
Factors Influencing Students' Choice of Biology Science in Senior Secondary School in Kaduna State

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ABSTRACT

This study was undertaken to ascertain the possible factors that account for the students' choice of Biology science in senior secondary school in Zaria local government, Kaduna state. The objective was to determine who influences students to choose Biology as subject, what personal and organizational factors motivate students to select and which aspect of Biology curriculum were satisfying to students. Questionnaire were administered to 153 students from 10 senior secondary schools in Kaduna state. Data was generated using their responses and analysed by mean and standard deviation. People who most influenced students to offer Biology were parents and teachers with mean of 4.0 and 3.0 each respectively. Laboratory technician and another teacher mean of 1.6 each being least influential. Personal and organizational factors that most influenced students were personal interest mean of 3.6, followed by Biology related background with 3.5, while Biology club/society activities mean of 1.9 had least influence. Most satisfying activity was club/societies with mean of 3.30. Biology practical work mean of 2.80 being least satisfactory. Part of the recommendation is for the Biology educators to properly plan, maintain active recruitment program by providing information to potential students, parents and the general public about Biology and Biology related subjects, Biology science teachers should work with school counsellor to develop a thorough understanding of the program.

INTRODUCTION

Trends in student's choices and persistence in Science, Technology, Engineering and Mathematics (STEM) subjects have been problematic in almost every corner of the world, however, to varying degrees. According to Lavigne, Vallerrand and Miquelon (2007), students' participation and persistence in STEM is very minimal in comparison to other fields. According to Mjega (2013), the problem of poor performance and participation in STEM is more serious in developing countries. Having discussed the students' participation in science in various parts of the world, it is important to illuminate the status of Biology in Nigeria.

There had been worldwide recognition of importance of science and thereby science education in national development and this has found a central place in the curricular of schools at all levels (Ogbonna, 2007). According to Olasehinde and Olatoye (2014), science education is designed to

guide the world towards a scientifically literate society and this is important for an understanding of science as it offers personal fulfillments and excitements

Biology is usually regarded as the most simple to understand among all the science subjects and thus it is the one that usually attract the widest enrolment than any other science subject especially at the upper basic level of the Nigerian education. Despite the fact that Biology is the simplest to comprehend among the science subjects, the level of academic achievement is nonetheless not much different from other science subject among the students. According to Akubuilu (2004), in spite of the popularity of Biology among students, the failure rate has remained very high many researchers in science education had been around about this downward trend and efforts to identify major factors with the aim of addressing them are being daily projected. The funding of the content analysis process revealed factors influencing the academic performance in

Biology (Tom, Coetzee, Heyns, 2014). They therefore concluded that the main factors identified were biological science and its characteristics of educators, educational strategies, resources and biological science assessment.

Reason for students' academic and career choice in science and technology have been studied by several researchers (Woolnough, 1994). According to them there are a number of factors that influence student's career choice into science and engineering. Despite the students' high school background: mathematics and science performance, grade II and 12 course selection and school science experience that might influence their choice of career, other factors also significantly influence student's career choice, job characteristics family influence and family responsibility.

Aims and Objectives

The main objectives of this study is to analyze the factors that led students to choose, enroll and participate in Biology science in senior secondary school in Zaria Local Government, Kaduna state.

1. Determine personalities that influence students' choice of Biology science in senior secondary school.
2. Determine the personal or organizational factors that influenced students' choice of the subjects.
3. Determine the effect of Biology science curriculum of the students' choice of the subject at the senior secondary school level.

Research Questions

The study answers the following questions:-

1. Who are the persons that influence students' to choose Biology science?
2. What are the factors that motivate students to enroll in Biology science?
3. Which aspects of Biology science curriculum satisfied students?

METHODOLOGY

The data for this was collected by means of a questionnaire. A list of people and factors that influence students to enroll in Biology science at the senior secondary school was compiled based on the results of other relevant studies (Numan et. al. 2007). Part one of the questionnaire consisted of questions on demographic characteristics of the respondents, while part two presents statements assessing the degree of influence each person or factor had on the respondent's decision to enroll in Biology science classes. Part three also provides statements assessing the degree of satisfaction the respondents within different aspects of the Biology science curriculum.

Stratified random sampling technique was used to select a sample of 5 out of 50 senior secondary schools offering Biology subject, out of which a total of 50 teachers were selected (10 teachers from each selected school).

RESULTS

Table 1: Person's influencing enrollment in Biology science

Persons	Mean	SD	Remarks
Former Biology student	2.8	1.33	Moderate influence
Students outside of Biology	2.0	1.22	Low influence
A friend	2.9	1.44	Moderate influence
Students enrolled in Biology	2.9	1.32	Moderate influence
Biology science teacher	3.0	1.53	Moderate influence
School counselor	1.8	1.14	Low influence
Another teacher	1.6	1.02	Low influence
Laboratory technologist/technician	1.6	1.10	Low influence

Persons	Mean	SD	Remarks
Parents	4.0	1.46	very influence
Siblings (brother or sister)	2.2	1.53	Low influence
Relative	2.4	1.38	Low influence
Neighbor	1.8	1.2	Low influence
Biology club activities	1.7	1.20	Low influence
People associated with Biology	2.2	1.35	Low influence

4= very influence; 3= moderate influence; 2= low influence; and 1= no influence.

Based on the mean scores presented in Table 1, the people who most influenced the students to enroll in Biology education were parents, the Biology teachers, a friend, and a former Biology

education student. The people who least influenced the respondents were the extension officer, another teacher, Biology club/society leader and the school counselor

Table 2: Personal and organizational influence on enrollment of Biology science

Influence	Mean	SD	Remarks
Biology club activities	1.91	1.34	Low influence
Occupational opportunities	2.98	1.45	Moderate influence
Biology related background	3.5	1.51	Moderate influence
Interest in Biology as a major in college	2.41	1.47	Low influence
Personal interests	3.60	1.55	High influence

The personal and organizational factors, which most influenced the respondents to choose Biology science as a choice subject at the senior secondary school were personal interests and possession of a Biology related background. The

personal and organizational factor with least influence respondents was Biology clubs/society. These inferences were made based on data presented in Table 2.

Table 3: Students satisfaction with phase of Biology Science Curriculum

Phase	Mean	SD	Remarks
Biology science course work	3.15	0.71	Very satisfied
Activities in Biology science	3.21	0.74	Very satisfied
Contest activities	3.18	0.81	Very satisfied
Biology clubs	3.30	0.79	Very satisfied
Biology practical course work	2.80	0.86	Dissatisfied
Classroom facilities	2.96	0.76	Dissatisfied
Laboratory facilities	3.06	0.96	Satisfied

4= very satisfied; 3=satisfied; 2= dissatisfied; 1=very dissatisfied

Based on the data presented in Table 3, the phase of the Biology science curriculum that the respondents were most satisfied with were Biology club activities, other activities like excursion and field

trip associated with their course work in Biology and contest activities. Phases that the respondents were least satisfied with were classroom facilities, Biology practical course work and laboratory facilities.

FINDINGS

1. Of the respondents, 28% were in SSS1, 38% were SSSII and 34% were SSSIII students. Fifty eight percent lived in or around rural areas where they value environment whereas 42% lived in towns and urban areas.
2. The parents, Biology science teacher, a friend and a former Biology science student are the people who most influenced students to enroll in Biology with parents having high influence. The people who least influenced the respondents were the laboratory technologist/technician, another teacher, Biology club/society leader and the school counselor
3. Personal interests and possession of Biology related background are the personal and organizational factors which most influenced the respondents to offer Biology while Biology club/society had least influence.
4. The respondents were most satisfied with Biology / Science club activities, and field trips, course work in Biology and contest activities. Phases of the curriculum that the respondents were least satisfied with were classroom course facilities Biology practical course work and laboratory facilities

DISCUSSION

Based on the results of the study, the most influential persons, that is, parents and teachers of respondents may exert this impact up on student's choice of Biology science because they both have direct link with the monitoring of students' learning, they serve as motivators, mentors and even models for the respondents, this in line with findings of Fonseca and Conboy, (2006) who opined that parenting practices and parental involvement with the school explain much of the variations in school performance. From this study, parent based factors were also noted to vary along the pattern of disparity of academic performances with the schools. The least influencers are not closely associated with the learning/teaching process, other teachers and technologist are far away from the respondents. For

the counselor's least impact, it may be that the students do not use or understand the roles of the office of the school counselor, since it is an emerging trend in Kaduna state secondary school. However, the counselor needs to create more awareness among students and staff and work in liaison with other staff of the school for optimum performance and achievement of his office as a school counselor.

The impact of Biology related background and personal interests in enhancing enrollment in Biology science may be that, Biology related background may serve as a precursor or to stimulate personal interest of the respondents in Biology science through transfer of skills learnt from their homes. Good background and interest have also been identified as factor that could promote high achievement in Biology. This may be the reason why they jointly have higher influences than the other factors considered in the study. The lowest influence by club activities may be as a result of the fact that students at the secondary school level have little or none personal finance at their disposal to run their clubs in a way that club activities can be made attractive to other students thereby influencing them to choose and enroll in Biology science as a subject of choice.

The dissatisfaction of students about the practical course work, classroom and laboratory facilities reveal a great deficiency in our science educational program's capacity to teach practical skills. This may be caused by under-funding or mismanagement of economic resources exhibited in lack of adequate and appropriate physical educational infrastructure in most of our secondary schools like lack of attractive classrooms, well equipped libraries and laboratories, lack of qualified staff in the needed for smooth running of course offering so that educational goals are achieved to meet needs of students and the society.

CONCLUSION

It was observed that the most often cited personal and organizational factors that influenced students to enroll in Biology were parents, personal

interests followed and possession of Biology related background and occupational opportunities. In this study, Biology related background ranked high because majority of the respondents grew up learning about their environment. Thus one could hypothesize that many students are participating in Biology science programs because of interest or curiosity in certain areas of Biology and not just for preparation for a certain occupation or Biology discipline such as farming, nursing etc.

RECOMMENDATIONS

1. It is recommended that Biology teachers should establish and maintain an active recruitment program by providing information to potential students, parents and the general public about Biology and Biology related subjects.
2. The practical phase of the program should be carefully analyzed to find out why students were least satisfied with it, and steps up the program.
3. The Biology science teachers should work with school counselor to develop a thorough understanding of the program. By this the counselor can do a better job counseling prospective students about the subject and encourage all students to consider enrolling in Biology science.
4. Administrators should work with teachers to facilitate the participation of students in the many activities available through Biology science and communicate appropriately to link policy formulators

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