievement score was greater than the pretest mean achievement score with the female students having slightly higher mean effect. This implies that both male and female students appear to have similar achievement in Health Education.

Table 3: Analysis of Covariance (ANCOVA) of the significant effect of school food services on students' mean achievement scores in Health Education

Source of variation	Sum of Squares	Df	Mean square	F-cal	p-value	Decision
Corrected model	416.970	1	416.970	38.906	0.000	
Intercept	26385.849	6	4397.642	410.325	0.000	
Pretest	5143.329	1	5144.329	34.989	0.000	
Methods	25667.741	1	25667.741	2394.945	0.000	
Main effects	45821.962	3	8607.321	803.111	0.000	
Gender	2.390	2	1.195	0.111	0.895	
Error	2100.624	196	10717			
Total	28486.473	202				

The result in table 3 revealed that school food service has significant effect on the mean achievement score of students in Health Education. This was shown by the calculated F-value of 2394.945 which is significant. However, the null hypotheses which states that school food services has no significant effect on the mean achievement scores of secondary school students in Health Education was rejected while the alternative was accepted.

The result in Table 3 shows an F- value of 0.111 which is not significant at 0.895 with respect to gender and students achievement. Hence, the associated probability value of 0.895 was greater than 0.05 set as level of significance, the null hypotheses which stated that school food services has no significant effect on the mean achievement score of male and female students in Health Education was not rejected. However, inference drawn was that gender has no significant effect on students' mean achievement scores in Health Education.

Discussion

The study indicated that school food services have significant effect on the mean achievement score of students in Health Education. The results of hypothesis one revealed that the experimental group improved tremendously and was more encouraging than those in the control group. The difference implies that the school food services has more positive effect on the student's achievement in the concept taught.

The findings are in line with Koraw (2006) who expressed that lack of infrastructure, equipment, materials and poor teaching method have contributed to students' poor achievement in science subjects. The study also supports Allen (2007) who opined that the most effective way of learning is through participation and suggested that educators should make special efforts in creating opportunities for students to participate in their learning. The study was also in support of Nkadi (2004) who stated that methods, skills and techniques adopted in teaching and learning environment can affect academic achievement of the students negatively or positively. The result obtained in this study might be attributed to active participation of the learners in addition to the students having been well fed by the

school food which will help them to concentrate pay attention and teaching progress and any concept learnt under this environment can never be forgotten during examination.
The result of hypothesis two showed that school food services has no significant effect on the mean achievement scores of male and female students in health education. This reveals that males and females achieved equally in health education taught. The findings have given support to Blades (2001) who explained that good nutrition (food) contributes to the improved wellbeing of children (boys and girls) and their potential learning ability, thus contributing to better school performance. It is also in line with Tompkins (2008) who opined that poor nutrition (food) or lack of food in school children (boys and girls) tends to compromise learning capacity. The result of the findings is equally in line with Rodgens (2008) who observed that the issue of sex and achievement in science is an important area that has involved a lot of researches as available results above have not yielded any conclusive trend in performance. This study has also drawn our attention towards gender matters more especially in case of Health Education as one of the science subjects.

Conclusion

This study examined effect of school food service on the achievement of Health Education among students in Orlu LGA of Imo State. Based on the findings, the researchers concluded that students taught Health Education after being fed with school food in experimental group improved tremendously in their achievement in Health education than the students in control group where no food was served to them and there was no effect on the mean achievement scores of the students in health education based on the gender as both male and female students achieved equally. Based on these findings, the school food service should be encouraged and recommended for secondary schools in Imo State and in Nigeria at large for this will give an edge to our students in learning of health education in order to be able to compete with their counterparts all over the world and also be able to tackle the numerous issues of health maintenance, promotion and technology in this our present era.

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