

University Education and the Holistic Empowerment of Female Science Students in Enugu Education Zone, Nigeria

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Abstract

The study investigated the impact of university education on the holistic empowerment of female science students in the Enugu Education Zone, Enugu State, Nigeria. The research was guided by three specific objectives: assessing intellectual empowerment, evaluating financial empowerment, and exploring socio-cultural empowerment among the students. Utilizing a quantitative research paradigm, the study employed a descriptive survey design. A simple random sampling technique was applied to select 480 female science students from the Faculty of Education across three universities. Data were collected using a well-structured questionnaire, validated by two specialists in Science Education and Measurement and Evaluation. The internal consistency of the instrument was confirmed through Cronbach's Alpha. Data analysis was conducted using the Statistical Package for Social Sciences (SPSS). Descriptive statistics, including mean and standard deviation, addressed the research questions, while inferential statistics, specifically an independent t-test, were used to test the hypotheses at a significance level of 0.05. Findings indicated that university education significantly contributes to the intellectual and financial empowerment of female science students but does not substantially enhance their socio-cultural empowerment. This suggests that in the Enugu Education Zone, cultural norms still favour men over women, regardless of educational attainment. The study recommends that female science students be afforded equal opportunities and fair treatment in all aspects of societal life, like their male counterparts.

Keywords: University education, female science students, intellectual empowerment, financial empowerment, socio-cultural empowerment, gender equality in education

Introduction

Education plays an essential role in human pursuits. It is considered an important factor in the progress of the society. That is the reason it is accorded a pride of place in the developmental agenda of many nations. The relevance of education to students cannot be overemphasised. This is because a literate nation is a wealthy nation. Education is the bedrock of a nation's development. An educated population is the workforce of the nation. According to Osuji and Oluoch-Suleh (2017), education aims to facilitate individuals in gaining knowledge, abilities, ethical principles, and a positive mindset that is sustainable in human formation and societal transformation. What this entails is that education informs and forms the student for societal development.

To achieve societal transformation and gain essential knowledge and abilities, the importance of university education cannot be overstated. In its national policy on education, the Federal Republic of Nigeria (FRN) (2014) outlined the objectives of university education. Drawing from the policy, it is worthy to note that university education has the following aims: “to contribute to the country’s development by offering high-quality and relevant training; instill appropriate values vital for individual and societal well-being; enhance individual’s intellectual capacity to comprehend and show appreciation to their local and global surroundings; equip individuals with both physical and intellectual skills to enable self-sufficiency and valuable contributions to society; encourage and support scholarly endeavours and community involvement; foster and strengthen togetherness in love; and promote cooperation and understanding both nationally and internationally” (p. 28).

Judging from the aims of university education, the focal niche of this study lies in this aim: to equip individuals with both physical and intellectual skills to enable self-sufficiency and valuable contributions to society. This is the concern of this present study where many women are relegated to the background in their various homes because of a lack of empowerment opportunities. Here, Science education is the answer to empower women holistically through university education.

Science education enables female science students to develop the desired abilities and understanding. It enables them to develop powerful ideas of science and ideas about the nature of scientific activity and the way they are being applied. Scientific knowledge and skills enhance evidence-based inquiry in the students and enable them to acquire knowledge and skills to tackle a variety of issues that need individual and collective action, such as health, environmental, cultural, and family-related issues. Science education then is an applied field that derives its authenticity from the fact that science as a field of endeavour is fundamental to human survival and hence must be seen as the right of every individual to learn. Science education therefore is an avenue for women empowerment.

Empowerment is all about fulfilment. In a nutshell, it primarily involves assuming proactive command over one’s life by being adequately informed and possessing education, financial competence, and pertinent abilities. Further, empowerment is the ability to be responsible for what one does especially in decision-making. In addition, it is about taking responsibility of one’s actions without undue interference from any factor from outside (Urom, 2002). In support of the above assertion, Okpoko (2002) emphasised that empowerment is about power and management of power. Therefore, the term is rooted in power. Furthermore, according to Okpoko (2020), to

empower is simply to give authority to someone which enables them to make unquantified positive decisions in life. In empowerment, the person who is empowered is embodied with the responsibility of leadership. Focusing on this research investigation, empowerment is equipping female science students with sustainable knowledge and skills that can help them to be liberated intellectually, financially, and socio-culturally.

In contemporary society today, women's holistic empowerment is a need. In Nigeria for instance, especially in the Enugu education zone where patriarchy is practised daily, the need to empower women holistically through university education cannot be overemphasised. This is because women play a key role in societal transformation. Therefore, their contributions to the developmental sustainability of the society are equal to none. This calls for their continuous active involvement and participation in programmes tailored toward societal development. The United Nations Development Programme UNDP (1997) subscribed to this assertion by emphasising that women constitute a good percentage of the world's population, and they work very hard for its socio-economic growth. Therefore, they should be considered as equal partners in every developmental programme of society.

Education of the female folk is key to their dignity in the society. University education enhances the living conditions of the female student in the society. It creates pathways for the different careers that female students aspire to in the nation. In this contemporary knowledge society, the influence university education has on the holistic empowerment of female science students in the Enugu Education Zone of Nigeria cannot be overemphasised. This is because there have been social concerns from different stakeholders regarding the emancipation of the female child through university education.

It has been observed that many graduates who are married are forced to stay at home without a meaningful source of income. This makes them to be vulnerable and at the mercy of their husbands because they are not empowered financially. As a result of the non-financial empowerment of women, they fall prey to socio-cultural enslavement and all manners of marital abuse. This has made some families to be dysfunctional.

The big question here is has university education done its best in empowering female science students to cope with these ills in society? Has the female science student utilized the opportunity that university education offers to develop the skills needed, both physical and intellectual for their self-reliance and usefulness in society? This calls for holistic empowerment of the female science

student. The female science student needs to be empowered intellectually, financially, and socio-culturally. This study therefore focuses on these three variables as part of the holistic empowerment of the female science students.

Statement of the Problem

The relevance of university education for societal transformation cannot be overemphasized. University education helps the student acquire physical strength and cognitive capacity that enhances self-reliance and societal development. The female science university student is not left out of this. This is because science enables them to foster a sense of curiosity and questioning, and proper reasoning for a good life in society (Hagedoorn & Mphehongwa (2013).

Despite how relevant university science education is, the impact of this on female science students has been worrisome. Some key stakeholders in education have wondered about the need for this university education since some female graduates are left at home un-empowered (Odejide, 2013). Sometimes, after their university education, they are forced to remain at home without any tangible work that can help them to be financially empowered (Robinson, 2017). As a result of this, they fall prey to socio-cultural enslavement and marital abuse. This eventually leads to dysfunctional homes (Bhatia & Mehendiratta, 2014)

It is based on this that the current study delved into the holistic empowerment of female science students through university education. The study was done in Nigeria, precisely, in the Enugu education zone of Enugu State. The research focused on the relevance of university education to female science student, the influence university education has on their intellectual, financial, and socio-cultural empowerment. The researcher observed the anomaly in the phenomenon being studied.

Purpose of the Study

This investigative research determined the influence of university education on the holistic empowerment of female science students in the Enugu education zone of Enugu State, Nigeria. Specifically, the study sought the following: to:

1. Ascertain the influence of university education on the intellectual empowerment of female science students.
2. Establish the influence of university education on the financial empowerment of female science students.

3. Find out the influence of university education on the socio-cultural empowerment of female students.

Research Questions and Hypotheses

The following research questions and hypotheses guided this investigative research:

Research Questions

1. To what extent does university education influence the intellectual empowerment of female science students?
2. To what extent does university education influence the financial empowerment of female science students?
3. To what extent does university education influence the socio-cultural empowerment of female science students?

Hypotheses

The study was guided by three hypotheses. The researchers tested these hypotheses at an alpha significance level of 0.05. The tested hypotheses were the following:

H₀₁: There is no significant difference in the mean ratings of married and unmarried female science students on the influence of university education on their intellectual empowerment in the Enugu education zone of Enugu State, Nigeria.

H₀₂: There is no significant difference in the mean ratings of married and unmarried female science students on the influence of university education on their financial empowerment in the Enugu education zone of Enugu State, Nigeria.

H₀₃: There is no significant difference in the mean ratings of married and unmarried female science students on the influence of university education on their socio-cultural empowerment in the Enugu education zone of Enugu State, Nigeria.

Review of Related Literature

Studies that have a relationship with the phenomenon under investigation were reviewed. The studies were drawn from scholars from diverse cultural milieus to address university education and the holistic empowerment of female science students. The studies were looked at as follows: Tinuke (2011) conducted a study on women's empowerment using higher education in Nigeria. The purpose of the study was to ascertain the gap in education between men and women. The descriptive survey method was employed as the design of the study. The researcher collected Data from interview schedules, journal articles, textbooks, seminar papers, magazines, bulletins,

newspapers, and periodicals. The study found that as the level of education gets higher, the number of females that participate in the educational venture gets lower. This means that there are more female students in lower educational institutions than in the universities.

The study concluded that there is a big educational gap between males and females regarding university education. More so, there were more males in science-related programmes than females in the universities. Majority of the female students concentrated on Arts and Humanities. The reviewed study is different from the present study in terms of focal area. The current study looks at the holistic empowerment of female science students, while the reviewed study focused on enrolment and the gap between male and female students in the universities.

Furthermore, Ali, Ali, Baghish, and Soomro (2021) did a study on the determinants of financial empowerment among women in Saudi Arabia. The research put forward a conceptual framework that investigated how financial literacy and financial socialization contributed to the development of financial self-efficacy, financial coping strategies, and financial empowerment among Saudi women, utilizing the Social Cognitive Theory (SCT). The data were gathered through an initial survey involving 1,368 female participants representing various segments of Saudi society, including university students, women in households, and women working in diverse sectors. To test the proposed hypotheses, the study employed the Partial Least Squares (PLS) path modelling technique using Smart PLS.

The findings of the research highlight a positive and significant connection between financial literacy, financial coping strategies, and financial well-being. Additionally, financial socialization is shown to be significantly linked to both financial self-efficacy and financial empowerment. The study also reveals the positive role played by financial self-efficacy and financial coping behaviours in fostering financial empowerment among the participants. The reviewed study is related to the current study around financial empowerment. However, they are different in terms of study location and method.

In another study conducted by Aqel (2020), the focus was on the empowerment of female students of Majmaah University, Saudi Arabia. The study employed an analytical and descriptive approach, utilizing various tools such as document analysis, questionnaire surveys, and meetings with university leadership. The empowerment rate for female students in activities was found to be fifty percent. Cultural activities accounted for about thirty to forty percent, while social activities constituted approximately 28.38 percent of the overall activities.

The results from meetings indicated that female students were more empowered when engaging in activities that align with their nature and identity, with a rate of 17.14 percent. The primary obstacles were rated at 11.19 percent. However, there weren't enough female students participating in competitions to assess their empowerment. The primary requirements for empowering activities and tailoring them to the needs, desires, and attitudes of female students were rated at 17.14 percent.

According to the questionnaire, the factor of autonomy and assessment scored an average of 1.90 out of 3, coming after academic development, which had a general average of 2.18 out of 3. The current study shares similarities with the reviewed study in terms of research focus and data collection methods. However, they differ in terms of research design and location.

In addition, Kane (2020) conducted a study on the role of higher education in women's empowerment in Senegal. The study based its findings on data collected from the Ministry of Higher Education in Senegal. The results indicate that a significant gender gap persists in the education sector, particularly in the fields of science and technology. It is imperative to provide training and opportunities for girls to actively contribute to national development.

While girls now constitute the majority in higher education, they continue to be underrepresented in scientific and technological programmes. For instance, in Senegal, more than 50% of higher education students are female. However, when it comes to scientific and technological training, the gender balance is far from being achieved. According to data from the Ministry of Higher Education, only 40% of students in these fields are girls. This reviewed study wasn't explicit in the design the study adopted. However, the current study adopted a descriptive survey research design.

Similarly, Bhatia and Mehandiratta (2014) conducted a study focused on the empowerment of women within a socio-cultural context. Their empirical study was carried out among female professionals in the Faridabad District of India. The sample consisted of 204 respondents, comprising 76 teachers, 45 doctors, 30 lawyers, and 53 female professionals falling into other categories, which encompassed individuals such as female chartered accountants, company secretaries, engineers, and managerial-level female employees in the corporate sector. Among the respondents, 192 were married, while the remaining 12 were unmarried. In terms of age distribution, 59 females were in the 'less than 34 years' category, 77 fell into the '34-40 years' range, and 68 belonged to the 'more than 40 years' category.

The study's conclusion emphasises the significant role of investing in women as a catalyst for development. By providing education, livestock like cows or goats, or supporting them in starting businesses, a cascade of positive outcomes can be expected. These include a sustained rise in income, enhanced empowerment, greater social inclusion, improved health and education for children, and notably, improved mental health and overall happiness. It is important to note that the target population in the reviewed study differs from that of the current study.

Methodology

The methodological approach the study followed was as follows:

Design of the Study

The study adopted a quantitative paradigm, and specifically, the descriptive survey research design. The purpose of survey research design is to study a group of people or items by collecting and analysing data from only a few people or items considered to be representative of the entire group. In addition, employing the descriptive survey design, the study aimed to describe accurately and systematically a phenomenon (McCombes, 2020), university education, and female science students' holistic empowerment. The choice of this design was informed by the desire to find out the opinions of female science students from the faculty of education on the influence of university education on their holistic empowerment.

Area of the Study

The study was carried out in the faculty of education of private and public universities in the Enugu education zone of Enugu State, Nigeria. Enugu education zone is one of the six education zones under the Post Primary Schools Management Board (PPSMB) of Enugu State. Enugu education zone comprises four Local Government Areas: Enugu North, Enugu East, Enugu South, and Isi-Uzo Local Government Areas. The area is made up of urban, semi-urban, and rural communities. The major occupations of the citizens of this zone are civil service, agriculture, and trading. This zone houses the seat of power of Enugu state, and it has many institutions of higher learning. However, the focus of this study is universities. The environmental, geographical, religious, economic, political, and educational factors of the zone affect the phenomenon under study. More so, the choice of the zone is due to some issues the researchers observed in some families about women empowerment.

Population of the Study

The population of the study comprised 1,600 students in the 3 universities that offer education programmes in the Enugu Education Zone (Source: Admission Register of the Institutions, 2019/2020, 2020/2021, 2021/2022, 2022/2023). The population consists of only female (married and single) science students in the faculty of education. Their programmes of study include Biology Education, Physics Education, Chemistry Education, Mathematics Education, Computer Science Education, and M.Ed. Science Education. The researchers chose only female science students because as some scholars observed, many a time in the Nigerian society especially in Enugu Education Zone, women are relegated to the background. This therefore necessitated the researchers to address the issue of holistic empowerment of female science students through university education.

Sample and Sampling Technique

The researchers studied the whole university since there are only three that offer education courses. Therefore, the researchers did not sample the universities. This is because the population was manageable for the study. However, the sample size of the female science students that made up the study was 480 students out of the 1,600 students that offer science education in the three universities. The researchers determined this using 30% of the total population as recommended by Osuji and Oluoch-Suleh (2022). A simple random sampling technique was used to draw out the sample for the study. All the programmes and year groups were considered in the sampling. This enabled the researchers to get robust information about the phenomenon being studied.

Instrument for Data Collection

The researchers used a structured questionnaire in the collection of data. The questionnaire is titled; “University Education and Female Science Students’ Holist Empowerment Questionnaire (UEFSSHEQ)”. The instrument was used to get information from the students for the study. The instrument, that is, the questionnaire had two sections; A, and B. Section A contained information regarding the demography of the respondents, while section B had four clusters according to the specific purposes of the study. Cluster 1 concentrated on the influence of university education on the intellectual empowerment of the female science student. Cluster 2 focused on the influence of university education on the financial empowerment of the female science student. Then, cluster 3 dealt with the influence of university education on the socio-cultural empowerment of female science students. All the clusters had a variety of items that addressed each research question.

Validity of the Instrument

The researchers subjected the questionnaire to face validity. Three specialists were involved in the validation. One specialist came from Science Education, and the other, from Research and Evaluation, and the third from Applied Statistics. The specialists were the academic staff of Godfrey Okoye University Enugu, Nigeria, and the University of Nigeria Nsukka. They were all from the ranks of senior lecturer and above. They checked the adequacy of items, the appropriateness of the design, and the appropriateness and relevance of the items to ascertain that the items measured what they ought to measure. On completion, corrections and suggestions made were effected, and the final instrument was developed.

Reliability of the Instrument

The researchers ascertained the reliability of the instrument by first administering the instrument to 100 female science students from a university in Nsukka Education zone in the form of trial testing. This zone is outside the study area but shares the same similarities with Enugu Education Zone. The scores obtained from the trial testing were used to ascertain the reliability of the instrument using Cronbach Alpha.

The use of this approach was considered appropriate because the instrument was a questionnaire structured in four attitude and extent scales. The reliability coefficient obtained was 0.834. The following figures were derived from each cluster; cluster 1: 0.766, cluster 2: 0.675, cluster 3: 0.657, and cluster 4: 0.885. This implies that the instrument has high and positive internal consistency and, hence, is very reliable for the study.

Method of Data Collection

A total of 480 copies of the questionnaire were administered to the respondents on the spot. The researchers made use of three briefed research assistants for the study. The researchers coached them on what to do especially in the administration and retrieval of the instruments, which they carried out effectively. The essence of briefing the research assistants was to acquaint them with the purpose of the study and its educational implications. In the end, the instrument return rate was 100%.

Method of Data Analysis

The statistical package for social sciences (SPSS IBM Version 21) was used and it enabled the researchers to analyse the data easily. Descriptive and inferential statistics were used as means of data analysis. Mean and standard deviation were used to answer the research questions, and an

independent sample t-test was used to test the null hypotheses at an alpha level of 0.05 significance. The mean was used to answer the research questions while standard deviation was used to check the closeness of their responses.

For the descriptive statistics, the benchmark for acceptance of the mean responses was 2.5. This decision rule was based on the principle of the lower and upper limit of the mean. For the inferential statistics, the general rule was that when the P-value is greater than 0.05 (Significant Level), it means that the difference is not significant. When the P-value is less than 0.05, it is statistically significant (P>0.05 = Not Significant; P<0.05 = Significant).

Result

The researchers got the following findings from the study:

Intellectual Empowerment of Female Science Students

Under this specific purpose, this question was posed: to what extent does university education influence the intellectual empowerment of female science students? Table 1 presents the answer to this research question as thus:

Table 1

Mean (\bar{x}) Ratings and Standard Deviation (SD) on the extent University Education influences the Intellectual Empowerment of Female Science Students

S/N	ITEMS	VHE ×4	HE ×3	LE ×2	VLE ×1	\bar{x}	SD	Decision
1	University education facilitates creative thinking in the female science student	880 220	648 216	88 44	0	3.37	.65	HE
2	University education creates in the female science student consciousness of creative problem-solving	264 66	912 304	132 66	44 44	2.82	.78	HE
3	University education helps female science students look at issues from different perspectives	700 175	591 197	172 86	22 22	3.09	.85	HE
4	University education enables the female science student to engage colleagues and partners with stimulating and curious intellectual discussions	788 197	585 195	176 88	0 0	3.23	.74	HE
5	University education helps female science students have a passion for further studies	524 131	786 262	174 87	0 0	30.9	.67	HE
6	University education facilitates the spirit of research and inquiry in the female science student	700 175	456 152	306 153	0 0	3.05	.83	HE
7	University education enables female science students to practice what they studied in school	704 176	519 173	174 87	44 44	3.00	.96	HE

8	University education facilitates good communication skills for the female science student	524 131	852 284	86 43	22 22	3.09	.73	HE
9	University education encourages female science students to study often	880 220	648 216	88 44	0 0	3.37	.65	HE
10	University education develops the intellectual capacity of the science female student	868 217	591 197	132 66	0 0	3.31	.70	HE
Grand Mean						3.14	.76	HE

Key: VHE – Very High Extent; HE- High Extent; LE – Low Extent; VLE – Very Low Extent

Table 1 shows the extent university education influences the intellectual empowerment of female science students in the Enugu Education Zone of Enugu State, Nigeria. All the items showed a high extent to which university education influences the intellectual empowerment of female science students with a grand mean of 3.14 and standard deviation of 0.76; drawing from the findings, university education empowers female science students through building their intellects. **H₀₁**: There is no significant difference in the mean ratings of married and unmarried female science students on the influence of university education on their intellectual empowerment in the Enugu education zone of Enugu State, Nigeria.

The answer to hypothesis 1 is presented in Table 2

Table 2

Mean, Standard Deviation, and t-test results of the Ratings of Unmarried and Married Female Science Students on the influence of University Education on their Intellectual Empowerment

Marital Status	N	Mean	SD	Df	t-value	Sig. (2tailed)	Decision
Unmarried	300	31.46	3.77	478	.299	.765	Not Sig.
Married	180	31.35	3.80				

Table 2 shows that there is no significant difference in the mean ratings of unmarried female science students ($\bar{x} = 31.46$, $SD = 3.77$ and married ($\bar{x} = 31.35$, $SD = 3.80$) on the influence of university education on their intellectual empowerment, $t(478) = .299$, $p = .765$. Therefore, the null hypothesis was not rejected. Thus, there is no significant difference in the mean responses of married and unmarried female science students on the influence of university education on their intellectual empowerment.

Financial Empowerment of Female Science Students

The research question under this specific purpose was: to what extent does university education influence the financial empowerment of female science students? The answer to research question 2 is presented in Table 3 as follows:

Table 3

Mean (\bar{x}) Ratings and Standard Deviation (SD) on the extent University Education influences the Financial Empowerment of Female Science Students

S/N	ITEMS	VHE ×4	HE ×3	LE ×2	VLE ×1	\bar{x}	SD	Decision
1	University education gives female science students a sense of financial stability	440 110	717 239	174 87	44 44	2.86	.87	HE
2	University education provides job security to the female science student	352 88	459 153	390 195	44 44	2.59	.89	HE
3	University education facilitates the financial investment of the female science student	664 66	588 196	392 196	22 22	2.64	.77	HE
4	University education gives female science students the direction on how to save money in the Bank	0 0	393 131	394 197	152 152	1.96	.77	LE
5	University education allows the female science student to seek highly paying job	440 110	786 262	216 108	0 0	3.00	.67	HE
6	University education enables female science students to buy shares and properties	88 22	453 151	396 198	109 109	2.18	.83	LE
7	University education conscientizes the female science student on monetary policies of the nation	352 88	390 130	392 196	66 66	2.50	.95	HE
8	University education gives the female science student skills for the financial upliftment of her family	352 88	720 240	260 130	22 22	2.82	.78	HE
9	University education gives female science students ample skills for effective financial management	616 154	456 152	348 174	0 0	2.96	.83	HE
10	University education holistically empowers female science students financially	520 130	654 218	220 110	22 22	2.95	.83	HE
Grand Mean						2.65	.82	HE

Key: VHE – Very High Extent; HE- High Extent; LE – Low Extent; VLE – Very Low Extent

Table 3 shows the extent to which university education influences the financial empowerment of female science education students in the Enugu Education Zone of Enugu State, Nigeria. In items 1, 2, 3, 5, 7, 8, 9, and 10, the respondents showed that university education influences the financial empowerment of female science students to a high extent; while items 4 and 6 showed that

university education influences the financial empowerment of female science students to a low extent. The study concludes that university education influences the financial empowerment of female science students to a high extent with a grand mean of 2.65.

H₀₂: There is no significant difference in the mean ratings of married and unmarried female science students on the influence of university education on their financial empowerment in the Enugu education zone of Enugu State, Nigeria.

The answer to hypothesis 2 is presented in Table 4:

Table 4

Mean, Standard Deviation, and t-test Results of the Ratings of Unmarried and Married Female Science Students on the influence of University Education on their Financial Empowerment

Marital Status	N	Mean	SD	Df	t-value	Sig. (2tailed)	Decision
Unmarried	300	26.47	4.02	478	.038	.970	Not Sig.
married	180	26.46	4.05				

Table 4 shows that there is no significant difference in the mean ratings of unmarried female science students ($\bar{x} = 26.47$, SD. = 4.02 and married ($\bar{x} = 26.46$, SD. = 4.05) on the influence of university education on their financial empowerment, $t(478) = .038$, $p = .970$. Therefore, the null hypothesis was not rejected. Thus, there is no significant difference in the mean responses of married and unmarried female science students on the influence of university education on their financial empowerment.

Socio-Cultural Empowerment of Female Science Students

The study asked the following research question under this specific purpose: to what extent does university education influence the socio-cultural empowerment of female science students? The response to this question is presented in Table 5 as thus:

Table 5

Mean (\bar{x})Ratings and Standard Deviation (SD) on the extent University Education influences the Socio-Cultural Empowerment of Female Science Students

S/N	ITEMS	VHE ×4	HE ×3	LE ×2	VLE ×1	\bar{x}	SD	Decision
1	University education gives the female science student a sense of a happy home	264 66	390 130	304 152	132 132	2.27	1.01	LE
2	University education helps female science students to self-liberation from archaic cultural influences	524 131	585 195	220 110	44 44	2.86	.92	HE
3	University education helps female science students to have high and positive self-esteem in society	704 176	846 282	44 22	0 0	3.32	.56	HE
4	University education gives the female science student every opportunity to participate fully in the activities of the society	440 110	516 172	308 154	44 44	2.73	.91	HE
5	University Education enables the female science student to assert herself fully in her marital home without any harassment from her husband or her husband's kinsmen	88 22	519 173	394 197	88 88	2.27	.81	LE
6	University education equips female science students with skills to avoid domestic violence	266 66	327 109	346 173	132 132	2.23	1.00	LE
7	Any female science student who received a university education is not maltreated in her marital home	176 44	129 43	394 197	196 196	1.86	.92	LE
8	University education enables female science students to be leaders in society	260 65	459 153	394 197	65 65	2.45	.90	LE
9	Any female science student who received a university education has every opportunity to remain steadfast in marriage	176 44	63 21	436 218	44 44	1.82	.90	LE
10	University education equips female science students with sustainable knowledge and skills to fight the ills of society	264 66	585 195	350 175	44 44	2.59	.89	HE
Grand Mean						2.44	.88	LE

Key: VHE – Very High Extent; HE- High Extent; LE – Low Extent; VLE – Very Low Extent

Table 5 shows the extent university education influences the socio-cultural empowerment of female science students in the Enugu Education Zone of Enugu State, Nigeria. The responses of the respondents in items 2, 3, 4, and 10 showed that to a high extent, university education influences the socio-cultural empowerment of female science students; while items 1, 5, 6, 7, 8, and 9 showed that university education influences the socio-cultural empowerment of female

science students to a low extent. With a grand mean of 2.44, it means that university education has influenced the socio-cultural empowerment of female science students in Enugu Education Zone of Enugu State, to a low extent. What this implies is that socio-culturally, there is need for a mental shift to accommodate fully the views and opinions of women in the society.

H₀₃: There is no significant difference in the mean ratings of married and unmarried female science students on the influence of university education on their socio-cultural empowerment in Enugu education zone of Enugu State, Nigeria.

Table 6 shows the result of the t-test analysis.

Table 6

Mean, Standard Deviation and t-test Analysis of the Ratings of Unmarried and Married Female Science Students on the influence of University Education on their Socio-cultural Empowerment

Marital Status	N	Mean	SD	df	t-value	Sig. (2tailed)	Decision
Unmarried	300	24.43	6.22	478	.162	.872	Not Sig.
Married	180	24.34	6.14				

Table 6 shows that there is no significant difference in the mean ratings of unmarried female science students ($\bar{x} = 24.43$, $SD = 6.22$ and married ($\bar{x} = 24.34$, $SD = 6.14$) on the influence of university education on their sociocultural empowerment, $t(478) = .162$, $p = .872$. Therefore, the null hypothesis was not rejected. Thus, there is no significant difference in the mean ratings of married and unmarried female science students on the influence of university education on their sociocultural empowerment.

Discussion of the Findings

The findings of this current study revealed that university education to a high extent influences positively the intellectual empowerment of female science students. The finding of this study showed positive perception and relation with holistic empowerment of female science education students. This maintains the fact that university education is more appropriate to increasing the intellectual properties of the individuals. University education is needed for attainment of intellectual empowerment of female folk as required by SDGs goal 4 and 5. Intellectual empowerment through university education provides female science education students with the rationale and intelligibility to integrate in the real world. This has helped them to acquire basic skills needed for holistic function as a woman. This result is consistent with Malik and Courtney

(2011), John (2017), Duyilemi (2017) and Ankeli (2019). In their respective studies, they identified intellectual properties as the most fundamental empowerment needed for holistic well-being especially as regards a girl child.

Regarding the financial empowerment of female science students, the study discloses that to a high extent university education influences the financial empowerment of female science students. This indicates that financial empowerment through university education provides the female science students with an ample opportunity for a decent jobs and employment. This provides them with the avenue to make money and gain financial freedom. The finding of this study agreed with Kaigama, and Audu (2014), Fletcher (2014), Liu (2017), Lavanya and Ahmed (2018), Igbodalo (2018); and Abhinandan, Abhishek, Sanath and Gururaj (2023). In these studies, they mapped out the relevance of financial empowerment to the well-being of a girl child in the society. Financial empowerment not only gives a girl child freedom but also gives her sense of belonging and self-confidence amongst her mates irrespective of gender as accorded in SDGs goal 5.

In the same vein, regarding the socio-cultural empowerment of female science students, the study revealed that university education influences the socio-cultural empowerment of the female science students to a low extent in Enugu Education Zone of Enugu State, Nigeria. This shows that female science students in Enugu Education zone are still disadvantaged socio-culturally despite university education. It is worthy to note that socio-cultural empowerment provides the female science students with the eligibility to participate in decision making at home and society at large for national development. However, socio-culturally, Enugu Education zone is still rigid. This impedes the holistic empowerment of female science students. The findings of this study disagree with Liu (2017), Ganeshan and Anbalagan (2018) and Obanya (2014), that socio-cultural empowerment is a major factor for female science students' attainment in university education. The current study equally pointed out that marital status of the female science students has no significant impact to the acquisition of holistic empowerment. The study agreed with Odili, Eze and Odile (2013), Sako (2015) and Stark (2018) who observed that marital status is not a factor in women holistic empowerment.

Conclusion and Recommendations

The study concludes that university education through science education is very paramount in the development of a girl child. University education is a vehicle for female science students' holistic empowerment. In a nutshell, university education provides a fertile base for the girl child to

develop intellectually and have financial freedom. On the contrary, despite university education, female science students remain slaves to socio-cultural practices in Enugu education zone of Enugu State, Nigeria. In essence, university education needs to do more in helping the female science students empowered socio-culturally.

Based on the findings, the researchers make the following recommendations:

1. Parents should do their parental obligations by sending their female children to acquire university education, in other to empower them holistically.
2. Government at all levels should roll out measures that would enhance female students' opportunity to access university education, through scholarship programmes and other encouraging measures.
3. The society should give the female science students the same opportunity and treatment given to their male counterparts in all spheres of life to be liberated from socio-cultural ills of the society.

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