

Adequacy of Electronics Curriculum in Technical Colleges in North Central Nigeria for Equipping Students with Entrepreneurial Skills

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Abstract

Equipping students with entrepreneurial skills depends largely on the adequacy of Electronics curriculum in the technical colleges. This study was therefore carried out to determine the adequacy of the content of Electronics curriculum in equipping the students with entrepreneurial skills for meaningful employment. There was no sample as the entire population of the 85 teachers was studied. The design was used to collect data from teachers in electronic department in 21 Technical colleges within the 6 states in north central of Nigeria. The instrument used for data collection was a structural questionnaire. From the analysis of the data, the result indicated that Electronics curriculum in technical colleges in north central of Nigeria were grossly inadequate for the development of entrepreneurial skills for marketing, resource management and time management skills. Based on the findings, it was recommended among others that the Electronics curriculum should be revised. Also, the curriculum planers and government agencies responsible for the management of electronics curriculum in technical colleges should prepare modules, guidelines and learning materials in entrepreneurial skills that will support the teaching and learning of entrepreneurial skills in electronics in technical colleges in north central of Nigeria.

Keywords: Electronics, Curriculum, Entrepreneurship, Entrepreneurial skills

1.0 Introduction

Curriculum as a term has different operational meanings to different educationist including curriculum specialist. Olaitan (2003) defined curriculum as learning experiences which the learner is exposed to under the guidance of the school. Sommefeldf and Briggs (2002) defined curriculum as a social construct designed to transmit the characteristics of the society. The authors furthered stated that a society maintains and develop its identity over time through a continuous defining and redefining of its particular culture with the context of an ever-changing world. Emphasis is on equipping students with electronics skills, knowledge and attitudes. Electronics curriculum is the one that is geared towards attaining the goals of technical education as shall be unfolded briefly courtesy NPE (2004).

Technical colleges are the second 3 years study in the secondary technical schools where learners are provided with different technical skills for self-employment. NPE (2004) stipulated goals of technical and vocational education as to;

- (a) Provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and Technical colleges
- (b) Provide the Technical knowledge and vocational skills necessary for Electronic, commercial and economic development
- (c) Give training and impart necessary skills to individual who shall be self-reliant economically.

The teacher of electronics technology is saddled with the responsibility of implementing the electronics curriculum at this level. This is for the purpose of attaining the goals from a-c above. As such, teaching is the process of helping someone to learn. Ogwo and Oranu(2006) defined teaching as the science and art of assisting a person to learn. The writer however sees electronics teacher as a person who has acquired the pedagogy of electronics knowledge, skills and attitude, and is qualified to help an individual to learn the electronics skills in Radio, Television, Amplifier and satellite work.

The word electronics comes from electrons mechanics which means learning the way electron behaves under different conditions of externally applied field. Electronics according to Neha (2011) means the study of flow of electronics in electric circuits. It is studied as a branch of vocational education to provide youths with gainful entrepreneurial skills. Equipping the learners with productive skills according to UNESCO (2009) is to reduce the tide of such challenges facing the youth global financial economics crises, unemployment, job deskilling and poverty. The same UNESCO document emphasized that young people need entrepreneurial skill oriented anchors that will enable them to cope with the global tensions, pressures, unemployment and contradictions in their daily lives. It was in line with the above that UNESCO (2001) reviewed Radio Television

and Electronics department specialized areas as; Radio communication, Radios and Audio Frequency Amplifier, Satellite Transmission & reception, and Television. In Nigeria, Technical colleges are saddled with the responsibility of facilitating skill acquisitions in Electronics, as well as facilitating application and utilization of knowledge through teaching and learning of related science and Electronics.

Entrepreneurial skills are necessary skills needed to succeed in any business or trade. Hence, Uduma (2004) asserts that entrepreneurial skills are the ability of individual to exploit an idea and create an enterprise (small or big) not only for personal gain but also for social and development gains. Ifegbo (2002) noted that entrepreneurial skills are acquired through training that emphasizes the acquisition and development of appropriate knowledge and skills that enables an individual to maximize the resources around him within the limits of his capability. UNESCO (2004) described entrepreneurship as the process of creating something different with value by devoting the necessary time and effort, assuming the accompanying financial, psychological and social risks, and receiving the resultant rewards of monetary and personal satisfaction.

Entrepreneurship as a process of organizing, managing and assuming risk of a business, consist of effective utilization of ideas, information and facts that help a learner to acquire competencies needed for firm career commitments such as setting up business, marketing services or being productive employers in organization like in electronic enterprise. The skills are essential in tackling unemployment and poverty challenges. The curriculum of Technical Colleges should therefore, contain entrepreneurial skills for the acquisition of skills, knowledge and competencies that would enable learners in the electronics department to make use of the resources to produce electronics appliances and services upon graduation.

Nigerian government in line with the above, recognized the need for entrepreneurial skills when it directed in her (FGN, 2004) National policy on education that the different educational institutions including Technical colleges should introduce entrepreneurship education to inspire students with a desire for achievement and self-improvement both at school with a view to appreciate the dignity of labour. It appears that the level of entrepreneurial skill acquisition is very low due to slow integration of practical entrepreneurship education in the curriculum especially in Electronics sector in Nigeria. It should be able to equip individuals for creative problem solving and innovation. Through the curriculum of Electronics, it is expected that the students will acquire entrepreneurial skills like resource management skills, marketing skills, strategic planning skills, and time management skills.

The students graduating from the Technical colleges could then acquire skills on how to set up and manage Electronics related occupations or enterprise like Radio and Television repairs, winding of step-down transformers, satellite transmission, reception and installation, Audio Frequency Amplifier production and the likes. Amaechi (2012) sees the essence of Electronics curriculum as intended to expose learners to entrepreneurial skills in resource management, marketing, strategic planning and time management skills to help them meet up with the challenges of unemployment, job disliking and poverty. For the curriculum to achieve this, it requires an adequate and functional curriculum. Adequate in this perspective means that is sufficient and satisfactory in quantity and quality in terms of content and facilities. Until this is made, the definition of adequacy will not make sense in the context of curriculum. However, it is only when adequate curriculum of the technical colleges is put in place that learners would be exposed to the learning experiences needed for requisite entrepreneurial skills.

Government of recent introduced several curricular contents and prescribed some innovative techniques for the teaching and learning of the curricular contents of different subjects and for different levels of education, including Technical colleges. Quite disheartening, it appears that hundreds of thousands of Electronics graduates produce yearly from the Technical colleges have a limited hope of getting further education or getting employment after graduation and remained unemployed. The way out of this ugly pandemonium is to redirect the focus electronics curriculum in Technical colleges towards inculcation of productive entrepreneurial skill. In effect, an electronics curriculum was poised to achieve the following objectives (NERDC 2007);

- Equip electronics students with productive skills for survival
- Stimulate creativity and enhance entrepreneurship in electronics Technology
- Prepare electronics students for further studies in vocational and technology education, Engineering and computer science
- To enhance interest of and others who wants to take electronics technology as a second vocation or hobby.

UNESCO (2001) indicated that Radio, Television and Electronics work curriculum is organized around four themes namely; Radio communication, Electronics device and circuit, Radio and Audio Frequency Amplifier and Television. It was however, recommended that e-learning and GSM repairs should form part of the electronics curriculum. All is geared towards attaining an adequate electronics curriculum which will enable the students gain usefully employment on graduation. Some students who get self-employed according to Amaechi (2012) usually fold up or even lose their jobs because of inadequate entrepreneurial skills and consequently, graduates of electronics technology resorts to arm robbery, touting and other misdeals in order to

live.

From the aforementioned therefore, a gap is seen between the electronics curriculum in technical colleges and the entrepreneurial skills needs for the students to acquire for employment. In other words a gap exists particularly on what entrepreneurial skills which the students require from the Technical colleges in preparing the students to face the challenges of unemployment and poverty. There is the need therefore to investigate into the extent of adequacy of Electronics curriculum in meeting the entrepreneurial needs of electronics students in technical colleges to check the tides of challenges of unemployment and poverty. This forms the statement of the problem.

2.1 Purpose of the study

The main purpose of the study was to investigate the adequacy of the electronic curriculum in technical colleges for equipping the students with entrepreneurial skills for gainful employment. Specifically, the study was designed to determine the following:

1. Adequacy of electronics curriculum in technical colleges in North Central of Nigeria for equipping students with entrepreneurial skills in marketing to meet the challenges of unemployment.
2. Adequacy of Electronic Curriculum in Technical Colleges in North Central for equipping students with entrepreneurial skills in resource management to meet the challenges of unemployment.
3. Adequacy of Electronics Curriculum in Technical Colleges in North Central for equipping students with entrepreneurial skills in time management to meet the challenges of unemployment.

2.2 Research questions

The following research questions guided the study:

1. What is the degree of adequacy of Electronics Curriculum content in Technical Colleges for equipping students with entrepreneurial skills in marketing to meet the challenges of unemployment?
2. What is the degree of adequacy of the Electronic Curriculum content in equipping students with entrepreneurial skill in resource management to meet the challenges of unemployment?
3. What is the degree of adequacy of the Electronic Curriculum content in equipping students with entrepreneurial skill in time management to the challenges of unemployment?

3.0 Methodology

Descriptive survey research design was used in carrying out the study. Description in the view of Ogbonna , Dakun and Dewan (2006) is an act where the researcher tries to describe and interpret what exist. Such a researcher seeks to find out condition of adequacy and inadequacy of existing curriculum. It is also known as non-experimental research.

The study was carried out within the 6 states in north central of Nigeria. The design was used to collect data from the teachers in electronic department in 21 technical colleges on the adequacy of electronics curriculum and its delivery in developing entrepreneurial skills in the students. The population of the study was 21 Technical colleges in north central of Nigeria 85 teachers of related electronics courses. There was no sample as the entire population of the teachers was studied. The structured questionnaire consisted of 30 items on a 3-point scale of very adequate, moderately adequate and grossly inadequate. Three experts validates from University of Technology Minna, Niger State of Nigeria validated the instrument. The expert two from industrial Technical Department (electronics section) and one from measurement and evaluation after justifying and scrutinizing the instrument made useful suggestions which improved the final draft of the instrument used for the study.

The Cronchbach's Alpha method was used to determine the reliability of the instrument which yielded a coefficient value of 0.52. As such, 85 copies of the questionnaire were distributed to the teachers with the help of 4 research assistants who were students in the department of Industrial Technical Education, Federal University Minna. After the administration of the questionnaire, a total of 68 copies of the instrument were properly filled and returned by the research assistants which represents 80% returned rate. The data collected were organized and analyzed using the mean and structural deviation was also computed to show how close or far apart the respondents are from the mean.

For analysis and interpretation, very adequate was assign a value of "1" while grossly inadequate was a value of "0". Base on the 2 points scale, the point for the scale is 1. Real limit of the response scale was used for interpretation as follows: grossly inadequate mean that items had mean scores between 0.00 and 0.49; moderately adequate had mean scores between 0.05 and 1.49 while very adequate had mean scores of between 1.50 and 2.00. Therefore, only item with mean ratings of 0.00 and 0.49 were interpreted on grossly inadequate; also any item with a mean of between 0.05 and 1.49 was interpreted as moderately adequate while an item with mean between 1.50 and 2.00 was interpreted as very adequate. The results of the study are presented as shown in the tables 1-3 below.

4.0 Findings

4.1 Table (1) Mean and Standard Deviation of Teachers' Opinion on the adequacy of the electronic curriculum for developing entrepreneurial skills for marketing skills.

S/No	Adequacy of the Electronic curriculum in providing entrepreneurial skills in marketing management.	Mean	SD	Remark
1	Customer location skills	0.253	0.361	GI
2	Competition skills	0.327	0.421	GI
3	Savings and investment skills	0.070	0.256	GI
4	Marketing communication skills	0.615	0.485	MA
5	Marketing research skills	0.244	0.423	GI
6	Distribution skills	0.239	0.265	GI
7	Price control skills	0.156	0.231	GI
8	Marketing forecasting skills	0.101	0.211	GI
9	Negotiation and bargaining skills	0.001	0.001	GI
10	Sales management skills	0.230	0.41	GI
	Average means	0.224	0.306	

Table 1 above indicates that 9 items were grossly inadequate in the opinion of the teachers for marketing skills. The overall average of the mean of 0.224 is an indication that the electronics curriculum in technical colleges does not contain the marketing skill for equipping the students to be self-employed in that of marketing related enterprises.

4.2 Table (2) Mean and Standard Deviation of Teacher's Assessment of the adequacy of the electronics curriculum in development of entrepreneurial skills for resource management.

S/No	Adequacy of the electronic curriculum content in development of entrepreneurial skills in resource management	Mean	SD	Remark
1	Cash flow and investment control skills	0.461	0.493	GI
2	Raw materials processing skills	0.384	0.486	GI
3	Management skills	0.709	0.44	MA
4	Measurement and test instrument management skills	0.769	0.44	MA
5	Production management skills	0.153	0.361	GA
6	Lead management skills	0.615	0.486	MA
7	Power consumption management skills	0.384	0.486	GA
8	Components management skills	0.307	0.461	GI
9	Equipment management skills	0.307	0.463	GI
10	Appliances management skills	0.307	0.463	GI
11	Workplace management skills	0.462	0.415	GI
	Average mean score	0.41	0.487	GI

Since the items were weighted on a three point scale very adequate which scored 2 points, had mean of between 1.50 and 2.00, moderately adequate scored 1 and had mean between 0.50 and 1.49 while grossly inadequate scored (0) and had mean scores of between 0 and less than 0.50. From table 1 management skills, measure and test instrument management skills and lead management skills were considered moderate adequate while other 8 items was consider grossly inadequate. This implies that electronics curriculum content did not cover the contents in the development of entrepreneurial skills. The average mean for the entire items is 0.41 indicating grossly inadequate curriculum Content in the development of entrepreneurial skills in students for resource management skills.

4.3 Table (3) Mean and Standard Deviation of Teachers Assessment of the Adequacy of electronics curriculum for developing entrepreneurial skills in time management

S/No	Adequacy of the electronic content in developing entrepreneurial skills in time management.	Mean	SD	Remark
1	Maintain control of time	0.384	0.486	GI
2	Planning skill strategies	0.384	0.487	GI
3	Record keeping skills in product, finance & tools	0.307	0.461	GI
4	Employee motivation skills	0.280	0.421	GI
5	Prioritize ones time according to different Activities	0.461	0.493	GI
6	Maintain control of time	0.615	0.486	MA
7	Time consciousness skills for task performance	0.923	0.266	MA
8	Maintaining team spirit	0.384	0.486	GI
9	Organizing skills for each days task	0.415	0.395	GI
	Average			

Table 3 above showed that maintaining team work spirit and time conscious skills have rating between 0.50

and 1.49. This shows that the respondents agreed on the adequacy of the curriculum in developing entrepreneurial skills for time management in team work and time consciousness but moderately. The rest of the item scored less than 0.50 showing gross inadequacy of the curriculum for developing entrepreneurial skills for time management. The overall average mean of the item was less than 0.50 which indicates that the electronic curriculum in the technical colleges were grossly inadequate in preparing student for time management.

5.0 Discussion of Findings

Findings of this study revealed that the electronics curriculum content in Technical colleges is not adequate for students of electronics in development of entrepreneurial skills. Analysis of data (table2) shows that all the respondents agree that the curriculum of the electronic in technical colleges do not adequately cover the content in development of entrepreneurial skills in resources management. The graduates of electronics from technical colleges are expected to effectively manage scarce resources, using the skills that they ought to have learnt in the curriculum of electronics. Unfortunately, research report such as Onu (2011) stated that the students have not acquired the skills for entrepreneurship, possible because the curriculum do not have in-built entrepreneurial contents in the curriculum. Onu's report supports the present finding.

Marketing skills at any stage of electronics ventures are critical to the success of entrepreneurship in electronics. Unfortunately, most of the marketing skills listed in table 1 are not adequately provided for in the technical college electronics curriculum for development of entrepreneurial skill in students for marketing. Amaechi (2012) stress that the curriculum content of electronics need to provide some entrepreneurial skill such as marketing research, negotiation and scales management skill, so that the graduates of electronics from technical colleges who eventually take up career in electronics will be able to equip themselves with appropriate life skills for self-employment and self-reliance. The present findings are not meeting the above standard. The electronic curriculum in technical colleges was also perceived as grossly inadequate for the development of entrepreneurial skill for time management skills which is not a welcome development. The inadequacies of the curriculum of the electronics in Technical colleges to provide students with related business ideas will mean that the graduates will be idle on graduation and could indulge in some social evils like touting, arm robbery, kidnapping, and prostitution among others in order to sustain their livelihood.

Conclusion

Current changes in the electronic labour markets demands that students should acquire relevant entrepreneurial skills through school curriculum. Globalization also demands electronic students should acquire similar knowledge as e-learning and GSM skills to enable them move along the train of globalization. With this understanding, electronics curriculum should include such learning to enable the electronics student with e-learning entrepreneurial skills e.g. surfing the net, online registration skill, electronics Appliances and GSM repairs skills among others. Developing entrepreneurial skill in the electronics students will enable them on graduation to set up business enterprises related to electronics occupation on their own and in turn become self-employed and self-reliant such efforts will help in the reduction of crime rate, high rate of under employment in Nigeria, leading to self-employment and electronics business ownership.

Recommendations

The writer advanced the following recommendation based on the findings of the study

1. The electronics curriculum in the technical colleges should be revised and well enriched with the latest content on entrepreneurial skills in marking management, resource management and time management.
2. Curriculum planners, policy makers and government agency responsible for adequacy of the technical college curriculum should make provision for instructional materials, teaching guides, and learning materials in entrepreneurial skills leading to the acquisition of the required entrepreneurial skill in electronics. Reliable seminars and workshops should be organized for the electronics teachers on regular bases. This will keep them abreast of the current electronics challenges and the latest content in related electronics entrepreneurial skills.
3. Electronics students should be deeply involved in industrial entrepreneurial skill acquisition practices with a reasonable remuneration.

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