An Investigation of the Reason behind the Poor Students' Enrolment in Integrated Science Education Programme at Joseph Sarwuan Tarka University Makurdi, Benue State

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Abstract: The study investigated reason behind the poor students' enrolment in Integrated Science Education Programme at Joseph Sarwuan Tarka University Makurdi, Benue State. A descriptive survey research design was used. Seventy four (74) 400 level Integrated Science Education students of Joseph Sarwuan Tarka University, Makurdi (JOSTUM) formed the population of the study. A total of seventy four (74) 400 level Integrated Science Education students of JOSTUM were selected as sample for the study. A structured questionnaire was used as instrument for the study. The instrument was found reliable and valid for collecting data by the researcher's supervisor. Four (4) research questions were developed for the study, the research questions were answered using mean and standard deviation while chi-square statistics was used to test the null hypotheses formulated for the study. The findings revealed that students tend to go for their parents' careers which influence their enrolment in Integrated Science education programme (3.82), students believe that science is difficult and this discourages them from enrolling into Integrated Science education programme (3.23), poor science foundation at the Secondary School level influences students enrolment in Integrated Science education programme (3.42). It is also indicated that the students themselves think less of the course as limited to teaching in Junior Secondary Schools therefore going for better (perceived) courses of study at the higher institutions. It was however recommended that education should be carried out by school administrators about the course and that only the best brains should be enrolled into studying education courses. Scholarship should also be awarded by school administrators or the government to any student who is brilliant in education courses to create interest for others with low or no interest to science and motivate the weak ones, among others.

Keywords: Integrated Science Education, Students Enrolment.

INTRODUCTION

Science is a systematic enterprise that builds and organizes knowledge in the form of testable explanation and predictions about the universe. According to Ugwu (2014), science in its broadest form refers to all human activities involving organized knowledge of natural phenomena. According to Oforkansi (2013), science education is a field of study specifically concerned with two basic aims which are the production of a scientifically interactive society as well as the development of potential scientific and technological man power. Okon (2012) reveals that education through study of science produces economic benefits and contributes to a country's future wealth by increasing the productive capacity of its people. Science is therefore receiving much emphasis in education because of its significant and relevance to life and society.

A good knowledge of science is essential for technological advancement of any country. Today the world has been rightly described as that of science and technology thus, literacy in science is therefore, seen as a need for every man and woman. The federal government of Nigeria spells this out in its National Policy of Education (NPE, 2014) by stating that educators should be inculcating in the child the spirit of inquiry and creativity through exploration of nature and local environment. It is obvious that in Nigeria, the development of science and technology is given the greatest priority in the overall educational structure. The federal government of Nigeria (2004) substantiates the point; a great proportion of education expenditure will be devoted to science and technology and Universities and other levels of the system will be required to pay attention to the development of scientific talent, more Colleges of Technology and Polytechnics will be opened and the ratio of science to liberal Art student in the Universities has been fixed at 60:40 during the plan period. Ewesor and Itie (2015) asserted that all over the world, attention has been focused on science and technology so that there can be social, economic and even political development in which Nigeria is no exception to this drive.

Integrated Science education is an educational programme in response to competitive demand for science and technology all over the world to promote cognitive, affective, and psychomotor domains of the learners. It is a course of study which is devised and presented in such a way that students gain the concept of the fundamental unity of science, the commonality of approach to problem of scientific nature and helps students to gain an understanding of the roles and function of science in everyday life and world in which they live (Kukwi, Eggari & Mahmuda, 2014). The main objectives of the Integrated Science programme according to the National Policy on Education (NPE, 2014) includes: to prepare students to acquire adequate laboratory and field skills; inculcation

of meaningful and relevant knowledge in Integrated Science; the ability to apply scientific knowledge to everyday life in matters of personal and community health, and agriculture; reasonable and functional scientific attitudes.

Considering the importance of the programme, the poor students' enrolment in Integrated Science education should therefore be a thing of serious concern to the nation (Joint Admissions and Matriculation, JAMB, 2016). The long-standing consistent poor enrolment of students in Integrated Science education in Nigerian tertiary institutions, especially in Universities is a threat to Nigerian economic, social, scientific and technological development. Oforkansi (2013) reported that the major factors leading to students' poor enrolment in science disciplines include lack of interest in the teaching and learning of Science among the students, which emanates mainly from the monotonous and ineffective methods of instructions used by the teachers, lack of skilled professional teachers, intellectual demand of the course, parental influence, lack of instructional materials, peer group influence, among others. Gorden (2012) listed a lot of factor which account for low enrolment in Science education, most of which are students' perception of the subject matter of science which he strongly believes that it is a common fact that students perceive Science courses as being so abstract, rigid, diverse, calculative and brainstorming. The author went further to state that students' low enrolment in Science education should be traced back to Secondary Schools where the foundation of science education is being laid. He emphasized that in Secondary Schools, we have shortage of science teachers, lack of proper supply of laboratory facilities, the use of unsuitable method of teaching science and low qualification of science teachers. However, there is no specific research finding on factors or reason behind poor students' enrolment in Integrated Science education programmed particularly at the University level. Thus, the present study seeks to investigate the reason behind the poor students' enrolment in Integrated Science education programme at Joseph Sarwuan Tarka University Makurdi, Benue State.

MATERIALS AND METHOD

This study was carried out to investigate the reason behind the poor students' enrolment in Integrated Science education programme at Joseph Sarwuan Tarka University Makurdi, Benue State. The study was conducted during the second semester of the academic session 2019/2020 on students admitted during 2017/2018 academic year. The main purpose of the study is to investigate the reason behind the poor students' enrolment in Integrated Science education programme at Joseph Sarwuan Tarka University Makurdi, Benue State. The following research questions and null hypotheses were formulated and tested at 0.05 level of signifance using Chi-Square so as to obtain answers to the research questions:

Research Questions

1. What is the influence of parents on students' enrolment in Integrated Science education programme?

2. What is the influence of students' perception of Integrated Science on their enrolment in Integrated Science education programme?

3. What is the influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme?

4. What is the influence of peer group on students' enrolment in Integrated Science education programme?

Hypotheses

1. There is no significant influence of parents on students' enrolment in Integrated Science education programme.
2. There is no significant influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme.
3. There is no significant influence of peer group on students' enrolment in Integrated Science education programme.

Research Design

The study adopted the descriptive survey research design. This is because the researcher used questionnaire for collecting data from the respondents who are considered to be a representative of the population; then generalize the findings to the entire population concerned.

Population and Sample

The population of the study comprised of all the 400 level Integrated Science Education students of Joseph Sarwuan Tarka University, University, Makurdi (JOSTUM) which were enrolled into the programmme in 2017/2018 academic session. The sample size for the study is 74 Integrated Science Education students of JOSTUM who are all 400 level students.

Research Instrument

The instrument used for data collection is a structured questionnaire designed by the researcher titled "Reasons behind Poor Enrolment in Integrated Science Education Questionnaire (RPEISEQ)". The questionnaire consists of four sections (A, B, C and D) and each section contains the items aimed at providing data used in answering the research questions in the study.

Validation of Instrument

The developed instrument was validated by the researcher's project supervisor and one other validator who is an expert in measurement and evaluation in the Department of Science Education, Joseph Sarwuan Tarka University, Makurdi. The validators examined the suitability of the content and also ascertained the face validity of the instrument.

Method of Data Analysis

Data collated was analyzed using descriptive statistics of frequency and mean to answer the research questions. A mean of 2.50 was used as a cut-off mark for decision making in the study. Hence, an overall mean of 2.50 and above was considered agreed, while below 2.50 would be considered disagreed and Chi-Square was used for hypotheses test at 0.05 level of significance and it formed the basics for accepting or rejecting each of the hypotheses.

RESULT

Research Question 1: What is the influence of parents on students' enrolment in Integrated Science education programme?

Table 1: Mean Responses on the influence of parents on students' enrolment in Integrated Science education programme

S/N	ITEM	SA (4)	A (3)	D (2)	SD (1)	N	Mean	Remark
1.	Students tend to go for their parents' careers which influence their enrolment in Integrated Science education programme.	61	13	-	-	74	3.82	Agree
2.	Parents allow their children to go for careers of their choice which influence their enrolment in Integrated Science education	-	10	42	22	74	1.84	Disagree
3.	Parental factor does not influence students' enrolment in Integrated Science Education	3	6	37	28	74	1.78	Disagree
4.	Students go for such careers as medicine, pharmacy, among others in order to impress their parents.	43	26	5	-	74	3.51	Agree
5.	The ugly experiences of teachers such as non-payment of salaries, pensions, gratuities, among others make them discourage their children from enrolling into Integrated Science education programme.	44	26	4	-	74	3.54	Agree
6.	Parents encourage their children to enroll into Integrated Science education programme	-	5	45	24	74	1.74	Disagree

Table 1 shows that items 1, 4 and 5 each have mean scores of 3.82, 3.51 and 3.54 respectively which are above the benchmark of 2.5. Item 2, 3 and 6 however had a mean value of 1.84, 1.78 and 1.74 respectively which are below the benchmark. This indicates that in respect to the influence of parents on students' enrolment in Integrated Science education programme, it was found that students tend to go for their parents' careers which influences their enrolment in Integrated Science education programme, students go for such careers as medicine, pharmacy, among others in order to impress their parents and that the ugly experiences of teachers such as non-payment of salaries, pensions, gratuities, among others make them discourage their children from enrolling into Integrated Science education programme. It was however disagreed that parents allow their children to go for careers of their choice which influence their enrolment in Integrated Science education, parental factor does not influence students' enrolment in Integrated Science Education. It was also disagreed that parents encourage their children to enroll into Integrated Science education programme.

Research Question 2: What is the influence of students' perception of Integrated Science on their enrolment in Integrated Science education programme?

Table 2: Mean Responses on the influence of students' perception of Integrated Science on their enrolment in Integrated Science education programme

S/N	ITEM	SA (4)	A (3)	D (2)	SD (1)	N	Mean	Remark
1.	Students believe that science is difficult and this discourages them from enrolling into Integrated Science education programme.	36	24	9	5	74	3.23	Agree
2.	Students' general dislike of the mathematical nature of Science influences their enrolment in Integrated Science education programme.	37	37	-	-	74	3.50	Agree
3.	Some students underrate Integrated Science for the fact that it is taught only at the Primary and Junior Secondary Schools thus, influencing their enrolment in the programme.	37	27	10	-	74	3.36	Agree

		SA	A	D	SD	N	Mean	Remark
4.	Lack of clear understanding of the objectives of Integrated Science education programme by students influences their enrolment in the programme.	40	31	3	-	74	3.50	Agree
5.	Students are discouraged from enrolling in Integrated Science education programme on realizing that they will end up as teachers.	47	21	3	3	74	3.51	Agree
6.	The joy of being a teacher in the future encourages students chose Integrated Science education as a course of study	-	7	43	24	74	1.77	Disagree
7.	The ambiguity of words in Integrated Science encourages students to enroll into Integrated Science education at the tertiary level of education	27	33	14	-	74	3.18	Agree

Table 2 reveals that items 1-5 and 7 have mean values of 3.23, 3.50, 3.36, 3.50, 3.51 and 3.18 respectively which are all above the benchmark of 2.50. Item 6 however had a mean value of 1.77. It can thus be concluded that based on the influence of students' perception of Integrated Science on their enrolment in Integrated Science education programme, the following were observed: students believe that science is difficult and this discourages them from enrolling into Integrated Science education programme, students' general dislike of the mathematical nature of Science influences their enrolment in Integrated Science education programme, some students underrate Integrated Science for the fact that it is taught only at the Primary and Junior Secondary Schools thus, influencing their enrolment in the programme, lack of clear understanding of the objectives of Integrated Science education programme by students influences their enrolment in the programme, students are discouraged from enrolling in Integrated Science education programme on realizing that they will end up as teachers and that the ambiguity of words in Integrated Science encourages students to enroll into Integrated Science education at the tertiary level of education. It was however disagreed that the joy of being a teacher in the future encourages students chose Integrated Science education as a course of study.

Research Question 3: What is the influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme?

Table 3: Mean Responses on the influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme

S/N	ITEM	SA (4)	A (3)	D (2)	SD (1)	N	Mean	Remark
1.	Poor science foundation at the Secondary School level influences student's enrolment in Integrated Science education programme.	37	31	6	-	74	3.42	Agree
2.	Student's lack of basic scientific knowledge will find it difficult to pass Jamb thus, influencing their enrolment in Integrated Science education programme.	39	32	3	-	74	3.49	Agree
3.	Students from rural Secondary Schools without adequate qualified Science teachers will lack the background knowledge which has a bearing on their enrolment in Integrated Science education programme.	49	20	5	-	74	3.59	Agree
4.	Secondary Schools without well-equipped science laboratories will produce students without the necessary background knowledge needed for their enrolment in Integrated Science education programme.	36	38	-	-	74	3.49	Agree
5.	Students' non-involvement in science practical activities at the Secondary School level influences their enrolment in Integrated Science education programme.	41	30	3	-	74	3.51	Agree
6.	Students with sound Secondary School education will find it easy to pass SSCE and JAMB thus, influencing their enrolment in Integrated Science education	31	39	4	-	74	3.36	Agree
7.	Secondary Schools with well-equipped science laboratories will produce students with necessary background knowledge needed for enrolment into Integrated Science education	47	27	-	-	74	3.64	Agree

Table 3 shows that respondents agree on all the items as items 1 to 7 all had mean values of 3.42, 3.49, 3.59, 3.49, 3.51, 3.36 and 3.64 respectively which are all above the benchmark of 2.50. This is an indication that the influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme include: poor science foundation at the Secondary School level influences students enrolment in Integrated Science education programme, students lack of basic scientific knowledge will find it difficult to pass Jamb thus, influencing their enrolment in Integrated Science education programme, students from rural Secondary Schools without adequate qualified Science teachers will lack the background knowledge which has a bearing on their enrolment in Integrated Science education programme, Secondary Schools without well-equipped science laboratories will produce students without the necessary background knowledge needed for their enrolment in Integrated Science education programme, students' non-involvement in science practical activities at the Secondary School level influences their enrolment in Integrated Science education programme, students with sound Secondary School education will find it easy to pass SSCE and JAMB thus, influencing their enrolment in Integrated Science education and that Secondary Schools with well-equipped science laboratories will produce students with necessary background knowledge needed for enrolment into Integrated Science education.

Research Question 4: What is the influence of peer group on students' enrolment in Integrated Science education programme?

Table 4: Mean Responses on the influence of peer group on students' enrolment in Integrated Science education programme

S/N	ITEM	SA (4)	A (3)	D (2)	SD (1)	N	Mean	Remark
1.	Some students follow their friends' choices of careers which influences their enrolment in Integrated Science education programme.	53	17	4	-	74	3.66	Agree
2.	Some students seek advice from their friends concerning their choices of career and this influences their enrolment in Integrated Science education programme.	31	38	5	-	74	3.35	Agree
3.	Peer counselling has influence on students' enrolment in Integrated Science education programme.	54	20	-	-	74	3.73	Agree
4.	Peer interaction brings to students' knowledge about careers they were previously unaware of thereby influencing their enrolment in Integrated Science education programme.	48	20	6	-	74	3.57	Agree
5.	Students seeing their friends enrolling in other programmes such as medicine, engineering, among others influences their enrolment in Integrated Science education.	58	13	3	-	74	3.74	Agree
6.	Students go for study programmes irrespective of their friends' views	4	3	49	18	74	1.91	Disagree
7.	Students are encouraged by their friends to enroll into Integrated Science education programme	-	6	39	29	74	1.69	Disagree

Table 4 reveals that items 1-5 have mean values of 3.66, 3.35, 3.73, 3.57 and 3.74 respectively which are all above the benchmark of 2.50. Item 6 and 7 however had mean values of 1.91 and 1.69 respectively. It can thus be concluded that based on influence of peer group on students' enrolment in Integrated Science education programme, the following were observed: Some students follow their friends' choices of careers which influences their enrolment in Integrated Science education programme, some students seek advice from their friends concerning their choices of career and this influences their enrolment in Integrated Science education programme, peer counselling has influence on students' enrolment in Integrated Science education programme, peer interaction brings to students' knowledge about careers they were previously unaware of thereby influencing their enrolment in Integrated Science education programme, and that students seeing their friends enrolling in other programmes such as medicine, engineering, among others influences their enrolment in Integrated Science education. It was however disagreed that students go for study

programmes irrespective of their friends' views and that students are encouraged by their friends to enroll into Integrated Science education programme.

Hypothesis 1

There is no significant influence of parents on students' enrolment in Integrated Science education programme.

Table 5: Chi-square analysis on significant influence of parents on students' enrolment in Integrated Science education programme.

	N	Mean ($\bar{x}$)	Std	Df	X^2cal	X^2tab	Level of Sig.
Observation	74	3.28	0.60	5	66.40	30.14	0.00

Table 5 shows a chi-square (X^2) value of 66.40, df = 5 obtained at 0.00 level of significance of the observation from 74 respondents. Analysis of chi-square indicates that X^2_{cal} value of 66.40 is greater than X^2_{tab} of 30.14 at the 0.05 level of significance. Since X^2_{cal} is greater than X^2_{tab} is greater than X^2_{tab} then the null hypothesis which state that there is no significant influence of parents on students' enrolment in Integrated Science education programme is rejected.   It is therefore concluded that there is a significant influence of parents on students' enrolment in Integrated Science education programme.

Hypothesis 2

There is no significant influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme

Table 6: Chi-square analysis on thesignificant influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme

	N	Mean ($\bar{x}$)	Std	Df	X^2cal	X^2tab	Level of Sig.
Observation	100	3.09	0.94	18	34.68	28.87	0.01

Table 6 above shows a chi-square (X^2) value of 34.68, df = 6 obtained at 0.01 level of significance of the observation from 74 respondents. Analysis of chi-square indicates that X^2_{cal} value of 34.68 is greater than X^2_{tab} of 28.87 at the 0.05 level of significance. Since X^2_{cal} isgreater than X^2_{tab} is greater than X^2_{tab} then the null hypothesis which state that there is no significant influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme is rejected.   It is therefore concluded that there is a significant influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme.

Hypothesis 3

There is no significant influence of peer group on students' enrolment in Integrated Science education programme

Table 7: Chi-square analysis on significant influence of peer group on students' enrolment in Integrated Science education programme.

	N	Mean ($\bar{x}$)	Std	Df	X^2cal	X^2tab	Level of Sig.
Observation	100	3.09	0.19	20	155.00	31.41	0.01

Table 7 above shows a chi-square (X^2) value of 155.00, df = 6 obtained at 0.00 level of significance of the observation from 74 respondents. Analysis of chi-square indicates that X^2_{cal} value of 155.00 is greater than X^2_{tab} of 31.41 at the 0.05 level of significance. Since X^2_{cal} is greater than X^2_{tab} then the null hypothesis which states that there is no significant influence of peer group on students' enrolment in Integrated Science education programme is rejected. It is however concluded that there is a significant influence of peer group on students' enrolment in Integrated Science education programme.

Discussion of Findings

This section dealt with the discussion of findings arrived at by this study and is discussed in line with the findings from research questions formulated for the study as follows:

Research Question 1 sought to find out the influence of parents on students' enrolment in Integrated Science education programme. This was analyzed in Table 1 which shows that students tend to go for their parents' careers which influences their enrolment in Integrated Science education programme, students go for such careers as medicine, pharmacy, among others in order to impress their

parents and that the ugly experiences of teachers such as non-payment of salaries, pensions, gratuities, among others make them discourage their children from enrolling into Integrated Science education programme. It was also indicated that parents do not allow their children to go for careers of their choice which influence their enrolment in Integrated Science education, parental factor does influenced students' enrolment in Integrated Science Education and that parents themselves do not encourage their children to enroll into Integrated Science education programme. This is in agreement with Kola and Akanbi (2013) who also conducted a study on the perceived causes of students' low enrolment in science in secondary schools, Nigeria and fund that low student interest and lack of motivation from their parents reduces the child's enrolment in science study.

Research question 2 was asked to determine the influence of students' perception of Integrated Science on their enrolment in Integrated Science education programme. This was answered in Table 2 which reveals that students believe that science is difficult and this discourages them from enrolling into Integrated Science education programme, students' general dislike of the mathematical nature of Science influences their enrolment in Integrated Science education programme, some students underrate Integrated Science for the fact that it is taught only at the Primary and Junior Secondary Schools thus, influencing their enrolment in the programme, lack of clear understanding of the objectives of Integrated Science education programme by students influences their enrolment in the programme, students are discouraged from enrolling in Integrated Science education programme on realizing that they will end up as teachers and that the ambiguity of words in Integrated Science encourages students to enroll into Integrated Science education at the tertiary level of education. These findings corroborate that of Aina (2012), in his study he asserted that lack of clear understanding of the objectives of Science education programme by students influences their enrolment in the programme and that the prospect of being a teacher in the future discourages students to choose Science as a course.

Research Question 3 was asked to investigate influence of background knowledge of science at the Secondary School level on students' enrolment in Integrated Science education programme. This was analyzed in Table 3, it reveals that poor science foundation at the Secondary School level influences students enrolment in Integrated Science education programme, students lack of basic scientific knowledge will find it difficult to pass Jamb thus, influencing their enrolment in Integrated Science education programme, students from rural Secondary Schools without adequate qualified Science teachers will lack the background knowledge which has a bearing on their enrolment in Integrated Science education programme, Secondary Schools without well-equipped science laboratories will produce students without the necessary background knowledge needed for their enrolment in Integrated Science education programme, students' non-involvement in science practical activities at the Secondary School level influences their enrolment in Integrated Science education programme, students with sound Secondary School education will find it easy to pass SSCE and JAMB thus, influencing their enrolment in Integrated Science education and that Secondary Schools with well-equipped science laboratories will produce students with necessary background knowledge needed for enrolment into Integrated Science education. This finding is in cognizance with that of Meltzer (2012) who also reported that students from rural Secondary Schools without adequate qualified Science teachers will lack the background knowledge which has a bearing on their enrolment in Science education programme in the higher institution.

Research Question 4 was asked to determine the influence of peer group on students' enrolment in Integrated Science education programme. This was analyzed in Table 4, it reveals that some students follow their friends' choices of careers which influences their enrolment in Integrated Science education programme, some students seek advice from their friends concerning their choices of career and this influences their enrolment in Integrated Science education programme, peer counselling has influence on students' enrolment in Integrated Science education programme, peer interaction brings to students' knowledge about careers they were previously unaware of thereby influencing their enrolment in Integrated Science education programme, and that students seeing their friends enrolling in other programmes such as medicine, engineering, among others influences their enrolment in Integrated Science education. It was however disagreed that students go for study programmes irrespective of their friends' views and that students are encouraged by their friends to enroll into Integrated Science education programme. The results from this study are consistent with findings by Tella (2007); Amedu (2015) in their various study also asserted that some students follow their friends' choices of careers which influences their enrolment in Science education programme.

Recommendations

1. Education (sensitization) should be carried out about the course and that only the best brains should be enrolled into studying education courses
2. Employers of teachers should recruit both male and female graduates of integrated science to teach basic science in their schools so as to teach the students benefits of Integrated Science subject
3. Scholarship should always be awarded to any student who is brilliant in integrated science to create interest for others with low or no interest to science and motivate the weak ones.

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