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STUDENTS' PERCEPTION ON ENTREPRENEURSHIP EDUCATION IN PHYSICS: THE CASE OF UNIVERSITY OF AGRICULTURE, MAKURDI, NIGERIA

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Abstract

The study investigated the students' perception of entrepreneurship education in Physics: the case of the University of Agriculture, Makurdi, Nigeria. The study was guided by three research questions. The study adopted a descriptive survey design. The population of the study comprised all the students in the Faculty of Agricultural Engineering for the 2024/2025 session. The population was 2426 students. The study sample comprised 345 (200 male and 145 female) Engineering students randomly drawn from different Departments in the Faculty. Two instruments were used to gather data for the study and were validated by three Lecturers. Using the Cronbach Alpha method, the reliability coefficients of 0.87 and 0.82 were obtained for the instruments. The researchers, with the help of five other research assistants, visited the University Faculty, identified the students from the Faculty, gave the instruments to them to complete and returned it on the spot to minimized instrument lost. The data collected in the course of the study were analyzed using frequency and percentages. The result revealed that there were 12 entrepreneurial skills; the students in the University graduate with very poor knowledge of the electricity entrepreneurial skills, and both the male and female students graduate with very poor knowledge of the electricity entrepreneurial skills. Recommendations are that the University Faculties should be very intentional about the development of entrepreneurial education, and Faculty curriculum developers should ensure the incorporation of active entrepreneurial education in their programmes. The implication of the study for entrepreneurship education is that the University and students should be very intentional about the training and acquisition of knowledge on entrepreneurial skills for job creation and promotion of national security.

Keywords: Perception, entrepreneurship, Physics, gender

Introduction

Physics is one of the science subjects taught in Nigerian Universities. It is very important in Universities of Agriculture as most of the practical operations are physics-related (Nigerian University Commission, NUC, 2025). There are several practical concepts which demand a certain level of skills in the Physics curriculum which the students must be familiar with in order to solve the societal problems. Considering the importance of the skills in Physics, the University students should be able to familiarize themselves with most of these skills to apply them within and upon graduation. The acquisition of practical/entrepreneurial skills by students in Physics is directly related to the knowledge of students on the types of skills present. The Federal Ministry of Education clearly states that no teacher can give what the teacher does not have (FME, 2006).

This reveals that the Nigerian University students must learn some of the entrepreneurial skills in Physics while still in the University so they can apply them after their studies in the University. The level of unemployment of graduate from Nigerian Universities is a revelation of what they were taught in school about entrepreneurial education. This position leads the researchers to this study titled students' perception on entrepreneurship education in Physics: The case of University of Agriculture, Makurdi, Nigeria.

Nigeria has been faced with unemployment challenges for more than 10 years (2015 - 2025) it ranks as the highest country with unemployment rate in the world (NBS, 2025). The high rate of unemployment can be linked to the poor knowledge of entrepreneurial skills (Utibe & Onwioduokit, 2019). It is hopeful that with proper knowledge of entrepreneurial in Physics by the University students which is the main objective of this study, the above national challenges would be brought under control. The importance of Physics as a requirement for scientific and technological development of any nation cannot be overemphasized. The technological potentials, societal comforts and entrepreneurial skills and development of Nigeria depend on the quality of the Physics education provided (Utibe & Agah, 2015).

The general objectives of Physics are to:

i. Provide basic literacy in Physics for functional living in the society;
ii. Acquire basic concepts and principles of Physics as a preparation for further studies
iii. Acquire essential scientific skills and attitudes as a preparation for technological application of Physics; and
iv. Stimulate and enhance creativity (NUC, 2025).

Objectives one, three and four would be used in this study to promote entrepreneurial skill development. The Physics curriculum used in Nigerian University covers the following basic areas: Mechanics, sound and waves, optics, heat, electricity, atomic and nuclear physics and physics and the society. All the areas would be useful in this study as it relates to the concepts of entrepreneurial skill in Physics.

Utibe and Agwagah (2016) defined entrepreneurial skills education as the training of the students in the University to be able to setup and run a business (no matter how small the business may be) in a profitable and sustainable manner. Sodha, Vaghela and Kumar (2024) defined entrepreneur as an individual who creates a new business, bearing most of the risks and enjoying most of the rewards. The process of setting up a business is known as entrepreneurship. Entrepreneurs play a key role in any economy, using the skills and initiative necessary to anticipate needs and bring new ideas to market. Important facts about entrepreneur are:

i. A person who undertakes the risk of starting a new business venture is called an entrepreneur.
ii. An entrepreneur creates a firm to realize their idea, known as entrepreneurship, which aggregates capital and labour in order to produce goods or services for profit.
iii. Entrepreneurship is highly risky but also can be highly rewarding, as it serves to generate economic wealth, growth, and innovation.
iv. Ensuring funding is important for entrepreneurs.

Mónico, Carvalho, Nejati, *et al.* (2021) noted that entrepreneurial skills are acquired through training that emphasizes the acquisition and development of appropriated knowledge and techniques that will enable the individuals to maximize the resources around them within the limits of their capability. The skills consist of effective utilization of ideas; information and facts

that help a leaner develop competencies, marketing, services or being productive employees of organizations (Hahn, Minola, Bosio, *et al*., 2020). Astiana, Malinda, Nurbasari, *et al.* (2022) defined entrepreneurial skill as the ability to create and build something from practically nothing. The study opines that true entrepreneurial skill is characterized by three attributes: Opportunity recognition, marshaling of resources and creation of a business. Aima *et al.* (2020) defined entrepreneurial skill as the willingness and the ability of individual to seek for investment opportunities in environment and be able to establish and run enterprise successfully based on identified opportunities.

Utibe and Olah, (2024) in a study investigated the influence of guidance and counselling services, national security concerns and students' performance in Physics in Gwagwalada area council of FCT, Abuja, Nigeria. The study was guided by three research questions and two hypotheses and tested at 0.05 level of significance. The study adopted an ex-post facto design. The population of the study comprised of all the Physics students in the 13 public secondary schools in Gwagwalada area council of FCT. A sample of 454 (154 Physics students who make use of counselling services and 300 Physics students who don't make use of counselling services). Personal and academic data of Physics students from four randomly selected public secondary schools was used for the study. The instrument for data collection was a proforma and was validated by three experts. The researchers visited the selected schools and extracted the data for 2022/2023 session used for the study. It was analyzed using mean, standard deviation and t-test statistics. The result revealed that there was a significant difference between the mean performance scores of Physics students who make use of counselling services and Physics students who don't make use of counselling services and their gender while there was no significant difference between the mean performance scores of male and female Physics students who don't make use of counselling services. The security risk is higher among students who don't visit the counsellors. Recommendations are that the school authorities in Abuja should encourage Physics students to visit the guidance counsellor.

Finally, entrepreneurial skill education is the process of creating something different with value by devoting the necessary time, assuming the accompanying financial, psychic and social risk and achieving of most personal satisfaction. In the above reviews, the issue of creating, organizing and managing a business stands out clearly. The end effect of this method is to create employment and reduce unemployment in society. In this study, students' perception on entrepreneurship education in physics: The case of University of Agriculture, Makurdi, Nigeria would be carefully planned in a process that would lead the students to the knowledge and possible acquisition of entrepreneurial skills for efficient and effective living in and outside the University.

Statement of the Problem

As practicing Guidance Counsellors and Physics lecturers, the researchers have personally observed a consistently high unemployment in Nigeria, especially among University graduates. The researchers have also observed that University students graduate out of schools without acquiring entrepreneurial skills in Physics. It is based on these observations that the researchers were motivated to carry out this study to examine the students' perception of entrepreneurship education in physics: The case of University of Agriculture, Makurdi, Nigeria.

Purpose of the Study

The purpose of this study was to determine the students' perception on entrepreneurship education in physics: The case of University of Agriculture, Makurdi, Nigeria. The study was designed to achieve the following specific objectives to:

1. Identify the electricity entrepreneurial skills present in Physics at the University.
2. Identify students' knowledge of the electricity entrepreneurial skills present in Physics at the University.
3. Identify students' knowledge of the electricity entrepreneurial skills present in Physics at the University based on gender.

Research Questions

To guide the researcher in the study, the following research questions were formulated:

1. What are the electricity entrepreneurial skills present in Physics at the University?
2. What is the students' knowledge of the electricity entrepreneurial skills present in Physics in the University?
3. What is the students' knowledge of the electricity entrepreneurial skills present in Physics in the University based on gender?

Significance of the Study

The result of this study would be beneficial to the students, lecturers, curriculum planners, government and researchers. This study, when published, will sensitize Physics lecturers to encourage the students to have basic knowledge of the entrepreneurial skills present in Physics at the University. It will serve as an eye-opener to University students in Physics to acquire basic entrepreneurial skills in Physics while still in the University. Finally, the results of the study would also contribute to the pool of research materials in the area of entrepreneurial skills present in Physics in the University for the researchers.

Scope of the Study

This study covered the entrepreneurial skills in the concepts of electricity in the University (NUC, 2025). This study was also delimited to the basic concept of electricity entrepreneurial skills present in Physics in the University.

Method

This study adopted a descriptive survey research design (McLeod, 2023). This design is appropriate because the sample is large and the findings would be generalized for the entire population. Students from the Faculty of Agricultural Engineering were used for the study. This study was conducted at the University of Agriculture, Makurdi, Nigeria. The population for the study comprised all the students in the Faculty of Agricultural Engineering for the 2024/2025 session. The population was 2426 students (Faculty of Agricultural Engineering, 2025). The study sample comprised 345 (200 male and 145 female) Engineering students randomly drawn from different departments in the Faculty. Two instruments were used to gather data for the

study. These instruments for data collection for this study were entrepreneurial skills in electricity in Physics, and students' knowledge of entrepreneurial skills in electricity in Physics. The instruments were validated by three Lecturers: one Professor of Physics, one Electrical Engineer and one from Test and Measurement, all from the Faculty of Agricultural Engineering, University of Agriculture, Makurdi, Nigeria. Their comments were used in the final drafting of the instruments.

To further strengthen the validity of the instrument used, the instruments were administered to a trial testing group of 50 students of the Faculty of Agricultural Engineering University of Agriculture, Makurdi who were not part of the main subjects for the study but who were found to be equivalent in all respects to the subjects in the study. The results obtained in this administration using the Cronbach Alpha method. The result showed a reliability coefficient of 0.87. Based on the above reliability index, the instrument was deemed suitable for use in conducting the study.

The experiment was conducted directly by five trained lecturers of the Faculty as research assistants. The research assistants were trained for three days before the administration of the instruments on the purpose of the study and the administration of the instruments. The data for the study was collected during the one school week visiting period. The research assistance that is lecturers of the University Faculty, identify the students from the Faculty, gave the instruments to them to complete it and returned it on the spot to minimized instrument lost. The data collected in the course of the study were analyzed using frequency and percentages.

Results

Research Question 1: What are the electricity entrepreneurial skills present in Physics in the University?

Table 1: **Summary of electricity entrepreneurial skills present in Physics in the University**

S/N	Electricity skills available in secondary schools
1	Ability to identify electrical tools
2	Ability to identify electrical materials
3	Ability to handle electrical tools
4	Ability to handle electrical materials
5	Ability to interpret electrical circuits on drawings
6	Ability to transfer electrical circuit information into practical
7	Ability to install fittings correctly and rigidly
8	Quick fixing of accessories and equipment
9	Neatness and aesthetics of finished jobs
10	Ability to run the lines in straight lines
11	Ability to tape the joints neatly
12	Ability to tidy up job areas always

Results in Table 1 shows that there are 12 distinct electricity entrepreneurial skills present in Physics in the University. This result indicates that with the identified skills in electricity, if

our university students are properly taught, they would be able to create something for themselves on graduation.

Research Question Two: What is the students' knowledge of the electricity entrepreneurial skills present in Physics in the University?

Table 2: **Summary of students' knowledge of the electricity entrepreneurial skills present in Physics in the University N = 345**

S/N	Electricity skills available in secondary schools	Level of knowledge			
		Poor	**Average**	**Good**	**Excellent**
1	Ability to identify electrical tools	200(58)	80(23)	45(13)	20(06)
2	Ability to identify electrical materials	240(70)	65(19)	30(09)	10(03)
3	Ability to handle electrical tools	225(65)	80(23)	25(07)	15(04)
4	Ability to handle electrical materials	235(68)	70(20)	25(07)	15(04)
5	Ability to interpret electrical circuits on drawings	290(84)	20(06)	20(06)	15(04)
6	Ability to transfer electrical circuit information into practical	280(81)	25(07)	25(07)	15(04)
7	Ability to install fittings correctly and rigidly	285(83)	20(06)	25(07)	15(04)
8	Quick fixing of accessories and equipment	282(82)	23(07)	25(07)	15(04)
9	Neatness/aesthetics of finished jobs	260(75)	45(13)	25(07)	15(04)
10	Ability to run the lines in straight lines	285(83)	20(06)	25(07)	15(04)
11	Ability to tape the joints neatly	285(83)	20(06)	25(07)	15(04)
12	Ability to tidy up job areas always	280(81)	25(07)	25(07)	15(04)

Note: *Numbers in brackets represent percentage*
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Results as shown in Table 2 revealed that most of the students in this study have poor knowledge of the electricity entrepreneurial skills present in Physics in the University. This result indicates that the students in the University graduate with very poor knowledge of the electricity entrepreneurial skills present in Physics in the University and as a result widen the skills gap in Nigeria.

Research Question Three: What is the students' knowledge of the electricity entrepreneurial skills present in Physics in the University based on gender?

Table 3: **Summary of students' knowledge of the electricity entrepreneurial skills present in Physics in the University based on gender N = 200 Male and 145 Female**

S/N	Electricity skills available in Physics in the University	Level of knowledge based on gender			
		Male		Female	
		Poor	Good	Poor	Good
1	Ability to identify electrical tools	180(90)	20(10)	140(97)	5(03)
2	Ability to identify electrical materials	185(93)	15(07)	140(97)	5(03)
3	Ability to handle electrical tools	185(93)	15(07)	140(97)	5(03)
4	Ability to handle electrical materials	190(95)	10(05)	140(97)	5(03)
5	Ability to interpret electrical circuits on drawings	190(95)	10(05)	140(97)	5(03)
6	Ability to transfer electrical circuit information into practical	190(95)	10(05)	140(97)	5(03)
7	Ability to install fittings correctly and rigidly	190(95)	10(05)	140(97)	5(03)
8	Quick fixing of accessories and equipment	190(95)	10(05)	140(97)	5(03)
9	Neatness and aesthetics of finished jobs	190(95)	10(05)	142(98)	3(02)
10	Ability to run the lines in straight lines	185(93)	15(07)	142(98)	3(02)
11	Ability to tape the joints neatly	185(93)	15(07)	142(98)	3(02)
12	Ability to tidy up job areas always	185(93)	15(07)	142(98)	3(02)

Note: *Numbers in brackets represent percentages*

The results in Table 3 shows that 98% of the female students graduate with poor knowledge of the electricity entrepreneurial skills present in Physics in the University compared to the male students with 95% of poor knowledge of the electricity entrepreneurial skills present in Physics in the University. This result indicates that there is only 3% gap between the female and male at the disadvantage of the female students.

Discussion of Findings

Electricity Entrepreneurial Skills Present in Physics in the University

The result of the study as shown in Table 1 showed that there are 12 different entrepreneurial skills that the University students in Nigeria can learn from Physics in the University. This result validates the position of NUC, 2025 on the objectives of Physics as stated. The NUC states the objectives of Physics to include acquisition of essential scientific/entrepreneurial skills and attitudes as a preparation for technological application of Physics and to stimulate and enhance creativity among the students.

Students' knowledge of the electricity entrepreneurial skills present in Physics in the University

The result of the study as shown in Table 2 revealed that there is a consistent poor knowledge of the electricity entrepreneurial skills present in Physics in the University by the students. The study indicated that the percentage of poor knowledge ranges from 58-84%. This finding lean support to the study of Utibe & Onwioduokit (2019) the study reveals that the high rate of unemployment can be linked to the poor knowledge of entrepreneurial skills by students. The finding also collaborate the fact stated in the Federal Ministry of Education, FME, (2006) that nobody can give what they does not have. The students can't create entrepreneurial skills from nothing since the foundation was not laid for them during their studies in the University.

Students' knowledge of the electricity entrepreneurial skills present in Physics in the University based on gender

The findings in testing of hypothesis five as shown in Table 3 revealed that there exists a consistent poor knowledge of the electricity entrepreneurial skills present in Physics in the University by both male and female students. The study indicated that the percentage of poor knowledge of male students is 93% while the female students are 97%. This high percent is very worrisome to the Nigerian education system. It contributes to the numerous societal problems in Nigeria. This collaborates with the saying: a lazy man is the devils' workshop. This finding lends support to the work of Utibe and Olah (2024) the study was on the influence of guidance and counselling services, national security concerns and students' performance in Physics. The rate of insecurity in Nigeria is directly proportional to the high rate of unemployment occasion from poor knowledge of entrepreneurial skills among male and female students.

Summary of the Study

This study investigated the students' perception on entrepreneurship education in Physics: the case of University of Agriculture, Makurdi, Nigeria. Three research questions were formulated to guide the study. Literatures related to the main variables of this study were reviewed. The study adopted a descriptive survey design. The population of the study consisted of all the students in the Faculty of Agricultural Engineering for 2024/2025 session. The population was 2426 students (Faculty of Agricultural Engineering, 2025). The study sample comprised.

The study sample comprised 345 (200 male and 145 female) Engineering students randomly drawn from different Departments in the Faculty. Two instruments were used to gather data for the study. The data obtained from the survey were collated, coded and analysed using frequency and simple percentage.

Conclusion

Based on the findings of the study, the researchers hereby concluded that there are different entrepreneurial skills that the University students in Nigeria can learn from Physics in the University and the general knowledge of students in entrepreneurial skills is poor. This is because the University does not provide the students with opportunity to developed entrepreneurial skills.

Recommendations

Based on the results and the conclusions reached, the following recommendations were made:

1. The University Faculties should be very intentional about the development of entrepreneurial education.
2. Faculty curriculum developers should ensure the incorporation of active entrepreneurial education in their programmes.

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