

# RELATIONSHIP BETWEEN THE ACADEMIC PERFORMANCE OF STUDENTS IN INTEGRATED SCIENCE AND MATHEMATICS: A CASE STUDY OF COLLEGE OF EDUCATION, IKERE-EKITI, EKITI STATE

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## Abstract

The study examined the relationship between the academic performance of students in integrated Science and Mathematics in College of Education, Ikere - Ekiti. Samples of 300 Students were randomly selected from three consecutive sessions, 2000-2003, from the records through inventory. The research design is an ex-post facto, Pearson Product Moment Correlation statistic was used to test the three hypotheses at  $P < 0.05$ . The result shows that:

1. There was a significant relationship between the academic performance of students in Integrated Science and Mathematics in the College of Education, Ikere-Ekiti.
2. There was a significant relationship between the academic performance of male students in Integrated Science and Mathematics. There was a significant relationship between the academic performance of female students in Integrated Science and Mathematics.

Based on the result of the findings, the-male students perform significantly better in both Integrated Science and Mathematics than their female counterparts. Therefore, the lecturers of integrated Science and Mathematics should encourage the female students to put more effort in their study habit, and the learning of these subjects at the college level. Finally, the concerned departments should sensitize their staff on the intricacies of the academic performance between the male and female students so that more emphasis will be laid on the counselling of the female students towards being quality Science and Mathematics teachers.

## Introduction

Integrated Science is a subject intended to incorporate all various science subjects: Physics, Chemistry, Biology and Geology (Bajah, 1983). Mathematics, which involves critical and abstract thinking that helps students to develop scientific knowledge is an essential component of Integrated Science. Some Mathematical concepts are found to constitute a problem to the Integrated Science students despite the fact that it is an indispensable discipline in the field of Science and Technology (Oladunni, 1986).

Integrated Science Curriculum at the Tertiary Institution Level is designed with the inclusion of Mathematical concepts, which may assist students of Integrated Science to achieve the objectives of the subject. For instance, geometric construction works are used in designing bridges, roads and edifice; and the idea of logic in Mathematics helps in validating claims in the Sciences. Studies conducted by Yoloye (1982), Agbonifo and Dimowo (1985) and Noble and Sawyer (1989) showed that there was a positive significant relationship between cognitive variables and students academic performance. Fowokan (1981) and Osuoha (1985) showed a relationship between the students' achievement in Mock Mathematics and Junior Secondary School Certificate Mathematics.

Abe (2002) showed that there was a significant relationship between  $CA_1$  and  $STT$ ,  $CA_2$  and  $STT$ ,  $CA_3$  and  $STT$  in seven schools out of ten schools sampled. Adeusi (1983) also showed that there was a positive relationship between pupils' performance in Class 4 and WASC while WAEC (1997) reported that the Senior Secondary Certificate Examination showed a positive significant relationship with the scores obtained by undergraduate students. In a similar research, Abdullahi (1983) reported that there was a significant and positive relationship between JME scores and first year university examination scores in Physics, while Masambichaka (1982) established a significant relationship between the students performance in the internal and external mathematics examination.

### Purpose of the Study

The main purpose of the study was to examine the relationship between the academic performance of students in Integrated Science and Mathematics in Education, Ikere-Ekiti.

### Research Hypotheses

1. There is no significant relationship between the academic performance of students in Integrated Science and Mathematics.
2. There is no significant relationship between the academic performance of male students in Integrated Science and Mathematics.
3. There is no significant relationship between the academic performance of female students in Integrated Science and Mathematics.

### Research Method

This is an ex-post facto research design, therefore, the researcher did not have direct control on the dependent and the independent variables and there was no treatment and manipulation of subjects since it involved collection of data from the students records in the department. The instruments used are the semester scores of the integrated science students in mathematics courses in the department of integrated science, that is, scores of ISC 111 - mathematics for science I, ISC 121 - mathematics for science 11, ISC 211 - mathematics for science 111 and ISC 311 - mathematics for science IV respectively between 2000 - 2003 academic sessions. Stratified random sampling technique was adopted to select three hundred students from the target population of students in the department. Pearson Product Moment Correlation Statistic was\* used to analyze the data. The scores gathered had been subjected to both internal and external moderation and confirmed valid and reliable by the assessors.

### Results

**Table I: Correlational Matrix between the Academic Performance of Students in Integrated Science and Mathematics**

Variables	Integrated Science	Mathematics	r	Result
Integrated Science	1	0.65 (High)	0.195	*
Mathematics	0.65 (High)	1		

\* Significant at  $P < 0.05$  Level

Table I shows a relationship between the academic performance of students in Integrated Science and Mathematics which is indicated by the calculated  $r$  of 0.65. The table value of 0.195 is significant at  $P < 0.05$  level. The null hypothesis one ( $H_{01}$ ) is therefore rejected.  $r_c$  of 0.65 reveals a high and positive relationship between the academic performance of students in Integrated Science and Mathematics.

**Table 2: Correlational Matrix between the Academic Performance of Male Students in Integrated Science and Mathematics**

Variables	Integrated Science	Mathematics	r	Result
Integrated Science	1	0.73 (High)	0.195	*
Mathematics	0.73 (High)	1		

\*Significant at  $P < 0.05$  Level

Table 2 shows a relationship between the academic performance of Male Students in Integrated Science and Mathematics which is indicated by  $r_c$  of 0.73. The table value of 0.195 is significant at  $p < 0.05$  level. The null hypothesis two ( $H_{02}$ ) is rejected.  $r_c$  of 0.73 reveals a high and positive relationship between the academic performance of Male Students in Integrated Science and Mathematics. Hence, there was a significant relationship between the academic performance of Male

Students in- Integrated Science and Mathematics.

**Table 3: Correlational Matrix between the Academic Performance of Female Students in Integrated Science and Mathematics**

Variables	Integrated Science	Mathematics	r	Result
Integrated Science	1	0.68	0.195	*
Mathematics	0.68 (High)	1		

\*Significant at  $P < 0.05$  Level

Table 3 shows the relationship between the academic performance of Female Students in Integrated Science and Mathematics, which is indicated by  $r_c$  of 0.68. The table value of 0.195 is significant at  $P < 0.05$  levels the hypothesis three ( $H_{03}$ ) is therefore rejected.  $r_c$  of 0.68 reveals a high and positive relationship between the performance of Female Students in Integrated Science and Mathematics. Hence, there was a significant relationship between the academic performance of Female Students in Integrated Science and Mathematics. »

## Discussion

A cursory look at table 1 shows that the correlation coefficient between the academic performance of students in Integrated Science and Mathematics was 0.65 which was positive and high while  $r$ -table at alpha level of 0.05 was 0.195 which was significantly low compared with the calculated  $r$  value. This leads to the acceptance of the hypothesis therefore; there was a significant relationship between the academic performance of students in Integrated Science and Mathematics at the college level. This finding is in line with the earlier studies by Yoloye (1982), Agbanifo and Dimowo (1985), Noble and Sawyer (1989). In table 2 the correlation coefficient between the academic performance of male students in integrated science and mathematics was 0.73 which was positive and high while the  $r$ -table was 0.195. Therefore, the hypothesis was upheld at alpha level of 0.05 while in table 3 the correlation coefficient between the academic performance of female students in integrated science and mathematics was 0.68 which was high and positive while the  $r$ -table was 0.195. This also leads to the acceptance of the hypothesis at alpha level of 0.05. However, the coefficients are very high in the male students than the female students. This could be so because Male Students were perceived to perform better in Mathematical Science than their female counterparts. The findings of this study corroborate those of Fowokan (1981), Osuoha (1985), WAFC (1997) and Abe (2002).

## Recommendations

Based on the findings of this study, the following recommendations are made:

1. Integrated Science teachers should be given proper orientation in basic Mathematics that can enhance their effective teaching of the Mathematical aspects of Integrated Science.
2. Female students in the Department of Integrated Science should be encouraged to show more interest in Science and Mathematics.

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