Socio-Economic Background and Interest as Determinants of Girls' Career Choice in Engineering and Technology Courses in University in Nigeria

By

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Abstract

The engineering discipline is still seen as a male-dominated sector in Nigeria. Women have been under-represented in the field of Engineering and Technology. Percentagesof female students inengineering and technology courses have been very low. The objective of this study was to examine the correlation between socio-economic background and personal interest on girls' career choice in Engineering and Technology. Stratified random sampling method was used to select two hundred female senior secondary school three students that participated in the study and three research hypotheses were tested. Data were analysed using Pearson Product Moment Correlation and multiple regression. The result indicated that socio-economic background of female students has significant influence on their career choice of engineering and Technology. Interest had significant influence on career choiceand socio-economicbackground of female students predicts career choice better than personal interest. Based on the findings, it is recommended that government should place emphasis on raising the standard of living of the people. Parents and stakeholders should also motivate girls to be more interested in Engineering and Technology since this would encourage better representation of women in Engineering and Technology.

Introduction

Girls' education has been recognized as panacea to sustainable social development across the globe. In fact, girls' education is considered to be a pivotal element of empowering them (Hill and King, 1995). In the literature of gender and development, girls' education is identified as the precondition of balanced and equitable socio-economic development (Ojobo, 2008 and Adcock, 2013).

The quantity and quality of education available to Nigerian girls will invariably determine the developmental pace of Nigerian families, and Nigeria nation at large. It should be noted that what Nigerian girls are today and what they will be tomorrow depend on what plans Nigeria as a country have for the girl child. According to Oniye (2008), Nigeria is craving for patriotic citizens to develop their potentials politically, economically, socially and technologically. The actualization of these laudable goals is dependent on the provision of functional education to the citizenry especially the girls who are future mothers and teachers of children.

Since it is believed in some parts of Nigeria that the right place for women is in the kitchen, some parents and others have considered it not necessary to provide equal educational opportunities to females with their male counterparts. In fact, as far as some parents are concerned, any amount of money they spend on their girl's education is regarded as a waste or another man's gain. This is because it is believed that girls would eventually end up in the kitchen or in another family. On the other hand, any amount of money spent on a boy's education is regarded as useful investment because it is believed that a boy propagates the family name. This indeed has made many families feel reluctant to send their girls to university at all, not to talk of studying engineering or technology courses which apart from being traditionally tagged masculine

field;it takes more years and money to complete these courses at the university (Kayode-Olawoyin,2016).

Hoffmann-Barthes, Nair and Malpede(2002)revealed the potential of engineering and technology for improving the quality of people's lives. Indeed, during the last few decades especially, developments in various fields of science and technology have had a profound impact on the quality of life of the major part of the human population, eliciting significant societal changes. As a result, it is now widely accepted that socio-economic and indeed cultural development, is largely dependent on harnessing the application of engineering and technological achievements.

To achieve scientific and technological input required in Nigeria, Nigeria as a country cannot afford to leave more than 50% of its population that is women out of theprocess. Yet, to date, a combination of factors have prevented women fromgaining equitable access to the information they need and have thus limitedtheir ability to participate fully in both engineering and technology courses in Nigerian Universities.Increasing engineering and technology investment and enhancing productivitytherefore becomes imperative. Nigeria women should be able to enjoy the economic, socio-political and intellectual benefits of science andtechnology.

According to Aderemi, Hassan, Siyanbola and Taiwo (2013), the number of women in tertiary institutions studying science and technologyis low.Despite the relevance and utilitarian purpose of engineering and technology, it has been observed thatcareer choice of females in the field is low. Badekale (2003) reported that women in Africa aregreatly underrepresented in science and technology related courses and occupations. In the samevein, the international conference organized by UNESCO in Bamako, Mali in July 2009 assessedthe participation of girls and women in science and technology in Africa to be the lowest of allthe regions of the world (Nnaka, 2009). Alutu and Eraikhuemen (2004) investigated theinvolvement of females in mathematics in south western Nigerian universities. The study showsthat the ratio of male to female lecturers was approximately 16:1, and the ratio of males tofemales enrolled at the undergraduate levels was 2:1, while at the post graduate levels, the ratioof male to female on roll was 6:1.Nwelih, Igene and Igene (2013) investigated gender studies in computing at the Universityof Benin. The results show that females are disadvantaged or less involved in the technical andlogical aspects of computer use. They concluded "that something definitive has to be done toimprove the statistics in computing in favour of females; else we risk having a populationteeming with females inadequately prepared to face the future; a future in which computers,information and technology hold sway".

Poverty, parents' level of education, parents' career, parental support, parental aspirations,presence of role models and mentors are seen as those socio-economic issues affecting girls' career choice in Engineering and Technology (Oniye, 2008).Osokoya (2002) noted further that females themselves have allowed negative filtering influences around them to overwhelm them, and as they carry these thoughts in their heads, they allow their confidence to be eroded.

Nguyen and Pudlowski (2012) identified some factors that deter girls from studying engineering. Such factors include lack of developed confidence to work in such a male-oriented environment; psychological nature whereby women are taught to think they do not possess the essential qualities and skills to become engineers and technologists; the design of engineering

curricula to suit the needs of male students, as few girls studying engineering admitted that they were slightly handicapped due to less physical strength when working in some of the workshops, among other factors.

Research, (Darren,2013), provide evidence for positive link between interest and career choice. His study revealed that some students grow up knowing what they want to do in life, these are students who will go the extra mile to reach their dream career and explore everything in it because of their passion and interest, thus a student's attitude towards his/her studies affects his/her performance.

Another point discussed in this study is the socio-economic status of the student. Munoz, Clavjo and Koven (1999) found that a more accurate predictor of students' academic career choice was the student's socio-economic status. Dosset and Munoz (2000) found that socio-economic status was the second strongest determinant of performance and the effect of socio-economic status of students can be overcome by identifying and meeting the social needs of the students.

Students from high socio-economic background are likely to enjoy the buoyancy of their background with essential materials like relevant text books, writing materials and needed support given to the student and good performance in the subject and that there are several ways in which extreme poverty exert an influence on career choice. Nwadinigwe (2006) explained that the home environment and the material around are the medium in and through which the potentials in the child are expressed and developed.

Nwadinigwe (2006) explained that socio-economic status of the family affects the academic performance of the child in school and this could affect the career choice.

Other researchers have reported that social factors such as absence of mentors and cultural milieu could affect females' enrolment in mathematics. That is, the attitudes and behaviour of parents, teachers, counselors and peers have consequences on female enrolment choices in Mathematics (Leedy, Lalonde and Runk., 2003). Research findings also indicate that these social groups think that males will outshine females in subjects such as high school calculus, and as a result, less encouragement is given to females in the pursuit of mathematics-related courses (Paa and MacWhirter, 2000).

There is a need therefore to look at the influence of socio-economic background and personal interest on female career choice in Engineering and Technology using secondary school students since most of these factors determine whether or not a girl child will be enrolling for Engineering and Technology at the tertiary level of education.

Statement of the Problem

Education especially at the higher level is an excellent instrument for bringing about individual and national development. It is crucial that more females are encouraged to pursue engineering and technology courses in university education. However, a close look at the pattern of females' university education in engineering and technology reveals abysmal low levels. In spite of all the laudable goals and objectives of education, Nigerian females still suffer some constraints in engineering and technology courses in university education which militate against their personal and national development. The gulf between male and female in engineering and technology courses in

university education is still there and wide, this gap becomes widened as the level increases for a number of reasons which are most times personal and sometimes as a result of socio- economic background.

Consequently, it suffices to say then that the researcher investigatedthe influence of socio-economic background and personal interest on girls' career choice in Engineering and Technology courses in a Nigerian university.

Hypotheses

The following research hypotheses were tested in the study:

i) There is no significant influence of socio-economic background on girls' career choice
ii) There is no significant influence of personal interest in science subjects on Engineering and Technology as career choices
iii) There is no significant relationship between socio-economic background and personal interest on female students' career choice in Engineering and Technology.

Methodology

The population for this study comprises public secondary school students in Ekiti state, Nigeria. The Schools used were the three Federal Unity Schools in the state namely, Federal Government Girls' College, Efon-Alaaye, Federal Government Girls' College, Usi-Ekiti and Federal Government College, Ikole-Ekiti.

Sampling Technique and sample

Total enumeration was used to select the three Federal unity schools in Ekiti state, stratified and Purposive sampling methods were employed to select two hundred (200) SSS3 female science students from the three schools as sample for the study. This is because at this stage, students must be making up their minds on the choice of future career.

Research Instrument

Two instruments were used for the data collection namely: Students' Socio-Economic Background Questionnaire and Personal interest Questionnaire

Female Students' Socio-Economic Background Questionnaire

A ten- item questionnaire on socio-economic background was constructed by the researcher based on the review of literature to elicit response on how socio-economic background of female students affects career choices in Engineering and Technology.

The questionnaire was assessed by expects in the field of Test and Measurement to ensure both face and content validity. The questionnaire has a response anchor ranging from Strongly Disagree (1) to Strongly Agree (4). The scale haschrombach Alpha value of .73. Some items of the questionnaire include:My parents earn good salary, Parents provide Science texts and other materials.

Personal interest Questionnaire

This questionnaire contained ten items to elicit response on female students' personal interest in Engineering and Technology as career choices. This questionnaire has response anchor ranging from Very Untrue (1) to Very True (4). The scale has a chrombach alpha of .70. Some of the items in the questionnaire include: I am personally interested in science subjects, My Teachers make science learning interesting, I like handling scientific tools etc.

Method of Data Analysis

The Pearson Product Moment correlation and multiple regression were

used to analyze the data to determine relationship between socio-economic background and personal interest ofcareer choice in Engineering and Technology.

Result of Findings

The first hypothesis states there will be no significant influence of socio-economic background on girls' career choice. The result is as presented in table 1.

Table 1: Pearson Product Moment Correlation Coefficient on Influence of the Socio-Economic Background of Students (SEBS) girls' career choice of Engineering and Technology

Variable	N	X	SD	R	Sig
Socio-Economic Background	200	38.90	8.66	0.306	0.01
Career choice of Engineering and Tech.	200	67.46	12.77		

Table1 show r-value of 0.306. This is a positive value which explains that socio-economic background of students has positive relationship with female career choice. The significance (0.01) which is less than 0.05 showed that the relationship is significant. The hypothesis is therefore rejected. The second hypothesis states that there will be no significant influence of personal interest in science subject on Engineering and technology as a Career choice. Using Pearson Product Moment Correlation, the result is as presented below.

Table II: Interest in science subject performance towards career choice of Engineering and Technology

Variable	N	X	SD	R	Sig
Interest in science subject	200	38.79	9.01	0.301	0.001
Career choice of Engineering and Technology	200	67.40	12.37		

The r-value (0.301) is a positive value; this indicates that there is a positive relationship between interest in science subject performance and career choice of Engineering and Technology. The significance (0.01) is less than 0.05. This shows that the relationship is significant. The hypothesis is therefore rejected.

The third hypothesis states that there will be no significant relationship between socio-economic background of students and personal interest towards Engineering and Technology. The hypothesis was tested using multiple regression analysis. The result is as follows:

The III: Multiple Regression Analysis of the Relationship between Socio-Economic Background and personal interest of female students towards choice of Engineering and Technology as career.

R = 0.334

Adjusted R^2 = 0.104
F = 12.142
P < 0.05

Variable	Beta values	t
Personal Interest	0.138	1.96
Socio-Economic Background	0.344	4.95

Dependent Variable: Career Choice of Engineering and Technology.

The table indicates the R-value 0.334 with adjusted R^2 (0.104) which shows that 10.4% of the variance in career choice of Engineering and Technology is due to the variance in personal interest in science subject and socio-economic background. The beta value 0.138 and 0.344 for Personal interest and socio-economic background respectively show that socio-economic background predict career choice of Engineering and Technology better than personal interest in Engineering.

Discussion of Findings

The result of the first hypothesis shows that there is a significant relationship between socio-economic background and girls' career choice of Engineering and Technology, that is socio-economic background exerts much influence on girls' career choice. This result corroborates Nwadigwe (2006) and Oniye (2008) whose study found that a more accurate predictor of academic performance was the students' socio-economic status. Dosset and Munoz (2000) also found that socio-economic status was the second strongest determinant of performance. In essence, socio-economic status is an important factor that influences enrolment, persistence and career fulfillment. The second hypothesis indicates positive relationship between personal interest and career choice of Engineering and Technology. The result suggests that students who are favourably disposed to a subject can do well and continue to shine against all forms of intimidation in the course of pursuing the career intention.This finding however corroborates the finding of Gowon (2007) that interest offer great possibility for achievement and indeed an important motivator of behavior and affect the attainment of students.

The third hypothesis indicates that the socio-economic background of female students predict career choice better than personal interest towards in engineering and Technology. This corroborates Nwadinigwe (2006) whose finding indicated that the environment and the material world around, are the medium in and through which the potentials in the child are expressed and developed, the more suitable the environment, the better the development. This suggests that a high socio-economic background breeds higher enrollment of females in Engineering and Technology. Also, lack of personal interest or nonchalant attitude towards science subject will not be okay in ensuring higher female career choice of Engineering and Technology.

Conclusions

In conclusion, socio-economic background of female students and their personal interest in Engineering and Technology have one influence or the other on female students' career choice. It is therefore, necessary that all teachers, parents and government to reason together on how to improve the condition of living so that the factors serving as cog in the wheel of progress in the area of academics can be removed if not at once, gradually.

Recommendations

Based on the outcome of this study, the following recommendations are proffered. Government should without delay see to the poor standard of living and ensure that everyone lives under the conditions in which he or she will be able to provide for the members of the family. Government needs to be counseled that poor socio-economic status and poor standard of living is bad enough for any family caught within.

Females should be well motivated to develop interest in science subjects from their early age in life; this would make them occupy their space in world of Engineering and Technology.

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