

The Pattern of Career Aspirations among Chemistry Students in Federal University of Technology, Minna, Niger State

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Abstract

This study checked for factors like how gender affects the choice of career to find out if students are influenced by so many factors that do not allow them to follow their choice of career. A purposeful sampling was used to select students in chemistry and chemistry education. Questionnaire was administered to ensure true validity of the study and then necessary data was collected through a carefully structured questionnaire. Data were analyzed by converting the data to main frequency count and standard deviation. 223 students make up the sample size for this study. From the data obtained, the findings show that the choice of career aspirations of students is affected by their gender by the means of male (3.04) and female (3.15) which is greater than the decision making 2.5. The findings showed that students are influenced by friends, social and social economic status by mean of (3.10). The findings also showed that parents play a major role in influencing their children choice of career by the mean of (2.66) and lastly the findings showed that guardian and counseling center in the school also influence career aspirations of students by mean of (2.79). In conclusion, a student's professional goals should be determined by their academic performance rather than by factors like popularity, parental influence, social position, or economic standing.

Keywords: Aspirations; Chemistry Students; FUTMINNA; Niger State; Validity

1. Introduction

Educators and psychologists begin to ponder on reasons why students are avoiding the study of science subjects like chemistry or not doing well in the subject. Several reasons either cognitive or non-cognitive have been attributed to student's enrollment and achievement in chemistry in Nigeria and particularly in Federal University of Technology Minna. In past decades, there have been issues around retention of students taking science or major degrees in tertiary institutions. According to Chen [1], scientists departments at universities were losing exceptionally gifted and academically capable individuals to non-science-based courses, and some of these students were choosing to drop out of college. Because it may assist policy makers and other stakeholders in coming up with interventions to aid in the retention of brilliant and academically able students who are seeking to follow professions in science, the study of ambitions of chemistry students is crucial. Moreover, policymakers' interest in the goals of youth has grown recently in order to influence laws pertaining to social issues, education, and skills [2]. Furthermore, ambitions and academic success have been connected [3,4].

What influences students' choice of science-based courses and how interested scholars have become in careers 2003; De Vaus [5], for instance, discovered that students' academic aptitude, prior learning experiences, and motivation from teachers are crucial factors when they are selecting scientific courses. According to Desantis and Quimby [6] research, students' job goals are influenced by the prevalence of science-related careers in their community. Experiences obtained through postsecondary education institutions have some influence over students' interest in science courses [7].

One of the factors that affect a career aspiration has been recognized as gender [8,9]. Fox and Stephan [10] in their study of professionals preferences in addition to real research experts scholar found that in comparison to both masculine and, feminine learners had more diverse career aspirations. The same investigation also discovered that women tended to be more interested in teaching careers but had similar inclinations toward non-teaching careers as men. A Further study by Gore and Leuwerke [8] indicated that ladies in high schools were seeking to pursue health and medicine related occupations whereas man were aspiring to pursue engineering oriented careers. In his investigation on whether gender differences exist in academic achievement, Emonefe [11] found that while academic performance is equal for both genders, female students self esteem decreased during the first year of college. The same survey also found that future family responsibilities were a significant factor in determining the courses and careers the female students chose.

These results were not unexpected, given prior accomplishments and life experience can impact an individual's choice to pursue others tasks [12]. One of the variables that affect ambitions for higher education has also been identified as GENDER. Oghenemine [13] examined variables that indicate variations in graduate programs based on the gender of students after completing their undergraduate degree. Oghenemine discovered that students majoring in physical sciences had a higher likelihood of pursuing graduate, than students majoring in the fields of biology, mathematics, and computer science. Male participation in graduate scientific programs is higher than female participation, according to the research.

In addition to gender, additional variables that have been found to affect professional goals include the educational environment, family history, and familial motivation [14].

For instance, family history play a crucial roles in giving young people access to tools ad inspirations to strengthen their belief regarding their ability [14]. Other elements that impact university students' career goals include attitudes about jobs and possibilities for professional development [9]. The degree to which people believe in their own abilities is another element that has been connected to professional goals. Perceived self-efficacy was described by Mickelson and Velason [12] as people's opinions about their own ability to perform certain tasks. Students' self-efficacy views and, consequently, their job goals have been linked to their academic ability [15, 16].

The academic aptitude of students has also been identified as a factor influencing their professional goals. Students who intended to study science and science-related courses demonstrated higher academic abilities than those who intended to study art-based courses, according to research on students' achievement and factors influencing their commitment to pursue science courses [17]. This has to do with one's perception of one's own ability to choose a course or a vocation. Prior experiences and successes can have an impact on an individual's decision to continue a certain endeavor [12].

Students' attitudes about chemistry have been connected to their decision to study chemistry as well as their job aspirations, in addition to the previously described factors influencing their choice of science courses and career aspirations. Students are unlikely to choose to study science-based courses at the tertiary level if they believe that science courses are less important. According to [18], who reviewed a number of studies; female students generally decide against pursuing science-based courses because they think the subjects are irrelevant.

Research Methodology

Research Design

According to Kothari [19], research design is the theoretical foundation for carrying out research; it includes design guidelines for observation interpretation, measurement, data analysis, and collection. The technique used for this was a descriptive survey design. This is so because the design to describes the existing state of affairs relative to the matters and calls for data coaction to address question related to the conditions. Taiwo [20] defined descriptive survey are method typically used in large scales population management, particularly those that entail systematic data collecting from population samples selected with the view that these samples accurately reflect the total population.

Population of the Study

The people included in this study's population are all that in the Federal University of Technology Minna, which enrolls over 18,000 students, is the study's population. The customer base is made up of students studying chemistry education and chemistry at Federal University of Technology Minna, ranging in level from 100 to 500. There are roughly 195 students enrolled in chemical education, compared to 507 students enrolled in chemistry. The total number of students in both groups is 702, excluding 400 level students who are enrolled in the practice of teaching and industrial training.

Sample and Sampling Techniques

223 students were the finite population for whom the sample size was statistically calculated at a significant level of 0.005 using Yaro Yamane. The researcher's sample strategies were deliberate. Using Yaro Yamane sampling, the sample size was statistically determined at a significant level of 0.005. Because not all

students are competent to participate in the research project, only chemistry education and chemistry students are chosen based on their relevance to the research project. This is why purposeful sampling was employed.

Research Instrument

A questionnaire titled "Questionnaire on Pattern of Career Aspirations among Chemistry Students at Federal University of Technology Minna, Niger State" was used as the study tool. There are two sections in the questionnaire: A and B. Respondent biographies, including department, rank, gender, and age, are included in Section A. The trend of job ambitions among Federal University of Technology, Minnesota's chemistry students was ascertained using Section B. The thirty-item survey was designed to gather data on respondents' levels of agreement using a four-point Likert scale: Strongly agree (SA), Agree (A), Disagree (D), and Strongly disagree (SD).

Validity of the Research Instrument

Validity is a crucial characteristic that assesses how well an instrument measures the things it is supposed to measure. An instrument that lacks validity will provide meaningless data [21]. The degree to which an instrument measures the specific notion it is intended to assess is known as its validity. Response items for the instruments utilized must inevitably fall into thematic subheadings that are dependent on the study's objectives in order to ensure validity. In addition, chemistry professors and three experts from the Federal University of Technology Minna's Department of Science Education's School of Science and Technology Education from the department's Department of Chemistry School of Physical Sciences validated the questionnaire.

Reliability of the Research Instrument

As to Adenike [22] findings an instrument's dependability is determined by its capacity to measure a concept consistently and steadily, which aids in determining the measure's fitness. The researcher conducted a rapport-building session with the target respondents to ensure that they are appropriately prepared to complete the instrument in the event of factual disclosures. Twenty students from the population participated in a pilot study, although not from the department that was sampled. Using SPSS version 25, the distributed questionnaires were compiled and examined; the Cronbach alpha value was 0.75 which demonstrate how dependable the device is.

Method of Data Collection

When the Head of Department presented an identity letter and an introduction letter, permission was requested to carry out the research at the chosen institution. Presenting a letter of introduction really help the researcher to ascertain the amount of by preventing questionnaire mortality. A copy of the questionnaires was distributed; the researcher used study assistants with training to distribute the surveys. The respondents were allowed at least one hour at a period determined by the school administration to complete the questionnaires in each of the designated levels, which are 100 through 500 levels. After that, the answers were gathered. To prevent losing data sheets, the researcher waited to collect completed surveys. The interviewers make use of the timetable provided for the data.

Method of Data Analysis

Version 25 of the Statistical Package *for Social *Sciences (SPSS) * will be used to statistically evaluate the data collected through the questionnaire. In order to respond to research questions 1, 2, 3, and 4, the data will also be evaluated using the mean, *standard deviation, frequency count, and percentage.

The Distribution of the Sample

120 students studying chemistry education and 112 students studying chemistry made up the total number of students who received the research instrument. How the samples were distributed, is illustrated on the table below:

Table 1: Number of Respondents

Department	Numbers of Students
Chemistry Education	120
Chemistry	112
Total	232

Analysis of Students responses based on the Research Questions

1. Research Question one: Are the choice of choosing a career aspiration of students affected by their gender?

To address this study topic, the mean of the answers was compiled, calculated, and compared to see how students' gender influenced their decision regarding their desired career path.

The results are displayed in Table 2, which shows how students' answers to the question on how their gender influenced their choice of career desire are expressed using mean.

Sn	Items	Male (\bar{X})	Female (\bar{X})
1	Concentration of Female students is more higher than male.	3.26	3.57
2	More female students than their male counterparts like taking chemistry classes.	3.37	3.17
3	It is rare for male chemistry students to study with female peers.	2.38	3.23
4	Do male classmates possess greater intelligence than their female colleagues?	3.42	3.38
5	Female student's rarely have affinity for chemicals	3.20	2.85
6	Female students do react to chemical reaction during practical class	3.12	2.58
7	More male than female students enjoy the subject of chemistry.	2.56	3.27
GRAND MEAN		3.04	3.15

Decision making =2.5

Table 1 displays how students' choices about their career aspirations are influenced by their gender. It was found that both male and female students agreed that their gender has a significant influence on their career aspiration choices. This is because the average mean for male and female students, 3.04 and 3.15, respectively, is significantly higher than the decision mean of 2.5. However, there are differences between the mean choices of male and female students, indicating that female students' aspiration choices differ from those of male students.

2. Research Question Two: Are the students influence by friends, social status and social economic background?

A compilation, computation, and comparison of the respondents' frequency count, mean, and standard deviation was done to establish the extent to which friends, social standing, and socioeconomic background influence pupils in order to address this study topic. The mean and standard deviation of the students' answers to the question on how friends, social standing, and socioeconomic background affect pupils are displayed in Table 3.

Sn	Items	SA	A	D	SD	\bar{X}	SD	Remark
1.	My decision to pursue a career in chemistry was influenced by peers who enjoy the subject in school	55	153	8	4	3.18	0.574	ACCEPTED
2.	The majority of my classmates are of opposite sex ,and they motivate me to study chemistry.	166	36	16	2	3.66	0.652	ACCEPTED
3.	Taking a course do make someone to get a lucrative job	174	45	1	0	3.79	0.422	ACCEPTED
4.	Few Parents owns a prominent branch of chemical company	61	29	33	97	2.25	1.276	REJECTED
5.	Government often renders jobs to the Chemistry students after school	37	73	45	65	2.37	1.079	REJECTED
6.	There are many chemical company in my country	107	80	17	16	3.26	0.888	ACCEPTED

7.	Chemistry lecturers are very good at lecturing in my school	100	107	11	2	3.39	0.627	ACCEPTED
8.	Chemistry as a course has a professional backing	38	134	41	7	2.92	0.695	ACCEPTED
GRAND MEAN						3.10		

Decision Making=2.5

The students' influence from friends, social status, and social background was displayed in Table 3 above. Because the average mean 3.10 is significantly higher than the decision mean 2.5, it was observed that the respondents agreed that friends, social status, and social background have a high influence on students.

3. Research Question Three: the role parents play to influence their children choice of career?

To address this research topic, we collected, computed, and compared the frequency count, mean, and standard deviation of the participants to determine the degree to which parents Impact their children's profession choice. The mean and standard deviation of the student replies regarding the role parents play in influencing their children's profession choice are displayed in Table 4.

Sn	Items	SA	A	D	SD	\bar{X}	SD	Remark
1.	My family want me to enroll in a course in chemistry.	101	87	4	28	3.19	0.977	ACCEPTED
2.	All of my siblings enjoy working with chemicals, and they do well at it.	49	23	96	52	2.31	1.067	REJECTED
3.	Family friends owns a big Chemical Factory	45	49	90	36	2.47	0.994	REJECTED

4.	Parents believed in choosing a career for their children	125	70	12	13	3.39	0.840	ACCEPTED
5.	My parents work in a chemical company	111	41	30	38	3.02	1.156	ACCEPTED
6.	My parents always put me through in chemistry course	75	6	31	108	2.22	1.357	REJECTED
7.	My parents wants me to be the bread winner of their chemical company	58	47	88	27	2.62	1.007	ACCEPTED
8.	I happen to be the only surviving child of my parents and both parents are a chemist by profession	40	22	76	82	2.09	1.094	REJECTED
GRAND MEAN						2.66		

Decision Making=2.5

The influence parents have on their children's profession choice is demonstrated in Table 4 above. Because the average mean 2.66 is higher than the decision mean 2.5, it was noticed that the respondents agreed that parents have a significant influence on their children's job choice.

4 Research Question four: do guidance and counseling's Centre influence career aspiration of students?

In order to investigate this research issue, the participant's frequency count, mean, and standard deviation were acquired, computed, and compared to ascertain the extent to which parents impact their children's profession choice.

The results are displayed in Table 5, which uses mean and standard deviation to show how students' responses to the guidance and counseling center affect their job aspirations.

Sn	Items	SA	A	D	SD	\bar{X}	SD	Remark
1.	My school does a great job of providing me with guidance and counseling information.	56	114	15	35	2.87	0.973	ACCEPTED
2.	My school provide guidance and Counseling services to the students on career choice	12	133	72	3	2.70	0.589	ACCEPTED
3	Counselors in my school do choose a course of career for us	120	31	50	19	3.15	1.049	ACCEPTED
4.	Counselors motivate me in chemistry courses	96	80	19	25	3.12	0.983	ACCEPTED
5.	Students in my departments always seeks counselors helps	25	82	101	12	2.55	0.766	ACCEPTED
6.	School management insist we seek counselors consent when face with Academics problems in chemistry course	68	99	20	33	2.92	0.999	ACCEPTED
7.	My school counselor attend to me often	17	28	173	2	2.25	0.611	REJECTED
GRAND MEAN						2.79		

Table 5 illustrated how the school's guidance and counseling center affects students' career aspirations. Due to the average mean 2.79 being greater than the 2.5 required for decision-making. It was noticed that the respondents agreed that high guidance and counseling impact students' career goals.

Discussion

This study's goal is to determine the career desire pattern of Federal University of Technology, Minna, Niger State, chemistry students. This study also looks into how students' choices about their careers are influenced by their gender, friends, social standing, and economic background, as well as the role parents play in influencing their children's career choices and the impact guidance and counseling centers have on students' career aspirations.

Table 2.1's analysis of how students' gender influences their career aspiration choice reveals that both male and female students strongly agreed that gender has an impact on their career aspiration choice. This is because both genders' average mean scores were higher than the decision-making threshold, at 3.04 for males and 3.15 for females.

Given that the average mean 3.10 is significantly higher than the decision mean 2.5, it can be concluded from the analysis of the influence of friends, social status, and social economic background on students in Table 2.2 that the respondents agreed had a high influence.

Because the average mean 2.66 is higher than the decision mean 2.5, the analysis of the role parents play in influencing their children's career choice in table 2.3 reveals that the respondents agreed that parents play a high role in influencing their children's career choice.

Table 4's examination of how guidance and counseling centers affect students' career aspirations reveals that respondents agreed that these centers had a significant impact on students' career aspirations since the average mean 2.79 is higher than the decision-making.

2. Conclusion and Recommendations

Summary of the Findings

The goal of this study is to better understand the career objectives of Federal University of Technology Minna chemistry students. Four research questions were addressed using frequency counts, means, and standard deviations on two hundred thirty-two (232) students, comprising 120 chemistry education students and 112 chemistry students. Federal University of Technology Minna was the school utilized, and the students' levels of chemistry and chemistry education ranged from 100 level to 500 levels. Items on a questionnaire on the career aspirations of Federal University of Technology Minna chemistry students were given to students from each department. A questionnaire on the employment aspirations of chemistry students at Federal University of Technology Minna was administered to (232) students from each school, utilizing a four-point Likert measurement system. The Federal University of Technology, Minna's scientific education department's two lecturers and the researcher's supervisor both approved of the research instrument, which the students used in response.

Conclusions

As the research comes to a finish, the results demonstrate that parents, friends, social class, gender, and other factors have an impact on students' job choices. Students do not choose their careers based just on interests or desires, but rather on a variety of considerations.

Recommendations

The findings of the study proffered some recommendations. These are:

- i. The Nigerian government ought to offer scholarships, awards, and other forms of motivation to encourage students to choose chemistry as a subject and to help them perceive the subject as vital.
- ii. The government ought to supply all of the educational resources required for chemistry courses at postsecondary schools.
- iii. Seminars and workshops should be held expressly to discuss the value of chemistry education for the advancement of the country.
- iv. For in-service teachers to influence future chemistry students' understanding, they urgently need to receive training.
- v. The focus should be on improving the effectiveness and efficiency of learning by making it learner-centered.
- vi. The Learning Management System should be promoted and its awareness, preparedness, and skill acquisition should be increased.

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