

PERTINENT ENTREPRENEURIAL SKILLS AS PERCEIVED BY ELECTRICAL AND ELECTRONIC TECHNOLOGY EDUCATION STUDENTS IN HIGHER INSTITUTIONS IN NORTH-CENTRAL, NIGERIA

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Abstract

The study investigated the entrepreneurial skills required by entrepreneurs as perceived by electrical and electronic technology education (EETE) students in higher institutions in North-Central Nigeria. Guided by two research questions and two null hypotheses, a descriptive survey research design was adopted. The study was conducted in all tertiary institutions offering EETE in North-Central Nigeria, with a total population of 201 subjects, including 74 EETE students from colleges of education and 127 from universities. A structured questionnaire titled “Questionnaire on Entrepreneurial Skills of Electrical and Electronic Technology Education Students (QSEETES)” was developed by researchers and validated by three experts from the Federal University of Technology, Minna. The instrument's reliability coefficient was determined to be 0.89 using Cronbach Alpha Statistics. Mean and standard deviation were used to answer the research questions, while z-test statistics tested the null hypotheses at a 0.05 significance level. Findings revealed that personal entrepreneurial skills such as integrity, innovation, decision-making, emotional awareness, and tolerance were perceived by EETE students with a grand mean of 3.27. Social entrepreneurial skills like leadership, developing others, collaboration, and conflict resolution were perceived with a grand mean of 3.14 and a standard deviation of 0.70. It was recommended that EETE lecturers continue exposing students to entrepreneurial skills required for employment after graduation. EETE students aiming to work in industrial organizations should seek additional entrepreneurial skills training and certifications from professional institutes outside the academic environment.

Keywords: Higher Institution, Electrical and Electronic Technology Education, personal entrepreneurial Skills, social entrepreneurial skills.

Introduction

Higher institutions are institutions that award academic certificates and degrees in several academic disciplines. These institutions include universities, colleges of education, polytechnics, mono-technics and other correspondence institutions. According to Federal Republic of Nigeria (FRN, 2014), the goals of tertiary institutions include: contribute to national development through high level relevant manpower training; develop and inculcate proper values for the survival of the individual and society; develop the intellectual capability of individuals to understand and appreciate their local and external environments; and acquire both physical and intellectual skills which will enable individuals to be self-reliant and useful members of the society among others. The realization of the stated goals requires effective implementation of several fields of study offered in higher institutions such as electrical and electronic technology education.

Electrical and Electronic Technology Education (EETE) is one of the vocational and technology education programme that concerned with equipping its beneficiary with practical skills and knowledge required for them to be self-reliant and be employable in any given industrial organisation. Lawal *et al.*, (2023) defined EETE as an aspect of technical education offered in tertiary institutions in order to produce electrical teacher and technologist. According to the National Board for Technical Education (NBTE, 2011), the main goal of EETE is to produce competent teachers/instructors electrical/electronic, technicians and technologists who are skilled to conduct various types of electrical and electronics installations, diagnose, repairs and maintenance. The programme is expected to give the students technical skills and competencies in working with Electrical and Electronics devices in order to grantee them to work with the industry or to become Electrical teacher. The programme is also expected to help the students to start their own business, becoming self-employed and able to employ others or continuing their education in advanced Technical programmes or post-graduate programme in technical institutions such as Universities (FGN, 2004). This implies that the EETE programme was designed to enable students gain the entrepreneurial skills needed in the world of business so that the graduates can be gainfully employed after graduation.

Entrepreneurial skills are the abilities of an individual to overcome challenges, innovation and achieving success. Muritala (2023) viewed entrepreneurial skills as effective utilization of ideas, information and facts that help a learner develop competencies needed for firm career commitments such as setting up business, marketing, services or being productive, wealth creators, employers of labour and self-reliant thereby contributing to nation building. Entrepreneurship skills in the content of this study are necessary skills needed by students of EETE to succeed in electrical and electronic technology trades or enterprises. Entrepreneurial skills in EETE encompass a broad range of various skills such as creative thinking, time management, adaptability, resilience, effective communication, financial literacy, and market awareness mention but a few which contained both technical and non-technical skills.

Entrepreneurship as one of the tenets of business or an enterprise, it's a process of bringing together creative and innovative ideas, combining them with management and organization skills in order to combine people, money and resources to meet an identified need and thereby create wealth (Agomuo, 2002). It is the willingness and ability of an individual to seek out investment opportunities, establish and run an enterprise successfully. Entrepreneurship is thus, the process of learning the skills needed to assume the risk of establishing a business. Akpotowoh and Amahi (2006) opine that the skills acquired in any of the areas of business related programme promotes training in entrepreneurship as well as equip graduates with requisite skills to establish and run small businesses of their own. Falobi and Ishola (2018) opine that implementation of entrepreneurial skills in EETE programme entails adequate resources. According to Ademiluyi (2007) entrepreneurship skills are simply business skills which individuals acquire to enable them effectively function in the turbulent business environment as an entrepreneur or self-employed. Akinola (2001) pointed out that it takes special skills to succeed as an entrepreneur and that most entrepreneurial skills come by learning and practicing. However, personal and social entrepreneurial skills are paramount in the day to day running of an entrepreneur

Personal skills are abilities such as communication and teamwork that help you perform tasks and build relationships with others. These abilities can be valuable in many parts of life, including school, family relationships, friendships and career. A social skill is any competence facilitating interaction and communication with others where social rules and relations are created, communicated, and changed in verbal and nonverbal ways. The entrepreneur has to be able to communicate and get close to people, along with the ability to identify opportunities and negotiate. To do this, the entrepreneur must use the personal and social skills. One with personal and social high-level social skills can leverage them to create relationships and opportunities.

Entrepreneurial skills are part of non-technical skills that are usually referred to as soft skills, essential skills, core skills, common skills or power skills which are interpersonal skills applicable to all professions. Madan (2024) referred non-technical skills as personal qualities and social attributes that influence how effectively individual communicate, collaborate, lead teams, resolve conflicts, and achieve objectives. Non-technical skills which are also entrepreneurial skills in this study are social leadership, effective communication, teamwork, and personal skills fatigue and stress that can enhance the way EETE students' carryout procedures, task and technical skills be explored and learn by it prospective graduates for them to succeed as entrepreneurs in future after graduation.

However, graduates of EETE programme without the relevant entrepreneurial skills will find the labour market most unrewarding and unfavourable in terms of creating job for them instead of seeking jobs where none exist.

Anho (2011) opined those entrepreneurial skills goes beyond training and education, it involves a process of human capacities building through formal and or informal training inculcating in the entrepreneur basic skills such as financial skills, technical skills, creative skills, managerial skills, intellectual skills, marketing skills, communication skills and technological skills. Usoro (2010) in Olanipekun *et al.*, (2021) observed that the failure of Nigeria's higher educational institutions is hinged on their products" (graduates) lack of the skills required by the labour market which has resulted in mass graduate unemployment.

The skills of EETE graduates do not match with the requirements of employers. It has also been reported by many scholars that fresh graduates of EETE face problems of securing suitable employment in industrial organization since they were found to be deficient in non-technical skills such as entrepreneurial skills which the organisation considered crucial for employment (Obadijah, *et al.*, 2021). Rasul and Mansor (2016), also revealed that there is a mismatch between the skills that graduates acquired and the prerequisite demanded by employers that can make them perform effectively at work. Technical skills alone without non-technical skills like entrepreneurial skills cannot provide assurance for employment in modern industrial and business organisations. It is against the backdrop, this study aimed at determining the pertinent entrepreneurial skills required by entrepreneurs as perceived by EETE students in higher institutions in North-Central, Nigeria.

Statement of the Problem

Entrepreneurial skills are vital link in economic growth of a nation. A lot of challenges have been identified by the society and the industries on the lack of entrepreneurial skills among EETE graduates which has contributes to the lack of requisite skill in their discipline for gainful employment. In the opinion of Ogundele (2021), most employers complain that good number of electrical and electronic technology graduates that are produced every year from tertiary institutions lack necessary job skills required and thereby make them unemployable. The EETE graduates are expected to possessed entrepreneurial skills that allows for flexibility, adaptability and ability to work across range of jobs, in the electrical and electronic fields or firm. This underscores the reason for which this study is undertaken to determine the pertinent personal and social entrepreneurial skills required by entrepreneurs in the field of electrical and electronic technology as perceived by EETE students in higher institutions in North-Central, Nigeria.

Research Questions

The purpose of the study is to examine the personal and social entrepreneurial skills required to be successful entrepreneurs as perceived by electrical/electronic students in higher institution in North-Central. The following research questions were raised to guide the study:

1. What are the personal entrepreneurial skills required to be successful EETE entrepreneur as perceived by EETE students in higher institutions in North-Central, Nigeria?
2. What are the social entrepreneurial required skills to be successful entrepreneur as perceived by EETE students in higher institutions in North-Central, Nigeria?

Research Hypotheses

The following research hypotheses were tested at 0.05 level of significance:

1. There is no significant difference between the mean responses of EETE entrepreneur students in colleges of education and those in universities on personal entrepreneurial skills as perceived by EETE students in higher institutions in North-Central, Nigeria.
2. There is no significant difference between the mean responses of EETE students in colleges of education and those in universities on the social entrepreneurial skills required to be successful entrepreneur as perceived by EETE students in higher institutions in North-Central, Nigeria.

Methodology

The research adopted a descriptive survey design to elicit information from final year electrical and electronic technology education students in higher institutions in North-Central, Nigeria. The population of the study is 201 subjects which comprises of 74 electrical and electronic technology education students from colleges of education and 127 from universities in the study area. Since the population was of manageable size, the entire population was used; hence no sampling technique was employed for the study. A structured questionnaire titled: "Questionnaire on Applicable Entrepreneurial Skills requirement of an entrepreneur in Electrical and Electronic Technology Education (AEREETE)" was used to collect data for the study.

The instrument was validated by three experts in the Educational Technology Department, University of Ilorin, Kwara State. A trial test conducted on 50 electrical and electronic technology education students in Ekiti State University, Ado-Ekiti, Nigeria to determine the reliability coefficient of the instrument. The Overall reliability coefficient of the instrument was 0.89. Mean and standard deviation were used to answer research questions with response options of Strongly Agree: SA = (4); Agree: A = (3); Disagree: D = (2); and Strongly Disagree: SD = (1) and z-test was used tested the null hypotheses at 0.05 level of significant. If the Significant two tailed value falls below 0.05, the result will be regarded as significant, and if otherwise, it will be regarded as not significant.

Results

Research Question 1

What are the the personal entrepreneurial skills required in the field of EETE as perceived by electrical and electronic technology education students in higher institutions in North-Central, Nigeria?

Table 1: Means Responses and Standard Deviations on Technical Skills perceived by Electrical and Electronic Technology Education Students in Higher Institution.

S/N	ITEM STATEMENT	N _T =198		
		X _T	SDT	R
1	Integrity	2.66	0.77	A
2	Flexibility	3.45	0.69	A
3	Innovation	2.40	0.59	D
4	Searching for information	3.31	0.62	A
5	Productive efficacy	3.53	0.81	SA
6	Adventurous spirit	3.65	0.75	SA
7	Decision taking	3.21	0.45	A
8	Tolerance to stress	3.44	0.76	A
9	Emotional awareness	3.23	0.80	A
10	Self-confidence	3.83	0.88	SA
10	Searching for realistic opportunities	3.27	0.71	A
Grand Mean		3.15	0.72	A

Key: N= Numbers of Respondents, X_T= Average Mean of Respondents, SDT= Average Standard Deviation, R =Remark.

Table 1 shows the mean responses of the respondents on the 10 items posed to determine the personal entrepreneurial skills perceived by EETE students in higher institutions with a grand mean of 3.27 which implies that the students agreed with all the items except item 3as personal innovation skills required by entrepreneurs in EET fields as perceived by EETE students in higher institution. The standard deviation of items ranges from 0.45 to 0.88. This standard deviation showed that the respondents were not too far from the mean and were closed in one another in their responses. This closeness of the responses adds value to the reliability of the item.

Research Question 2

What are the social entrepreneurial skills required as perceived by electrical and electronic technology education students in higher institutions in North-Central, Nigeria?

Table 2: Means Responses and Standard Deviations on Social Entrepreneurial Skills required as perceived by Electrical and Electronic Technology Education Students in Higher Institution.

S/N	ITEM STATEMENT	N _T =198		
		X _T	SDT	R
1	Understanding others	3.52	0.89	SA
2	Developing others	3.60	0.73	SA
3	Service oriented skills	2.89	0.60	A
4	Processing change skills	3.11	0.56	A
5	Resolving conflicts skills	3.55	0.72	SA
6	Leadership skills	3.22	0.84	A
7	Managing skills	2.77	0.64	A
8	Collaborating skills	3.35	0.36	A
Grand Mean/SD		3.14	0.70	A

Key: N= Numbers of Respondents, X_T= Average Mean of Respondents, SDT= Average Standard Deviation, R =Remark.

Table 2 shows the mean responses of the respondents on the 8 items posed to determine the social entrepreneurial skills required by entrepreneur in the of EET as perceived by EETE students in higher Institutions. The standard deviation of items ranges from 0.36to 0.89. This standard deviation showed that the respondents were not too far from the mean and were closed in one another in their responses. This closeness of the responses adds values to the reliability of the item.

Hypothesis One

There is no significant difference between the mean responses of electrical and electronic technology education students in colleges of education and those in universities on personal entrepreneurial skills required by entrepreneur as perceived by EETE students in higher institutions in North-Central, Nigeria.

The data for testing hypothesis one is presented in table 3

Table 3

z-test analysis of significant difference in the mean responses of students as regards the personal entrepreneurial skills as perceived by EETE students in higher institutions.

Tertiary Institutions Lecturers	N	Mean	S.D	df	Z	P-value	Remark
College of Education Students	74	3.40	0.76	196	-5.19	0.00	Rejected
University Students	127	3.57	0.65				

Key: N= Numbers of Respondents, \bar{X}_T = Mean of All Respondents, SD_T = Average Standard Deviation, df = Degree of Freedom, z= z-test

Table 3 shows the z-test analysis of differences in the responses of College of Education students and universities students regards the personal entrepreneurial skills as perceived by EETE students in higher institutions. The table revealed that the probability value obtained was found to be 0.00 which is less than the probability value of 0.05 in comparison. The null hypothesis was therefore rejected. Therefore, there was significant difference between the mean responses of EETE students in colleges of education and those in universities on the personal entrepreneurial skills.

Hypothesis Two

There is no significant difference between the mean responses of EETE students in colleges of education and those in universities on social entrepreneurial skills as perceived by EETE students in higher institutions in North-Central, Nigeria.

The data for testing hypothesis two is presented in table 4

Table 4

z-test analysis of significant difference in the mean responses of students as regards the social entrepreneurial skills as perceived by EETE students in higher institutions.

Tertiary Institutions Lecturers	N	Mean	S.D	df	Z	P-value	Remark
College of Education Students	74	3.66	0.25	196	-2.19	0.07	Accepted
University Students	127	3.72	0.42				

Key: N= Numbers of Respondents, \bar{X}_T = Mean of All Respondents, SD_T = Average Standard Deviation, df = Degree of Freedom, z= z-test

Table 4 shows the z-test analysis of differences in the responses of College of Education students and universities students regards the social entrepreneurial skills as perceived by EETE students in higher institution. The table revealed that the probability value obtained was found to be 0.07 which is greater than the probability value of 0.05 in comparison. The null hypothesis was therefore accepted. Therefore, there was no significant difference between the mean responses of electrical and electronic technology education students in colleges of education and those in universities on the social entrepreneurial skills perceived by EETE students in higher institutions.

Discussion of the Findings

The Findings revealed that personal entrepreneurial skills as perceived by EETE students such as integrity, innovation, decision taking, self-confidence, self-awareness, initiative, strategic thought, self-development, optimism among others were personal entrepreneurial skills perceived by students in higher institution which will contribute greatly to the students entrepreneurial skills and development of the nation. The findings agreed with Yusuf, *et al.*, (2023) who stated that the main objective of EETE programme in tertiary institutions is to prepare and produce qualified graduates with the precise skills as well as for self-reliance. They added that EETE is a course of study

where students acquire knowledge and practical skills about various electrical and electronic appliances to fulfil human needs. They also justify that the goal of the EETE programme is to produce electrical and electronic personnel that will contribute to nation development. The finding showed that there was significant difference between the mean responses of EETE students in colleges of education and those in universities on the personal entrepreneurial skills perceived by EETE students in higher institution. The finding is in line with the Gero and Mano-Israeli (2020) assertion that the present curriculum of EETE programme is not sufficient in providing students with relevant entrepreneurial skills. Hence, personal entrepreneurial skills are required as part of skills for the EETE students to excel after graduation.

Similarly, the finding also showed that there was no significant difference between the mean responses of EETE students in colleges of education and those in universities on social entrepreneurial skills as perceived by EETE students in north central, Nigeria. This study concurs with the study of Obadijah *et al.*, (2021) who stated that entrepreneurial skills such as leadership skill, developing others skill, collaborating skill, conflicts resolutions are required by the employers for the recruitment of graduates of EETE to become an entrepreneur or gainfully employed in industrial organisations, the researcher also revealed that employers offer special consideration to technical skills over non-technical skills like entrepreneurial skills. Hence, both technical and non-technical skills are also essential part of entrepreneurial skills which EETE students need to undergo before graduating from higher institutions.

Conclusion

Based on the findings on the pertinent of entrepreneurial skills as perceived by electrical and electronic technology education students in higher institution in North-Central, Nigeria. The findings of the study serve as the basis for making the following conclusion. Entrepreneurial skills are essential skills that EETE students require as entrepreneurs after graduation to promote innovation, business growth and competitiveness. Entrepreneurial skills such as leadership skills, developing others skill, collaborating skills, conflicts resolutions among others were pertinent to EETE students in higher institutions which will contribute greatly to the students' entrepreneurial skills and development of the nation. It was also concluded that both personal and social entrepreneurial skills were pertinent to EETE students in higher institutions which will make the students self-reliance and gainful employment after graduation.

Recommendations

Based on the findings, the following recommendations were made:

1. Federal government should create enabling environment by providing needed facilities and equipment that will encourage teaching and learning of entrepreneurial skills in our higher institutions.
2. Lecturers should expose their students to entrepreneurial skills required for job employment after graduation.
3. Electrical Electronics students whose dream is to work in industrial organisations after their graduation should seek for more non-technical skills such as entrepreneurial skills training and certifications from professional training institutes outside the academic environments.
4. There is need for periodic review of content and curriculum of the programme to meet the present realities and the need for the students to have more interest in entrepreneurship skills acquisition rather than mere formalities of attending the classes.
5. There should be inclusion of specific educational programmes on entrepreneurship to promote entrepreneurial innovation and capacity in more obvious way in tertiary Institutions.

References

- Amos P., Abdulkadir M. & Raymond E. (2022). Generic And Technical Skills Needed By Motor Vehicle Mechanics In Maintenance And Repairs Of Modern Automotives In Niger State, Nigeria. *Journal of Information, Education, Science and Technology (JIEST)*, 8(1), 137-147.
- Anho, J.E. (2011). Impact of Entrepreneurship Education and Training on University Graduates for Sustainable Development in E.A. Arubayi, N.E. Akpotu and E.P. Oghuvbu (Eds.) A Book of Reading: Education and Training for Entrepreneurship.
- Caleb, E. & Udofia, A. (2014). Generic Skills and the Employability of Electrical Installation Students in Technical Colleges of Akwa Ibom State, Nigeria. *IOSR Journal of Research & Method in Education*, 1(2), 59-67
- Federal Ministry of Education. (2004). *National Policy on Education (Revised)*. Lagos: Federal Ministry of Information Printing Division.
- Federal Republic of Nigeria. (2014). *National Policy on Education*. Lagos: NERDC Press.
- Gero A., & Mano-Israeli S. (2020). Importance of Technical And Soft Skills: Electronics Students' and Teachers' Perspectives. *Global Journal of Engineering Education*, 22(1), 13-19.
- Kathleen, C. (2015). Developing Employability Skills. Regional Educational Laboratory. *School Improvement Research Series (SIRS)*, 3(58), 406-415.
- Lawal, H., Idris, A., Jido, S. H., Saleh, J. & Abdulaziz, N., (2023). Skills Competency Among Electrical/Electronic Technology Undergraduate Students in Tertiary Institutions in Kano State. *International Journal of Multidisciplinary Research and Development*, 10(7), 20-25.
- Madan Z. (2024). The Complete Guide to Non-technical Skills. Retrieved on 22nd April, 2024 from: <http://www.naukri.com/career-advice/types-of-non-technical-skills-caid>.
- Martyn, S. (2019). *Descriptive Research Design*. Retrieved on 15th November, 2021 from: <https://explorable.com/descriptive-research-design>.
- Muritala A. A. (2023). Gap Analysis on Entrepreneurship Skills Needed and Possessed by Electrical electronic Graduates for Solar Power Installation in Technical Institutions in Niger State. A Published Research Project Submitted to the Department of Industrial and Technology Education, School of Science and Technology Education in Partial Fulfilment for the Requirement of the Award for Bachelor of Technology (B. Tech) in Industrial and Technology Education.
- National Business and Technical Examination Board. (2011). Report on Performance of Students in NTC Examination. Benin: NABTEB Press.
- Obadia, G. E., Tewase, L., Raymond, E. & Kareem . B. (2021). Assessment of Non-Technical Skills Required by Graduates of Electrical Electronics Technology for Employment in Industrial Organisations in Kano State. 8th international conference of school of science and technology education (SSTE), pp. 371-379
- Ogundele, A. G. (2021). Higher Education and Employment in the International Labour Market. The Need for Technical Education, .Retrieved from www.cefiva.net/compilationforproceedings.pdf-Nigeria. Pp. 219 2019.
- Olanipekun, L. O., Sokefun, E. A. & Akinlabi, N. A. (2021). Impact of Entrepreneurial Skills Acquisition on Graduates Self-Employability Status: A Study of Olabisi Onabanjo University Graduate Students. *Research Journal of Social Sciences and Humanities*, 2(3), 61-71
- Rahmah, I., Ishak, Y. & Wei Sieng, L., (2014). Employers' Perception of Graduates in Malaysia Service Sector. *International Business Management*. 5(3), 184-193.
- Rasul, M. S., & Mansor, A. N. (2016). Employability Skills Indicator as Perceived by Manufacturing Employers. *Asian Social Science*. 9(8), 42-50.
- Suhail M. G., Monica C., & Sumit G. (2018). A Conference Paper on the Importance of Non-Technical Skills for Employment Opportunities: A Gap Analysis of Students and Employers Perception. Retrieved on 6th September 2021 from <https://www.researchgate.net/publication/326826438>.
- Yusof, Y., Haruna, I. B., Roddin R., Ibrahim, M. M. & Hamid, H. (2023). Competencies Needed for Improving Teaching Among Lecturers of Polytechnics in North-Western Nigeria. *Journal of Technical Education and Training*, 5(1), 1-8