

INFLUENCE OF GENDER ON STUDENTS' ACADEMIC PERFORMANCE IN ANIMAL HUSBANDRY WHEN TAUGHT USING PROBLEM-SOLVING TEACHING METHODS.

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ABSTRACT

Background: This research studied the relationship between gender and student's academic performance in Animal Husbandry in senior secondary schools in Edo State Nigeria. Two research questions and two hypotheses guided the study.

Methodology: The study adopted the quasi-experimental design. Teacher made-test and questionnaire were used for data collection. The questionnaire was administered to 251 students in public schools in the study area. The students' responses were marked and scored, analysed using mean and standard deviation while t-test and ANCOVA were used to test the hypotheses at 0.05 level significance.

Result: The results of the study showed that the female students' performed higher than the male students the study established that location proved significant altogether in affecting students' general performance with respect to the teaching methods used.

Conclusion: Based on the findings of this study, recommendations were made. Parents are encouraged to provide the right education they can afford for their children irrespective of gender. Also, there should be a deliberate Federal Government policy to encourage absorbance of female students into further study in Animal Husbandry. Furthermore, it was recommended that stake

holders in the education industry should make use of these findings and try to research into ways of making gender-sensitive policies.

Keywords: Gender, Academic Performance, Animal Husbandry, Problem -solving

Introduction

The problem of students' under-performance in secondary schools in Nigeria has been a much discussed educational issue. In solving any problem however, it is pertinent to understand the causes of such problems. Many causes or agents have been studied as the etiological starting point for investigating the phenomena of school failure or success. These causes are looked into from several perspectives including the role of the students, teachers, parents or family, school environment, society, government, teaching methods gender etc. This study focused on the influence of gender in academic performance of students using problem-solving teaching method.

Gender plays a significant role on students' academic performance especially in science subjects. Gender is the range of physical, biological, mental and behavioral characteristics pertaining to and differentiating between the feminine and masculine (female and male) population. The importance of examining performance in relation to gender is based primarily on the socio-cultural differences between girls and boys. The importance of studying students' performance as linked to gender differences is particularly related to community behavioral differences between boys and girls (Adigun *et al.*, 2015). Moreover, Adigun *et al.* (2015) established that boys are given more difficult chores compared to girls. Therefore, the public see girls as a weaker gender (Adigun *et al.*, 2015). However, it was observed from the achievement test results conducted by Onekatu (2015) that boys and girls in the early ages perform equally in all subjects including science and mathematics, and as they grow to higher classes, the girls begin to get more interested in arts and commercial, while the boys take more to sciences. For this reason, more boys than girls are found to offer sciences. However, the issue of gender and students' academic achievement in sciences has remained a controversial issue. While some people propose that males perform better than females in sciences others argue that the reverse is the case. Denga (2014) reported that many comparisons showed that boys and girls on the average are the same on general intelligences test. Denga indicated that, girls do a little better on verbal tests and on test involving arithmetical ability. Okoye (2015) posited that no evidence is clear as to whether difference exist between males and females

in academic achievement in sciences. Okoye however stated that, girls tend to do better than boys in social sciences while boys tend to outperform the girls in sciences and mathematics.

Gender differences in academic performance cannot be assumed to be due to inherent biological differences between genders even if they exist but as a result of gender role stereotyping the studies abstained from examining reasons for the gender inequality in students' performance. (Abubakar & Bada, 2012) that have exclusively focused on the differences attributed to performance in different science subjects. Considering the findings of different people above, it is clear that there is not yet a consensus as to whether gender influences students' performance or not. Some are of the opinion that males are superior to females, while others said is females and some are even neutral. Based on these controversies, this study will further investigate the relationship between gender and academic performance in Animal Husbandry using problem solving and lecture teaching methods. Problem-solving is and should be a very real part of the curriculum, It presupposes that students can take on some of the vital elements of the curriculum.(Ogundari, 2014).It provides students with opportunities to use their newly acquired knowledge in meaningful real life activities and assists them in working at higher levels of thinking (Ogundari, 2014). Problem-solving is the act of defining a problem, determining the cause of the problem, identifying, prioritizing and selecting alternatives for a solution and implementing a solution is a problem solving method (Ogundari, 2014). Students learn by working on problems, this enables the students to learn new knowledge by facing the problems to be solved. The students are expected to observe, understand, analyze, interpret, find solutions and perform applications that lead to a holistic understanding of the concept (Ogundari, 2014). According to Tilman, *et al.*, (2011), Problem solving teaching method increases in-depth training and helps students to perform better in examinations, while in lecture method students solely receive information from the lecturer and attempt to memorize the content instead of understanding the concept and using them. Fukase & Martin (2017) believes that learning motivation is one of the benefits of this method. (Problem solving) as Njura, Kaberia & Taaliu (2019) see problem solving as one of the teaching methods that enhance engagement and encourages self-directed learning Abanikannda (2016) found that continuous use of Problem solving increase academic performance of students in contrast to conventional methods such as lecture method.

Academic performance has been regarded as the extent to which both students and the teachers, together with the school, have attained learning outcomes that are usually determined by national examinations or regular assessment tests, using varying grading structure (Ward *et al.*, 2019).

Students' academic performance improve when active learning methods are used. (Trivedi, 2013).Using appropriate instructional methods often lead to good teaching, thereby, accomplishing a desired result! (Akerle & Afolabi, 2012).In view of the belief that students' gender may have impact on the students' academic performance, this present study therefore is targeted at investigating the influence of gender on students' academic performance in animal Husbandry in secondary schools. Animal Husbandry is the process of domesticating animals for economic or recreational purposes and it entails proper feeding, health care, housing and many other activities given to the animals (Benerjee 2013). Animal husbandry at the Senior Secondary School level focuses on equipping the student with sufficient knowledge both theoretical and more practical towards understanding of the nature of animals as well as their environment. This knowledge is to be harnessed in order to target the achievement of national goals and objectives for job creation, wealth generation, self- sustainability and food security. However this appears far from what is obtainable in Senior Secondary Schools as regards to the teaching of Animal husbandry. It has been observed that most Senior Secondary Schools in Benin metropolis neither involved students of Animal husbandry on field work, field trips, school farm nor laboratory research and experimentation to discover things for themselves that will enhance their performance in animal husbandry. This paper therefore seek the effectiveness of problem solving teaching method in relationship to students' academic performance and gender in animal Husbandry in senior secondary schools students towards studying animal Husbandry for self-Sustainability, Sustainable Agricultural development and food security in Nigeria. Specifically, the study:

1. Examined the effect of problem- solving and lecture teaching methods on the academic performance of students in animal Husbandry in secondary schools in Edo State; ii. Determined the influence of gender on academic performance of students in Animal Husbandry in Edo State;

Research Question

1. What is the effect of problem- solving and lecture teaching methods on the academic performance of students in animal Husbandry in secondary schools in Edo State?
2. What is the influence of gender on academic performance of students in Animal Husbandry in Edo State?

Research Hypothesis

The following null hypothesis were tested at 0.05 level of significance.

HO i: There is no significant effect of 5problem-solving and lecture teaching methods on academic performance of students in animal Husbandry in secondary schools in Edo state

HO ii: Gender does not significantly influence the students' mean academic Performance in animal Husbandry.

Methodology

This study was conducted in the South South of Edo state. The study investigated the influence of gender on students' Academic Performance in Animal Husbandry in Senior Secondary schools in Edo State Nigeria. The research design used in this study was quasi-experimental. The population comprised 24498 and a sample size of 251 SSII Animal Husbandry students. The instrument used for data collection was teacher made test which titled: Animal Husbandry Performance Test (AHPT). AHPT test which was adapted from WACE past questions by the researcher to measure students' performance before and after teaching as a pretest (Pre-AHPT) and post-test (post-AHPT) respectively. The research instrument was analyzed using mean and standard deviation while t-test and ANCOVA were used to test the hypotheses at 0.05 level significance. The use of ANCOVA was to control the errors of initial non-equivalence arising from the use of intact classes as subjects of the study. If the Mean gain difference is positive it has a favorable effect and if it is negative it has an adverse effect.

Result

Research Question 1

What is the effect of problem- solving and lecture teaching methods on the academic performance of students in animal Husbandry in secondary schools in Edo State?

Table 1: Mean and Standard Deviation Scores of Student’s performance Scores X Treatment.

Group	N	(PRETEST)		POSTTEST		MD
		Mean	SD	Mean	SD	
Experimental (PSM)	124	13.69	8.129	76.99	11.201	63.3
Control(LTM)	127	16.28	7.529	64.23	12.252	47.95

Key: SD = Standard deviation, MD = mean difference, PSM = Problem Solving Method, LTM = Lecture teaching Method, N: number of respondent.

The results in Table 1 revealed a pretest mean (x)score of 13.69 and 16.28 and the standard deviations of 8.129 and 7.529 and posttest mean score of 76.99 and 64.23 and the standard deviation 11.201and 12.252 and a mean difference of 63.3 and 47.95 for the experimental and control group respectively. This means that there was no difference in the pre-test academic performance means scores of Animal Husbandry students in experimental and control groups before exposure to treatment using problem solving method. Students who took part in the study were given pretest. The examination was marked and graded out of one hundred percent. The pretest score were used as a covariate in the subsequent analysis. Because the students had not been taught the topic prior to the pretest, their performance on the pretest was dismal. This is due to the fact that the students were not entirely prepared for the pretest. The students' dismal performance was unsurprising because they had not been taught the topic or introduced to sections of the entire topic by their teachers, resulting in very little effort on their side to study the topic independently. As a result, the low student outcomes in the pretest were expected. The Table also revealed that the post- test mean score for students taught Animal Husbandry using problem was higher than the mean score of those not exposed to the technique. This implies that the mean score of students in the experimental groups was significantly higher as a result of the treatment they were exposed to.

Research question 2.

What is the influence of gender on academic performance of students in Animal Husbandry in Edo State?

Table 2: Mean score of Male and Female Animal Husbandry Students in the Experimental Group and Control Group.

Gender	N	Mean	Std. Deviation
Male	122	76.68	11.30
Female	129	78.01	10.87
Mean difference		1.33	

The findings in Table 2: Above showed a post-test mean score of 76.68 and 78.01 for male and female students taught Animal Husbandry in the experimental and Control groups. The result indicated that there was no significant difference in Male and female academic performance mean scores. However Female students mean score (78.01) was slightly higher than that of male (76.68) students with a mean difference of 1.33. This implies that girls performed better than the boys in

Problem solving method in the administered test. This is an indication that girls' Performance in Animal Husbandry subject under Problem solving method platform is better than boys' performance in the same subject using the same teaching method. This is probably due to the fact that girls could be more diligent in school matters and thus are unlikely to be absent from class. In addition, girls' registered slightly higher mean score in the posttest in all the two teaching methods compared with boys participants. Therefore, going by the results, girls easily got acquainted to the two teaching methods and this gave them the head start to perform better than boys.

Hypothesis 1

There is no significant effect of problem-solving and lecture teaching methods on academic performance of students in animal Husbandry in secondary schools in Edo State.

Table 3: The significant difference in the mean results of students and their academic performance taught animal Husbandry

Analysis of covariance (ANCOVA) of the significant difference in the mean results of students and their academic performance taught animal Husbandry with problem solving and lecture methods.					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	359.980 ^a	3	119.993	632.831	.000
Intercept	3014.906	1	3014.906	15900.286	.000
Method	.005	1	.005	.026	.872
Scores	357.611	1	357.611	1885.999	.000
Method * Scores	2.304	1	2.304	12.149	.001
Error	142.020	749	.190		
Total	3514.000	753			
Corrected Total	502.000	752			

The ANCOVA analysis in table 3 revealed that, $F_2 = 12.149$, the p-value of .001 was less than 0.05 (.001.005) the null hypothesis was therefore rejected. It shows that there was a significant difference between posttest mean results of Students and their Academic Performance taught Animal Husbandry with Problem Solving and Lecture Teaching Methods.

Hypothesis 2

There is no significant influence of gender on the students mean academic Performance in animal Husbandry.

Table 4: T-Test of significant difference between the mean score of male and female animal husbandry students.

Group	N	mean	SD	df	t	P-value	Remark
Male	122	76.48	11.168				
				122	-.475	0.636	Not significant
Female	129	77.43	11.292				

Key: Number of respondents; SD = Standard Deviation; DF = Degree of freedom; t-cal = table Calculated; t-tab = table value of t; p = level of significant

The data in table 4 showed a t value -475 and p value of 0.636. Testing at an alpha level of 0.05 the p value was greater than alpha level, so the null hypotheses which stated that there is no significant difference between the posttest mean score of male and female animal husbandry students taught with problem solving in senior Secondary schools in Edo State was not rejected. Hence, the hypothesis which states that there is no significant difference between the posttest mean score of male and female animal husbandry students taught with problem solving method was upheld. Thus, implying that there was no significant difference between male and female animal husbandry students taught with problem solving and lecture teaching methods.

Discussion of Findings

The findings from the analysis of research question one showed that the Animal Husbandry students' academic performance mean scores in experimental and control was not different significantly. The result revealed that $\bar{X} = 16.28$ and $\bar{X} = 13.69$ experimental group and control group respectively. Their standard deviations are 7.529 and 8.129 which indicated that the mean difference is insignificant. This implies no significance difference in mean performance score pretest. The test of null hypothesis 1 revealed that $p = 1.16$ and $t = 1.231$, which means that is $p > 0.05$ and there was no evidence to reject the H_0 . This result showed that there was no significant difference between the mean academic performance scores of Animal students in the experimental and control group. This Findings is in line those of Ogweno (2021) which established that the Problem based learning method was more powerful in enhancing Students achievement in Agricultural science subject.

The findings on the relationship between gender and students' Academic Performance in Animal Husbandry as a result of the use of Problem Solving teaching Method the findings in table shows that the mean Performance of female in experimental group in the posttest (78.01) is higher than that of male (76.68). Furthermore, the analysis of difference in male and female academic performance of Animal Husbandry students exposed to the treatment of teaching using the problem-solving approach revealed that female students had a higher post-test mean score than their male counterpart. This implies that though both groups were exposed to the problem-solving method, female students performed better in terms of their Performance scores in Animal

Husbandry, Null Hypothesis on the table also indicated the significant difference between the posttest mean score of student in the experimental and control groups. This is in line with the findings Oriator (2015) held the opinion that girls do better at all levels than boys in achievement even in areas such as arithmetic's where boys seem to excel, girls seem to have better grades. Denga (2014)) who held that female students perform better than males. Denga further reported that many comparison showed that boys and girls on the average are the same on general intelligence testing but girls do a little better on verbal test and on test involving arithmetical ability. The findings of this study conflicted with Nnamani & Oyibe (2016) that male students perform better than female in science and technology education¹⁰ This research supports Hartley and Sutton's (2013) findings that girls outperform boys in school academic achievement, motivation, and self-regulation. According to the findings of the study, gender has a significant effect on student performance, especially in Animal Husbandry subject in Edo State. In support of this finding, Voyer and Voyer (2014) provided conclusive evidence that females performed on average better than males in many school subjects, and that this trend had been observed in many countries since the early twentieth century.

Conclusion

The more appropriate method for the teaching of Animal Husbandry should be Problem solving as it produced improved academic results when compared to the lecture teaching method for Senior secondary school students taking Animal Husbandry subject. The study also found that problem -solving is gender friendly as there was no significant difference between gender and students' academic performance. This suggest that problem- solving teaching method can be used to enhance effective teaching and learning, produce improved Academic performance of students in Animal Husbandry at senior secondary school level.

Recommendations

The following recommendations were

- (i) Nigerian Education Research Development Council (NERDC), in conjunction with the Ministry of Education, should emphasize the use of Problem solving teaching method

- in the syllabus, because Problem solving teaching method use has demonstrated to produce better results in Animal Husbandry than lecture method. This will enable teachers to adopt the method in the teaching of Animal Husbandry subject.
- (ii) The supervisory arm of Ministry of Education, should discourage secondary school teachers, as much as possible, from over reliance on lecture teaching method. The method yields comparatively lowest performance in students learning outcomes in Animal Husbandry subject. The method also limits exchange of ideas amongst teachers and students.

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