

**F**ACTORS INFLUENCING THE CHOICE OF SCIENCE SUBJECTS AMONG SECONDARY SCHOOL STUDENTS IN TAFALocal GOVERNMENT AREA OF NIGER STATE: THE NEED FOR COUNSELLING

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**ABSTRACT**

**T**he main objective of this study is to identify factors, which influence the choice of Science subjects in secondary schools students the need for counseling in Niger State Nigeria the study was conducted in Tafa local Government Area of Niger State as a case study. A total of 240 respondents from six different co-educational secondary schools represented by letters A, B, C, D, E, and G were involved in the study. The study adopted a quantitative approach and data were gathered through Questionnaires, all ethical issues such as seeking permission for data collection from responsible authorities and confidentiality of respondents were observed. Descriptive

**Introduction:**

Science is a process as well as knowledge. Children learn science by being involved not only with its content, but also with its methodology. The effective science facility accommodates both Science study requires a variety of unique instructional materials in addition to those materials common to all of education. A science facility must have space to accommodate this variety in combination with hands-on instructional strategies. Science instructional areas have

statistics for data analysis was used. The study found out that some factors were found to have great influence on students in deciding to study Science subjects and have sustaining power to students regarding their choice and sustenance of Science Subjects. The findings show that availability of qualified teachers, peer group, family background, school type, intelligence, student's ability adequate instructional materials, and lack of career guide/counseling services affect the choice of Science subjects. The study recommends that the parents should cooperate with teachers in guiding and influencing students to choose science subjects. The Government should strive to ensure there are adequate Science teachers, adequate teaching and learning facilities in schools including textbooks and equipment so as to attract more students into Science, more privilege especially in accessing loans should be given to Science students to motivate them to take Science subjects, employment opportunities and other aspects. Educational policies should be well communicated to students as they are the beneficiary of the policies.

**Key words:** Choice, Science, Subjects,, Counseling, influencing.

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**S**patial and material needs that are different from those considered in designing a general use classroom National, state, and local efforts, public and private, are underway to improve science education. A major goal for education in the 21st century is to create scientifically literate citizens, who are able to think critically, make sense of complex data, and solve problems. Currently, it is observed that the objectives for improving scientific literacy are not achieved. Science enrollment is relatively low, achievement in certain grade level is declining and teachers' morale is low.. The number of secondary schools has more than tripled between 2004 and 2014 to serve different underserved communities and so has the number of enrollees. Despite these successes, there have been a number of challenges, including the following; Poor performance in secondary education examinations, with most students getting marginal pass of Division IV or failing completely, acute shortages of teachers, especially in the Sciences and Mathematics, with many students not able to do these subjects at all, acute shortages of Science and Mathematics

teachers, inequalities in learning environments among different schools resulting in inequalities of learning outcomes Knowledge of science and technology is therefore a requirement in all countries and all people globally due to the many challenges that are facing them. These challenges include emergences of new drug resistant diseases, effects of genetic experimentation and engineering, ecological impact of modern technology, dangers of nuclear war and explosions and global warming among others (Alsop & Hicks, 2001).

The broad aims of secondary education within, the overall national objectives as contained in the National Policy on Education of the Federal Republic of Nigeria (FRN, 2004) include:

1. preparation for useful living within the society; and
2. preparation for higher education.

In specific terms, the policy document stated among other things, that secondary schools should equip students to live effectively in our modern age of Science and technology. In view of this, the Government and professional bodies like Science Teachers' Association of Nigeria (STAN) have continued to make regular inputs into science education to ensure that science is effectively taught in Nigeria primary and secondary schools. It is pertinent to note, however, that the trend in most secondary schools in Nigeria, reveals that the number of the students who choose to study science subjects at the Senior Secondary School level has been declining (Nworgu, 1990; Maduabum, 1994, Salau, 2002) despite government's efforts and interest in science. This has had a spillover effect of poor enrollment into science courses in the Universities. Available data indicate low enrollments in science courses in the Universities (Madabum and Madubuiké, 1995, Nkpa and Olatunji, 1996; Maduabum, 2000; Maduabum, 2005). Guidance and counseling is helping profession which is concerned with molding, reconstructing and rehabilitating a trouble person. It is a self-revealing relationship and both preventive and curative of maladaptive behavior. It is globally accepted that, guidance and counseling activities are for human beings, those with or without problems, normal and abnormal. The establishment of modern guidance and counseling in secondary schools in Nigeria however, rest on the realization of the need

for more sophisticated and integrated package to help individual satisfy their problems and concerns of presents day living.

Guidance and counseling is an important educational tool in shaping the orientation in a child from negative ideas that is planted in the child by his/her peers. Hence the need school for the counselor to assist the child in molding their future through counseling therapy. The school counselor is seen as a role model and highly respected by students. The counselors by their training are expected to be friends with the school child, listen to the child's complains, short comings and proffer guidance to the child in a quest of moulding the child in the right part to take in their life pursuit. Egbo (2013) stated that "the total development of a child can only take place in an environment conducive for teaching and learning". It is in realization of the above that all

Educational services which can promote teaching and learning in schools are given prominent attention by educational planners. Counseling services are among the school educational services. It is believed that guidance and counseling services in school shall develop, assess and improve educational programmes; enhance teaching and improve the competence of the teacher and reduce cost for the children.. Akinade (2012) defines guidance and counselling as a process of helping an individual become fully aware of his/her self and the ways in which he is responding to the influences of his/her environment. It further assists him to establish some personal meaning for this behaviour and to develop and classify a set of goals and values for future behaviour. According to Oviogbodun (2015) counselling can be defined as a number of procedures in assisting an individual to solve his problems. Counselling is more involved emotionally in the affective realm personalized learning, that is, emotions and feelings, values, attitudes. Counselling is an interaction or relationship between two or few individuals, the client counsellor relationship of trust (Geshinde 1991; Adebowale, 2012; cited in Oviogbodun, 2015). Counselling is a learning process in which a counsellor helps an individual or individuals learn, understand themselves and their environment and be in a position to choose the right type of behaviours

that will help them develop, grow, progress, ascend, mature and step up, educationally, vocationally and socio personally, (Egbo, 2013). In other words, counselling is a transformative process of helping people to learn all that are to be learnt both in and outside the School according to research carried out by Ebizie, Enajedu & Nkech i(2016) The following are benefit of counselling to students in schools

1. Prepare students for the challenges of the 21st century through academic, career, and personal / social development.
2. Relates educational program to future success.
3. Facilitates career exploration and development.
4. Develops decision-making and problem solving skills.
5. Assists in acquiring knowledge of self and others.
6. Enhances personal development.
7. Assists in developing effective interpersonal relationship skills.
8. Broadens knowledge of our changing world.
9. Provides advocacy for students.
10. Encourages facilitative, co-operative peer interactions.
11. Fosters resiliency factors for students.
12. Assures equitable access to educational opportunities.

### **Statement of the Problem**

The rate of students dropping Science in Nigeria is not encouraging worse especially in the zone under study, (Tafa local government area of Niger State) and alarming regardless of the increase in access to education for most Nigeria children. Low students' enrollment in science subjects in Nigeria has remained one major problem facing education in the 21st century. Joint Admissions and Matriculation Board (JAMB) has made great efforts to keep to the target ratio of 60:40 Science/Arts, in her university admission in the line with the stipulation of the National Policy on Education. Contrary to expectations, the student university enrollment has remained reversed in favour of Arts over the years. Yoloje's (1988), in His study shows the percentages of science and technology enrollment in the first five years of the 1970s and the first five years of 1980s. Yoloje pointed

out that in none of the years has the 60:40 ratio been attained. We were closer, he continued, to the ratio in the early 1970s than in the early 1980s. However, there had been a steady though slow improvement since 1981-82. Equally disturbing is that the bulk of students who opt for the science select only biology in preference to chemistry and physics (WAEC, 1999). Most of these students simply register for biology, which they consider to be the easiest science subject (Ango and Sila, 1986). Another related issue borders on gender disparity in science enrollment. Girls and women are grossly underrepresented in the pursuit of science, technology and mathematics (STM) in Nigeria. Maduabum (1994), reported that available statistics indicate that enrollment figures of girls and women education at the secondary and tertiary levels are comparatively low. This has been confirmed at the secondary school level (Maduabum, 1996, Akinseinde and Ariehe, 2000, Salau, 2002, Israel, 2005, Longbap and Nok, 2007, and at the university level (Abdulraman, 1992; Nkpa, 1993; Maduabum, 1994, Maduabum, 2000, Maduabum, 2005). Maduabum (2005), in a study of total student enrollment by discipline and gender by Federal Universities 1993/94-1997/98 shows that many more males than females were enrolled in Nigerian Federal Universities in STM and STM-related courses in the period under the review. He stated further that, this is largely in contrast to the pattern of enrollment observed in the Arts. It is pertinent to note (Salau, 2002), that female enrollment is usually higher in the areas of English, history, government, religion and social sciences education than in physics, chemistry, mathematics and technology education programmes. The writer wish to add that it is not in doubt that certain factors are responsible for this gender disparity in enrollment.

### **Objectives of the Study**

To study the factors influencing students decision regarding the choice of Science subjects and implication for counseling. More specifically this study aimed to;

- i. Examine factors influencing students' choice of science subjects, in Tafa Local Government of Niger State.

- ii. To Investigate students' interest in vocational/career choice counseling services in science subjects selection

### Research Questions

- i. What are the factors influencing students' choice of science subjects?
- ii. Do vocational counseling services sustain students' interest in science subjects?

### Methodology

Survey research design was used for this study. A total number of two hundred and forty (240) students participated in the study. The sample was selected using simple random sampling technique. A well-structured instrument by experts tagged FACSSQ (factors affecting choice of science subjects questionnaire) designed by the researchers was used for data collection. This instrument has two sections A and B. Section A dealt with bio-data of the respondents while section B contained items on the topic. The reliability of the instrument was confirmed through split- half method. 0.78 correlation co-efficient was gotten which was high enough to determine the reliability of the instrument. Copies of questionnaire were personally administered by the researcher with the assistance of the school heads to the respondents. The collected data were analyzed using frequency counts and percentages

Table1. Showing selected schools in Tafa Local Government Area of Niger State and the Sample Size per school.

S/N	Schools Selected	School Type	Sample Size
1.	Govt Sec. Sch Azu	Mixed	40
2.	Govt Sec. Sch Sabon-Wuse	Mixed	40
3.	Govt Sec. Sch. Gauraka	Mixed	40
4.	Govt. Sec. Sch. Tafa	Mixed	40
5.	Govt Sec. Sch. Sabon- Bwari	Mixed	40
6.	Govt. Sec. Sch. Garam	Mixed	40

Source : Local Government Educational Resource Centre

## Results and Discussion

The two research questions earlier raised in the study were answered descriptively.

Research Question 1: What are the factors influencing students' choice of science subjects?

**Table 1: Percentage analysis showing factors influencing students' choice of science subjects**

S/N	Factors Influencing Students' Choice of Science Subjects	Responses			
		Yes		No	
		F	%	F	%
1	Ability	195	81.3	45	18.7
2	Intelligence	201	83.8	39	16.2
3	Aptitude	168	70.0	72	30.0
4	Interest	214	89.2	26	10.8
5	Value	156	65.0	84	35.0
6	Personality	166	69.2	74	30.8
7	Family background	159	66.3	81	33.7
8	School type	151	62.9	89	37.1
9	Peer group	174	72.5	66	27.5
10	Cost of training	179	74.6	61	25.4
11	Period of training	145	60.4	95	39.6
12	Parents' income	163	67.9	77	32.1
13	Availability of instructional materials	198	82.5	42	17.5
14	Teachers' quality	167	69.6	73	30.4
15	Religion	99	41.3	141	58.7
16	Gender	101	42.1	139	57.9

From table 1 above, item 1 revealed that 81.3% of the respondents agreed that ability influences choice of science subjects while 18.7% of them said no. Item 2 revealed that 83.8% of the respondents agreed that intelligence



influences choice of science subjects while 16.2% of them said no. Item 3 showed that 70.0% of the respondents agreed that aptitude influences choice of science subjects while 30.0% of them said no. Item 4 showed that 89.2% of the respondents agreed that interest influences choice of science subjects while 10.8% of them said no. Item 5 showed that 65.0% of the agreed that value influences choice of science subjects while 35.0% of them said no. Item 6 showed that 69.2% of the respondents agreed that personality influences choice of science subjects while 30.8% of them said no. Item 7 showed that 66.3% of the respondents agreed that family background influences choice of science subjects while 33.7% of them said no. Item 8 showed that 62.9% of the respondents agreed that school type influences choice of science subjects while 37.1% of them disagreed. Item 9 showed that 72.5% of the respondents agreed that peer group influences choice of science subjects while 27.5% of them disagreed. Item 10 showed that 74.6% of the respondents agreed that cost of training influences choice of science subjects while 25.4% of them disagreed. Item 11 showed that 60.4% of the respondents agreed that period of training influences choice of science subjects while 39.6% of them disagreed. Item 12 showed that 67.9% of the respondents agreed that parents' income influences choice of science subjects while 32.1% of them disagreed. Item 13 showed that 82.5% of the respondents agreed that availability of instructional materials influences choice of science subjects while 17.5% of them disagreed. Item 14 showed that 69.6% of the respondents agreed that teachers' quality influences choice of science subjects while 30.4% of them disagreed. Item 15 showed that 41.3% of the respondents agreed that religion influences choice of science subjects while 58.7% of them disagreed. Item 16 showed that 42.1% of the respondents agreed that gender influences choice of science subjects while 57.9% of them disagreed. Therefore, it could be observed that factors such as ability, intelligence, aptitude, interest, value, personality, family background, school type, peer group, cost of training, period of training, parents' income, availability of instructional materials and teachers' quality had high percentages while religion and gender had low percentages.

Research Question 2: Do vocational counseling services sustain students' interest in science subjects?

**Table 2: Percentage analysis showing vocational counseling services that sustain students' interest in science subjects**

S/N	Vocational Counselling Services that Sustain Students' Interest	Responses			
		Yes		No	
		F	%	F	%
17	Orientation service	189	78.8	51	21.2
18	Individual inventory service	167	69.6	73	30.4
19	Information service	178	74.2	62	25.8
20	Counselling service	202	84.2	38	15.8
21	Placement service	198	82.5	42	17.5
22	Referral service	156	65.0	84	35.0
23	Remedial service	142	59.2	98	40.8
24	Follow-up service	176	73.3	64	26.7
25	Research service	128	53.3	112	46.7
26	Evaluation service	137	57.1	103	42.9
27	I am exposed to vocational counselling services	56	23.3	184	76.7

From table 2 above, item 17 revealed that 78.8% of the respondents agreed that orientation service sustains students' interest in science subjects while 21.2% of them said no. Item 18 revealed that 69.6% of the respondents agreed that individual inventory service sustains students' interest in science subjects while 30.4% of them said no. Item 19 revealed that 74.2% of the respondents agreed that information service sustains students' interest in science subjects while 25.8% of them said no. Item 20 revealed that 84.2% of the respondents agreed that counselling service sustains students' interest in science subjects while 15.8% of them said no. Item 21 revealed that 82.5% of the respondents agreed that placement service sustains students' interest in science subjects while 17.5% of them said no. Item 22 revealed that 65.0% of the respondents agreed that

referral service sustains students' interest in science subjects while 35.0% of them said no. Item 23 revealed that 59.2% of the respondents agreed that remedial service sustains students' interest in science subjects while 40.8% of them said no. Item 24 revealed that 73.3% of the respondents agreed that follow-up service sustains students' interest in science subjects while 26.7% of them said no. Item 25 revealed that 53.3% of the respondents agreed that research service sustains students' interest in science subjects while 46.7% of them said no. Item 26 revealed that 57.1% of the respondents agreed that evaluation service sustains students' interest in science subjects while 42.9% of them said no. Item 27 revealed that 23.3% of the respondents agreed that they are exposed to vocational counselling services while 76.7% of them said no. Therefore, it could be observed that the extent of exposure of the students to vocational counseling services was very low.

### Summary and Conclusion

In providing answer to the Research question; what are the factors responsible for the choice of science subjects in Tafa local Government Area of Niger State The research revealed that, ability (81.3%), intelligence (83.8%), aptitude (70.0%), interest (89.2%), value (65.0%), personality (69.2%), family background (66.3%), school type (62.9%), peer group (72.5%), cost of training (74.6%), period of training (60.4%), parent income (67.9%), availability of instructional materials (82.5%) and teachers quality (69.6%), all contributes to the key factors responsible for the low turnout in the choice of science subjects among secondary school students in Tafa Local Government Area of Niger State. The research also revealed from the respondents that the chief cause of poor enrollment into science subjects are, the students ability (81.3%), especially in science related?> subjects is intelligence (83.8%) and availability of instructional materials (82.5%) to drive the teaching and learning of science subjects. On the contrary, the research revealed that religion (41.3%) and gender (42.1%) does not influence the choice of science subjects among students in Tafa Local Government Area of Niger State

To answer the second Research question; Do vocational counseling services sustain students' interest in science subjects in Tafa Local Government Area of Niger State? From table 2 above, item 17 revealed that 78.8% of the respondents agreed that orientation service sustains students' interest in science subjects while 21.2% of them said no. Item 18 revealed that 69.6% of the respondents agreed that individual inventory service sustains students' interest in science subjects while 30.4% of them said no. Item 19 revealed that 74.2% of the respondents agreed that information service sustains students' interest in science subjects while 25.8% of them said no. Item 20 revealed that 84.2% of the respondents agreed that counselling service sustains students' interest in science subjects while 15.8% of them said no. Item 21 revealed that 82.5% of the respondents agreed that placement service sustains students' interest in science subjects while 17.5% of them said no. Item 22 revealed that 65.0% of the respondents agreed that referral service sustains students' interest in science subjects while 35.0% of them said no. Item 23 revealed that 59.2% of the respondents agreed that remedial service sustains students' interest in science subjects while 40.8% of them said no. Item 24 revealed that 73.3% of the respondents agreed that follow-up service sustains students' interest in science subjects while 26.7% of them said no. Item 25 revealed that 53.3% of the respondents agreed that research service sustains students' interest in science subjects while 46.7% of them said no. Item 26 revealed that 57.1% of the respondents agreed that evaluation service sustains students' interest in science subjects while 42.9% of them said no. Item 27 revealed that 23.3% of the respondents agreed that they are exposed to vocational counselling services while 76.7% of them said no. Therefore, it could be observed that the extent of exposure of the students to vocational counseling services was very low.

### Recommendations

Based on the results from the findings, the following recommendation is made to enhance enrollment into sciences and boost Technological development

- (i) Since there have been shortage of Science related instructional materials in Schools, and little information is available to students on why should they study Science subjects, Students should be provided with adequate Science teaching aids and information about Science subjects to attract them to select Science subjects.
- (ii) All education stakeholders should discover and play their respective role in encouraging, influencing and sustaining students studying Science subjects. It should not be left to teachers alone as the study shows.
- (iii) Qualified and certified teachers should be employed to handle all science subjects and science related subjects to boost the adequate implementation scientific teaching and learning of pedagogy.
- (iv) Since students are influenced and sustained to join in Science subjects by access to counseling services, such as orientation services and it's like,, I recommend that Government, through its ministry of Education and Supervisory agencies should ensure the functionality of counseling services in schools, because the research revealed that the extent of exposure of the students to vocational counseling services was very low.

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