SUB-THEME: STEM and TVET for Innovation Technology and Engineering Education Innovative Skills Required by Technology Education Students of Tertiary Institution in Niger State for Self Reliance

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Abstract

The study identified the acquisition of innovative and entrepreneurship skills required by technology education students of Tertiary Institution in Niger State for self reliance. The design of the study was descriptive survey. Three research questions and three hypotheses were formulated to guide the study. The population for the study was 172 final year technology education students from FUT Minna Niger State and COE Minna Niger Statecensus Sample techniques. A structured questionnaire titled "Acquisition of Innovative and Entrepreneurial Skills Required Questionnaire" (AIESRQ). In a four point rating scale duly validated by experts in the field was used as instrument for data collection. The reliability coefficient of the instrument was determined using the Cronbach Alpha method which yielded a mean value of 0.71. Mean was used to answer used . research questions while t-test was testing the formulated hypotheses at 0.05 level of significance. The study revealed that entrepre neurship skills such as ability to determine the needs of customers, ability to capture, maintain and retain the attention of customers, ability to determine demand and supply situation, ability to develop good negotiation skills and others were identified as entrepreneurial marketing skill needs required for self-reliance by business technology students. Based on these findings, Conferences, seminars and workshops should be periodically arranged for teachers and students as this will assist them to update their knowledge and skills in technology education programmes. Government and other stakeholders in education should expose the students to other skill acquisition programmes and opportunities that will ensure skill development and promote economic selfreliance.

Keywords: Education Technology, Students, Skills, Innovative, Entrepreneurship Skills, Self-Reliance

Introduction

Education is the process of receiving systematic instruction, especially at a school or university. Oboreh and Nnebe (2019) explained education as a veritable tool for enhancing economic growth and national development. It is seen as the cornerstone of development because it forms the basis of literacy, skill acquisition, technological advancement, knowledge acquisition and ability to harness the natural resources of the environment. Education in the context of this study is skills needed for students to acquire inorder to function effectively in world of work. A major objective of education as defined by the National policy on Education is the acquisition of appropriate skills, abilities and competence that will enable individuals contribute to national development (NPE, 2013). Vocational and Technology Education (VTE)programme strives to achieve this aim by

Page | 835 EMERGING TRENDS IN STEM AND TVET IN THE 21st CENTURY

preparing students for the world of work either as employed or self-employed by instilling them with relevant skills, abilities knowledge and competencies. Raymond, et al., (2019) explained the aim of establishing VTE programme is to train individuals to equip them with teaching skills and technical skills in specific occupational area of specialization to enable them function effectively as Vocational and Technical teachers or lecturers at TVET institutions (technical colleges, vocational schools, training centers among others) as well as skilled technical personnel in industries. VTE in the context of this the study is a form of education the equips skills needed to function in the world of work to students.

Students are person who is studying at a university or other place of higher institution. Aliyu (2014) postulated that students are someone who is studying in order to enter a particular profession. Students in the context of the study are those students of technology education who exposed to different vocational skills in institutions such as electrical electronics technology, building technology, woodwork technology, metalwork technology and Automobile technology. The exposures of the students to these different fields make them to be skillful.

Skills is process by which individual is expertise. Mautinet al (2019) postulated that skill is the ability and capacity that is acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carryout complex activities or job functions involving ideals (cognitive skills), things (technical skills) and / or people (interpersonal skills). Skills in the context of this study are the process by which technology education students acquired knowledge and skills needed to be self reliance to enter a particular profession. As technology is dynamic the students of technology education have to innovative.

Innovative is the ability of introducing new ideas or ways of doing things. Faiza, et'al., (2018) explained innovative as the process of developing, generating, applying or promoting new ideas by employees to increase job performance. Innovative in the context of the study is the process at which the students of technology education is being creative, Using imagination to manipulateinstruments, to discover possibilities, and to construct objects and images that never existed before. Entrepreneurial skills acquisition are said to be the necessary set of skills required to be an entrepreneur. In other words, entrepreneurial skills acquisition are those necessary skills an entrepreneur needs to successfully run a business or add value to work. Aguet al., (2013) argued that acquisition of innovative skills must be nurtured through proper education so that it can be directed to responsible and enriching small business endeavours that will benefit the individuals and the communities in which the entrepreneurs live.

Entrepreneurship skills acquisition are those skills that an individual need to possess in order to enable him/her succeed in a virtual learning environment. Umunadi, (2014) defined entrepreneurial skills are business skills, which an individual acquires personally to function effectively in business as an entrepreneur and be self-reliant. Entrepreneurship skills in the context of this study is the business skills that students of technology education needs to gains and profits on their fields of profession to become self-reliant.

Self-reliance is the process at which individual depends on his own. Umoru and Nnagi, (2015) explained Self-reliance is the ability of an individual to establish a business of his own without depending on someone else. A person who is independent and self-employed is self-reliant. To

Page | 836 EMERGING TRENDS IN STEM AND TVET IN THE 21ST CENTURY

achieve self-reliance, one must be able to develop the spirit of self-employment; take calculated risk; translate his/her dream into reality through creating, organizing, and producing ideas; spot opportunity and utilize every difficult situation; and develop a school to work strategy, that is, have a practical work experience before graduation from school (Medeyase, 2013). Similarly, Daluba and Odiba (2013) observed that Nigerian graduates could only be self-reliant if they acquire relevant skills through entrepreneurship programmes which will translate into self-employment, wealth creation, job creation, and satisfaction. Despite the clamor for self-reliance and job creation in Nigeria, the planning of technology education in the country has not given enough attention to quality, relevance, and functionality of education. This is evident in students that have graduated from the tertiary institutions that are not yet self-reliant and cannot even do anything for themselves. Hence, this study is design to determine theinnovative skills required by technology education students in tertiary institution in Niger State for self reliance.

Acquisition of innovative and entrepreneurship skills helps in development of a country. It reduces poverty and creates jobs for the youths. This skills helps the technology education students to functions effectively after their graduations. Wey and Wolugbom (2018) explained that every technology education student needs to acquire entrepreneurial marketing skills to achieve self-reliance as its importance cannot be over-emphasized. The possession of these skill needs will facilitate students' self-employment after graduation thereby reducing graduate unemployment in Nigeria. Marketing as a facet of technology education provide a lot of business opportunities for students after graduation. Thus technology education students must get themselves acquainted with these skill needs while in school so they can achieve self-reliance after graduation and also contribute their quota to national development.

However, Nigeria has been confronted with the challenge of high unemployment among her youths. Today, the present state of the Nigerian economy requires every individual to think of the very best alternative means of meeting his/her immediate needs through self-employment which acquisition of innovative skills and entrepreneurial marketing skills offers to graduates especially those of technology education. According to Ezenwafor and Olaniyi (2016), the skill needs required by graduates of Nigerian tertiary institutions in this contemporary time, are more than mere preparation for white collar jobs but for self-reliance geared towards national development. The field of marketing in technology education provides abundant self-reliant employment opportunities for graduates, which they are unable to identify and explore because of they are deficient in relevant entrepreneurial skill needs required to market a business. It is very certain that unemployment will continue to increase at an alarming rate owing to ill-acquisition of entrepreneurial skills amongst Nigeria graduates (Adebisi, 2015), especially those of technology education. Thus the technology education student is also faced with the challenge of unemployment and striving to survive in the midst of the dwindling Nigerian economy.

Propose of the Study

The main purpose of this study was to determine the innovative skills required by technology education students in tertiary institution in Niger State for self reliance. Specifically, the study sought to:

1. Identify the acquisition of innovative and entrepreneurship skills required by technology education students for self-reliance.

Page | 837 EMERGING TRENDS IN STEM AND TVET IN THE 21ST CENTURY

- 2. Identify constraints that hinder the effective innovative and entrepreneurial skill acquisition by technology education students.
- 3. Proffer possible strategies for enhancing acquisition of skills by technology education students.

Research Questions

Based on the purpose of the study, the following research questions were answered:

- 1. What are the innovative and entrepreneurship skills needs required by technology education students for self- reliance?
- 2. What are the constraints that hinder effective innovative and entrepreneurship skills acquisition by technology education students?
- 3. What strategies will enhance acquisition of innovative andentrepreneurial skills by technology education students?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

- 3. There is no significant difference in the mean responses of technology education students of federal university of technology (FUT) and College of Education (COE) Minna on innovative entrepreneurial marketing skills required for self-reliance.
- 4. There is no significant difference in the mean responses of technology education students of federal university of technology (FUT) and College of Education (COE) Minna on constraints that hinder effective innovative and entrepreneurship skill acquisition by technology education students.

Methodology

The descriptive survey design was used for the study. The study was guided by 4 research questions and 4 hypotheses. The study was carried out in Niger State. The state has two tertiary institutions offering technology education programme, namely Federal University of Technology (FUT) and College of Education (COE) Minna. The choice of the state for this study was necessitated by the adequate number of technology education graduates who constituted the respondents for the study and also the growing number of unemployed technology education graduates who will benefit immensely from the findings of the study. Population of the study comprised all 172 final year students in the department of industrial and technology education and vocational and education from the two tertiary institutions for 2019/2021 academic session. The choice of this category of respondents was because they have vast potential for entrepreneurial development. Census techniques were used due to manageable size of the students. The instrument used for data collection was a 30 item structured questionnaire titled "Acquisition of Innovative and Entrepreneurial Skills Required Questionnaire" (AIESRQ), drafted using four (4) point rating scale ranging of strongly agree (SD) 4 points, agree (A) 3 points, disagree (D) 3 points and strongly disagree (SD) 1 point. The questionnaire items were subjected to face and content validation by two experts from technology education and measurement and evaluation. A reliability coefficient of 0.71 was obtained using SPSS Cronbach Alpha method thus making the instrument suitable for use. Data collected relative to research questions were analyzed using the meanwhile null hypotheses were tested at 0.05 level of significance using f-test. Mean scores of 2.50 and above were considered as accepted while mean scores below 2.5 were considered as rejected.

Page | 838 EMERGING TRENDS IN STEM AND TVET IN THE 21ST CENTURY

Results

Research Question 1

What are the innovative and entrepreneurship skills needs required by technology education students for self-reliance?

Table 1: Respondents Mean Responses of Technology Education Students of Federal University of Technology (FUT) and College of Education (COE) Minna on Innovative Entrepreneurial Marketing Skills Required for Self-Reliance.

S/N	Items	FUT	COE	MEAN	Decision
		N-69	N-103		
1	There is no policy framework for banks to set aside funds to support small and medium enterprises.	3.62	3.45	3.54	Accepted
2	Most parent and lecturers do not encourage entrepreneurial spirit and aspiration among children	2.10	3.01	2.56	Accepted
3	There are inadequate facilities and equipment for innovative and entrepreneurial acquisition	2.82	3.70	3.26	Accepted
4 .	Incompetency of lecturers	3.42	3.08	3.25	Accepted
5	Curriculum does not contain much room for creative freedom and enough entrepreneurial learning experiences	2.19	3,43	2.81	Accepted
6	Most lecturers are not trained to lead students through the path of productivity, self reliance and job creation	3.42	3,11	3.27	Accepted
7	Lack of awareness of benefits of entrepreneurial skill acquisition	3.93	3.72	3.83	Accepted
8	Lack of students interest in practically oriented courses	3.45	3.51	3.48	Accepted
9	Poor societal attitudes to self employment	3.53	2.88	3.21	Accepted
10	Inability of utilize resources more effectively and efficiently	3.20	3.19	3.19	Accepted
	Grand Total	3.17	3.31	3.24	Accepted

Table 1 above revealed that respondents agreed on all questionnaire items on innovative and entrepreneurship skills needs required by technology education students for self- reliance (mean scores > 2.5). The grand mean of 3.17 and 3.31 from Federal University of Technology and College of Education (COE Minna) respectively and an overall grand mean of 3.24 are indications that these institutions agreed that innovative and entrepreneurship skills needs required by technology education students for self-reliance in Niger State.

Research Question 2:

What are the constraints that hinder effective innovative and entrepreneurship skills acquisition by technology education students?

Page | 839 EMERGING TRENDS IN STEM AND TVET IN THE 21ST CENTURY

Table 2: Respondents Mean Responses of Technology Education Students of Federal University of Technology (FUT) and College of Education (COE) Minna on Strategies That will Enhance Acquisition of Innovative and Entrepreneurship Skills by Technology Education Graduates.

S/N	Items	FUT	COE	MEAN	Decision
		N-69	N-103		
1	Ensure teachers are well motivated	2.70	2.10	2.40	Rejected
2	Government should provide adequate facilities and equipments for innovative and entrepreneurial skills acquisition	3.42	3.01	3.22	Accepted
3	Developing positive attitude towards self- employment	2.90	3.41	3.16	Accepted
4	Provision of conducive teaching and learning environment	3.00	2.82	2.91	Accepted
5	Ensure practical instructional delivery	3.56	2.97	3.27	Accepted
6	Students should exposed to practical	3.56	3.06	3.14	Accepted
7	Students should be motivated	3.73	2.93	3.33	Accepted
8	Aims and objectives of the technology education programme should be well defined to the students	2.85	3.10	2.98	Accepted
9	Attending skills oriented trainings, seminars and conferences	3.51	3.11	3.31	Accepted
10	Banks should sets up policy frameworks to support small scale and medium enterprises	2.99	3.40	3.19	Accepted
	Grand Total	3.22	3.06	3.14	Accepted

Table 2 above revealed that respondents agreed on nine out of ten questionnaire items on hinder effective innovative and entrepreneurship skills acquisition by technology education students (mean scores> 2.5). The grand mean of 3.22 and 3.06 from FUT and COE respectively and an overall grand mean of 3.14 are indications that these institutions agreed that outlined are hinder effective innovative and entrepreneurship skills acquisition by technology education students in Niger State.

Research Question 3:

What strategies will enhance acquisition of innovative and entrepreneurial skills by technology education students?

Table 3: Respondents Mean Responses of Technology Education Students of Federal Iniversity of Technology (FUT) and College of Education (COE) Minna on Strategies that will Enhance Acquisition of Innovative and Entrepreneurship Skills by Technology Education Graduates.

SN	Items	FUT	COE	MEAN	Decision	
		N-69	N-103			
1	Ability for identify new trends in the marketing environment.	3.21	3.10	3.16	Accepted	
2	Entrepreneurial skills for recognizing and using tools and materials for production	3.52	3.02	3.27	Accepted	
3	Skills for accessing funds and accounting	2.87	2.92	2.89	Accepted	
4	Ability to capture the attention of customers	3.41	3.00	3.21	Accepted	
5	Ability to acquire effective sale techniques	2.90	2.71	2.81	Accepted	
6	Business managerial skills establishment,	3.56	3.21	3.39	Accepted	
	managing and sustaining business					
7	Ability to organize and build network	3.42	3.41	3.42	Accepted	
8	Ability to determine the needs of customers	3.60	2.56	3.08	Accepted	
9	Skills for introducing or using new ideas/ways of doing things	3.62	3.10	3.36	accepted	
10	Innovative skills of being independents imaginative and constructive thinkers	2.89	3.14	3.02	Accepted	
	Grand total	3.30	3.02	3.16	accepted	

Table 3 above revealed that respondents agreed on all the outlined strategies will enhance acquisition of innovative and entrepreneurial skills by technology education students (mean scores> 2.5). The grand mean of 3.30 and 3.02 from FUT and COE respectively and an overall grand mean of 3.16 are indications that these institutions agreed that the outlined strategies will enhance acquisition of innovative and entrepreneurial skills by technology education students in Niger State.

Hypothesis One:

There is no significant difference in the mean responses of technology education students of Federal University of Technology (FUT) and College of Education (COE) Minna on innovative entrepreneurial marketing skills required for self-reliance.

Table 4: Summary of f-test on innovative entrepreneurial marketing skills required for

Respondents	N	Mean	Df	Sig	f-value	Decision
FUT Students	69	3.17	170	0.09	0.05	Upheld
COE Students	103	3,31				

Page | 841 EMERGING TRENDS IN STEM AND TVET IN THE 21ST CENTURY

Table 4 shows the finding of the analysis of variance on readiness of FUT and COEas shown on innovative entrepreneurial skills required for self-reliance. (Table 4) revealed that 3.17 and 3.31, the f-test value 0.09 is greater than 0.05. This suggests that there is no significant difference in the mean responses of technology education students of Federal University of Technology (FUT) and College of Education (COE) Minna on innovative entrepreneurial marketing skills required for self-reliance. As a result, the null hypotheses was upheld

Hypothesis Two:

There is no significant difference in the mean responses of technology education students of federal university of technology (FUT) and College of Education (COE) Minna on constraints that hinder effective innovative and entrepreneurship skill acquisition by technology education students.

Table 5: Summary of f-test on constraints that hinder effective innovative and entrepreneurship skill acquisition by technology education students.

Respondents	N	Mean	Df	Sig	f-value	Decision
FUT	69	3.22			No. of the San Control of the Sa	Decision
Students						
			170	0.07	0.05	Upheld
COE	103	3.06				
Students						

Table 5 shows the finding of the analysis of variance on readiness of FUT and COE as shown on innovative entrepreneurial skills required for self-reliance. (Table 5) revealed that 3.22 and 3.06, the f-test value 0.07 is greater than 0.05. This suggests that there is no significant difference in the mean responses of technology education students of federal university of technology (FUT) and College of Education (COE) Minna on constraints that hinder effective innovative and entrepreneurshipskill acquisition by technology education students. As a result, the null hypotheses was upheld.

Discussion of Findings

The Findings of the study presented in table 1 revealed that all the identified innovative and entrepreneurship skills needs' required by technology education students for self-reliance. This is because it will help students achieve self-reliance and self-employment after graduation. This finding aligns with the opinions of Ezeh (2012) viewed that acquisition of entrepreneurial skills help students develop potentials for the attainment of self-reliance thereby contributing to sustainable development. This finding also collaborates with the view of Oyerinde and Falana (2016) that students who acquire marketing skills will be able to cross the bars of unemployment and become self-reliant.

The findings as presented in table 2 revealed that constraints such as lack of funds, incompetent manpower, lack of students' interest in practically oriented courses, poor societal attitude to self-employment, inadequate teaching/learning facilities, among others hinder the effective innovative and entrepreneurial skill acquisition by technology education students. This agrees with Kayode

Page | 842 EMERGING TRENDS IN STEM AND TVET IN THE 21st CENTURY

(2010) that most teachers are yet to acquire some practical entrepreneurial skills they are to instill in students as well as develop and adopt new teaching methods that will enhance skill delivery. It also confirms the observation by Gbenidio (2012) teaching and learning facilities are still inadequate in Nigerian tertiary institutions because education in Nigerian still remains poorly funded.

Findings from table 3 above, revealed that measures such as provision of adequate teaching/learning facilities and conducive environment, developing positive attitude towards self-employment, attending trainings, conferences, seminars and workshops that are skill oriented, competent manpower, and ensuring practical instructional delivery among others will promote the acquisition of entrepreneurial skills for self-reliance by technology education students after graduation. This is in line with Ugwu and Ezeani (2012) which indicated that tertiary institutions should have a strategy of action plan for teaching and research in entrepreneurship. This also aligns with the view of Nwakeaku (2013) that students are bound to develop skills which need to be improved through well planned strategies.

The findings of the study as revealed in tables 4, 5, and 6 also shows that disparity does not exist in the opinions of final year technology education students from the two tertiary institutions as it relate to the acquisition of innovative and entrepreneurship skill needs required by students, constraints hindering entrepreneurial skill acquisition and the strategies that will promote effective skill acquisition by technology education students in Niger State.

Conclusion

This study identified the acquisition of innovative skills and entrepreneurial skill needs required for self-reliance by technology education students, the constraints that hinder effective innovative and entrepreneurship skills acquisition as well as the strategy that will promote the acquisition of these innovative and entrepreneurial skill needs. Innovative and entrepreneurial skill needs are veritable tools that will prepare students for the contemporary world of work, helping them to become self-reliant and creators of jobs thereby reducing unemployment in the nation and sustenance of the economy. The ability of individuals to survive in the present state of the Nigerian economy is dependent on the type and quality of his or her innovative and entrepreneurial skills acquired.

Every technology education student needs to have innovative and acquire entrepreneurial skills to achieve self-reliance as its importance cannot be over-emphasized. The possession of these skill needs will facilitate students' self-employment after graduation thereby reducing graduate unemployment in Nigeria. Entrepreneurships as a facet of technology education provide a lot of business opportunities for students after graduation. Thus technology education students must get themselves acquainted with these skill needs while in school so they can achieve self-reliance after graduation and also contribute their quota to national development.

Recommendations

Based on the findings, the following recommendations were made:

1. Conferences, seminars and workshops should be periodically arranged for teachers and students as this will assist them to update their knowledge and skills in technology education programmes.

Page | 843 EMERGING TRENDS IN STEM AND TVET IN THE 21ST CENTURY

- 2. Government and other stakeholders in education should expose the students to other skill acquisition programmes and opportunities that will ensure skill development and promote economic self-reliance.
- 3. Technology education students should endeavour to acquire themselves with all the relevant skill needs necessary for them to create, and maintain their customers' needs
- 4. The teaching of technology education courses should be practical oriented as this will help to improve students creativity

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