



Soft Skills Needed by Electrical Technology Students for 21st Century Jobs

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Abstract

The study investigated the rise in the rate of unemployment among Electrical Technology graduates from Colleges of Education in Nigeria despite the huge government investment in power and education sectors. The study is a qualitative study which involve a survey of literature and interview protocol. This study is designed to determine the employability skills needed by electrical technology students in Colleges of Education qualitatively with the aimed of suggesting a departure from the general framework available to all disciplines. A review of journal articles and policy documents on Employability skills and Electrical Technology was conducted, leading to the interview data that was conducted among 6 employers of labour and 4 Senior Academic staff in the four Colleges of Education that have Electrical Technology programme in South Western Nigeria. The study revealed that there is a skill mismatch between Colleges of Education in Nigeria and the labour market. Thus, the students lack the skills for 21st-Century jobs. The two results were integrated to come up with a Framework of employability for Electrical Technology students in Colleges of Education in Nigeria. The study observed that the framework developed was still broad and therefore recommends a valid discipline-difference employability skill framework using Rasch Analysis Model to determine the competencies and its hierarchy.

Keywords: Soft Skills, Employability, Framework, Electrical Technology

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INTRODUCTION

The Federal government of Nigeria in her bid to ensure that more jobs are created and expanded for the youths has been investing heavily in the power sector of the economy. The data released by the National Bureau of Statistics (NBS 2017) indicates that the power generation output in Nigeria attained 7,000 megawatts of electricity for the first time in decades. This was due to the unbundling of the power sector to give room for efficiency and expansion. This has created various vacancies in the various sub-sectors of the electricity supply chain such as generation, transmission, and distribution. Thus, more job opportunities were opened to graduates from tertiary institutions, and especially, Electrical Technology Students. The stability in the power sector has a multiplying effect. It grows the level of foreign direct investment in the economy. This translate to more jobs opportunities for graduates. For instance, the Federal government through the Minister of Culture and Information announced the creation of 7million jobs in the last three years (Lai, 2018).

Related to this is the improved budgetary allocation for education which has increased from millions of naira to billions since 2011. Specifically, the 56 billion nairas budgetary allocation to education in 2017 increased to 102.9 billion nairas in 2018. This has brought about improved government intervention in both facilities and training with the aim of improving outcome which is employability of graduates. This role is effectively being handled by the Tertiary Education Trust Fund (TETFUND). The quality of a school is a function of the employability of its graduates (David Finch; Melanie Peacock;

Nadege Levallet; William Foster, 2016). One definitely expect an improved educational outcome in terms of ability to secure jobs based on the available job opportunities in both the public and private sectors of the economy. It is therefore worrisome that the employers of labour continue to lament about the poor quality of graduates which has made them a misfit for the labour market. This has earned them some unprintable names such as half-baked graduates or, graduates who are not graduate (Babatunde Durosinmi-Etti, 2017; Holmes & Holmes, 2015). Ari (2018) notes that the vacancies exists but, the people to fill them are not there. Ari Joseph is the Director General of the Industrial Training Fund (ITF) in Nigeria. There is, therefore, a huge waste of government investment in Technical Education due to the existence of skills mismatch between the school and the workplace (Daihiru Sale Mohammed and Sarimah Ismail, 2014). This is because it has been opined that the jobs are there but the graduates lack the skills to match those jobs (Babatunde Durosinmi-Etti, 2017). The employers expect the graduate to possess other extraneous skills apart from academic qualification (Dania, Bakar, and Mohamed, 2014; Emmanuel, 2015b). The continuous increase in the rate of youth unemployment reveals that the issue of skills mismatch in Nigeria education system has not been adequately handled particularly, at the College of Education level where many graduates of Electrical Technology are found to be roaming about the streets. The school should be concerned with the process of transition from the school to the workplace (Cai, 2013). Therefore, for the local content policy of the government to materialize and become functional, the school must be alive to its responsibility of developing students to be job-ready and capable of fitting into the employment market. This can only be achieved when we have in place a 21st-



Century employability skills framework that is capable of bridging the skills-gap existing between the school and the labour market most especially for Electrical Technology students that has received considerable attention from the government of Nigeria.

LITERATURE REVIEW

Comparative Job structure of the Tertiary Institutions in Nigeria

Although, it is very difficult to get unemployment data in Nigeria because the schools lack the database for graduates tracking (Woolley, Hays, Barnwell, Sen Gupta, & McCloskey, 2015; Asaju, 2014). It is expected that Electrical Technology graduates from Colleges of Education should have fair better on the employment scale as against their counterpart from the University and Polytechnic because of the nature of their training which gives them job opportunities as a professional technical teacher in schools and Technical Officers in Trades, Businesses and Industries (NCCE, 2012; NPE, 2013). However, the existing situation, and the result of preliminary studies reveal that the Colleges of Education trained Electrical Technology graduates are not always being considered for employment because of their over-reliance on academic qualification. This again accounts for the sacking of twenty-two thousand (22,000) teachers in Kano state in January 2018 for being unfit for the job (Nwachukwu, 2018).

The National Board for Technical Education (NBTE) which is in charge of Polytechnic education only has its focus on business and industries for its graduates. Thus, graduates of Polytechnics are mono-sector trained unlike Electrical Technology students from Colleges of Education who are dual sector trained. Schedule 80, subsection a, b and c of the National Policy on Education NPE (2013) specifically stated the industrial and business roles for Colleges of Education Technical, and Polytechnics.

However, despite these advantages, preliminary studies reveal that Electrical graduates from Colleges of Education lack the skills to match the existing jobs in Nigeria labour market. This is consequent upon the absence of employability skills in the curriculum of Colleges of Education. Therefore, the development of employability skills framework for Electrical Technology students in Colleges of Education will help to overcome the problem of unemployment among the graduates. Table 1 describes the job and career structures for Polytechnic, Colleges of Education and University graduates in Nigeria.

The trend of Technical Education in Nigeria

Technical Education is one branch of education offered at the present time worldwide. This is as a result of the economic downturns in most countries and the emergence of new technologies in some parts of the world (Azumah, 2014; Jackson, 2014; Oladejo, 2016). Technical Education was designed to provide opportunities for students who have a tendency for Science and Technology Education to meet the manpower needs of the Industry. Fafunwa (1974) and Nwoke (1990) opines that Nigeria has had contact with Technical and Vocational Education before the advent of the Europeans particularly, the Missionaries. The type of Education offered then was referred to as Traditional African Education whereby, the youths and young ones learn the occupation of their family through imitation and practice. It is on record that unemployment at this time was near zero if it existed at all (Fafunwa, 1974). This was because everyone was practically engaged in the skills of his clan or family. There were no idle hands. Thus, in the view of Fafunwa (1974), Education in Africa and Nigeria, in particular, predates the ‘Whites’ and recorded a near zero youth unemployment but, informal in nature. The aim of Education was the development of the immediate environment and self-sufficiency (Lawal, 2013). But, this trend has virtually been lost now. Skilled professionals like Electrical Technology graduates are now finding it tough to earn a living from their profession and therefore have nothing to contribute to national development. Lawal (2013)

describe national development as the exploitation and use of human and material assets to enhance national development. This includes the changes in the social welfare of the general population. Education is especially observed as the foundation of any type of improvement and additionally popularity based procedures (Lawal, 2013).

Table 1: Job and Career structure

S/ N	Type of Institution	Technical College	Polytechnic	College of Education	University
1	Duration	3	2 years	3 years	4 years
2	Controlling Body	National Business and Technical Examination Board (NABTEB)	National Board for Technical Education (NBTE)	National Commission for Colleges of Education (NCCE)	National University Commission (NUC)
3	Qualification	City and Guilds; NABTEB Ordinary Certificate	National Diploma (ND)	National Certificate in Technical Education (NCE Technical)	B.Sc/Bed
4	Job Status	Craftsman	Technologist	Classroom teacher Technical Officer	Engineer / Teacher
5	Career Opportunity	Business and Industry	Business, Industry, Organization	Schools and Technical Colleges, Business, Organization, and Industry	Teaching, Business, organization, and Industry.
6	Entry Salary Grade Level	Level 04	Public = 06 Private = 05	Public = 07 Private = 06	08

Source: College of Education, Ikere-Ekiti Manual.

In Nigeria, Technical Education is seen to be the best weapon that can be utilized to accomplish quick attractive changes and improvement in the nation's economic, political, sociological development (Adesina, 2013; Okoye, 2016). Improved emphasis on Technical Education will reduce unemployment and crime (Asaju et al., 2014; Awogbenle, 2010). The advocates for curriculum remodeling is intended to connect the School programme with the need of Employers (Pitan, 2017; Roland, 2005).

Equally, researchers like Asaju et al. (2014); Emmanuel (2015); Okoye (2016); Uddin (2013) still believe that more needed to be done by the Government to be able to achieve the goal of banishing unemployment among the youth in Nigeria. Some of the recommendations made by these researchers are: increase funding for Technical and Vocational Education, the creation of a conducive atmosphere for business to thrive, curriculum re-modeling for Technical and Vocational Education, increase fight against corruption and fixing of decayed infrastructural facilities. When all these are put in place, they hope it would bring down the level of unemployment and insecurity in the country. This to an extent would restore the original intents of Technical Education particularly, Electrical Technology (Emmanuel, 2015).

Unemployment in Nigeria

Nigeria fondly called the giant of Africa is the most populous black nation in the World and situated along the coast of West Africa. Nigeria and Ghana are having the highest number of people in the sub-region. However, Nigeria is the most enriched with the largest coastline and numerous mineral resources that put her in a vantage position in the global reckoning. However, the state of economies in



many of these countries has made some researchers and State watchers to worry about the State and impact of Education on the life of the inhabitants of these nations most especially, Nigeria. For example, the World Bank Global ranking of Universities at the end of 2016 shows that no single West African countries made the first one thousand in the world Educational ranking of Universities. In another index, World Bank, (2016) global unemployment index shows the alarming rate of unemployment in West Africa compared with some Asian countries like Malaysia and Singapore. All these are affirming the low qualities of Nigerian graduates; the level at which Education is in Nigeria and particularly, the need to reform Technical Education.

In a related development in 2016, while countries like Malaysia and Singapore had their highest level of unemployment at 4.5 percent and 6 percent respectively at the end of 2016 that of Ghana and Nigeria stood at 19.7 percent and 12.9 percent respectively during the same period. The previous unemployment rating in both Malaysia and Singapore were put at 3.5 percent and 2.1 percent respectively while the previous level of unemployment for both Nigeria and Ghana stood at 13.3 percent for Nigeria and 5.96 percent for Ghana.

Although it could be argued that all the four countries cited witnessed an increase in their level of unemployment when compared with their previous ratings as stated above, the rate of increment in the level of unemployment in both Malaysia and Singapore were marginal, while that of Nigeria and Ghana were astronomical. Especially, when compared the size of the Ghanaians population with that of Malaysia at about twenty-nine million people each. Secondly, the quality of education in some Asian countries might be responsible for their low level of unemployment when compared with some African countries like Nigeria and Ghana. For example, while both Nigeria and Ghana Universities could not be found among the first one thousand Universities in the world, both Malaysia and Singapore had their Universities among the first five hundred in the world. Figure 1 shows the rising rate of unemployment among the youth since 2014 in Nigeria.

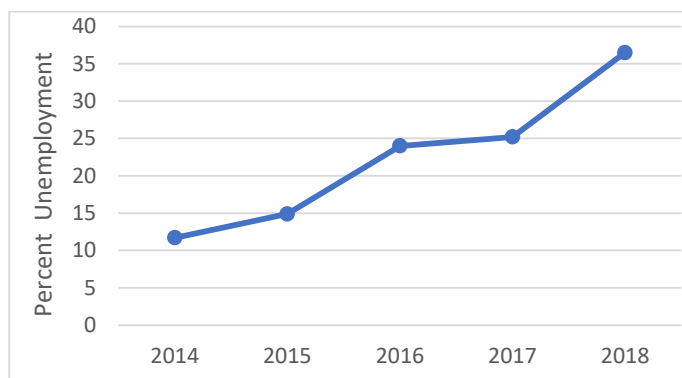


Fig 1. Youth Unemployment Rate in Nigeria (NBS,2018)

Therefore, the role of Education in national development cannot be overemphasized. Azumah (2014) while commenting on the poor state of education in Ghana, blamed the colonial masters for emphasizing General Education which resulted in the low development in Ghana. He observed that general education had turned the people to semi-literates with little attention focused on Technical Education in the educational system. With the rising concern that the level of youth unemployment will rise in the coming decade as contained in the 2016 World Bank report on Ghanaian's unemployment rate, there is, therefore, the rising fear about the preparedness of Government to deal with the rising problem. Some developed countries of the world had gone a step further in Technical Education by setting up accreditation bodies for the development of their graduate's employability skills like it is found in Japan, United Kingdom, Australia, United States of America and European countries (Ismail, 2015). Africa and Nigeria, in particular, is still struggling to get Technical Education right to meet the expected learner's outcomes. Just as it was revealed by the leading researcher and economist with the World Bank (Daniel, 2016), a solid

educational foundation that is relevant to the labour market is significant for fighting the issue of joblessness in African nations. Therefore, to provide the youth with technical skills is important but, it is equally important to provide them with the skills with which they will be more employable. Consequently, employability skills are important tools for bridging the skill-gap that is existing between the school and industry in technical and vocational education (Daihiru, 2014). The rate of change in the world order due to globalization in the last two decades gave rise to employability. According to McGrath (2009), employability arises as a result of three basic essential facts: the decline of industrial production and the rise of a service-based economy, the acceptance of education as the way to end poverty and social exclusion, and the related notions of lifelong learning and broad-based careers. This development has made the School Curriculum be obsolete and creates a skill mismatched between the School and the Industry.

The term employability has been variously defined by different scholars. Therefore, employability is a construct with no specific definition. Martin (2008) attest to this when they said that the definition of employability has varied, and changed in accordance with the political discourse. As a result, the way employability is viewed has to do with the political inclination of individuals or sectors without losing the concepts. Mansour (2016) recommend that the idea of employability skills might be subjective regarding the individual setting. This is in agreement with Hillage & Pollard (1998) who asserted that employability is a construct of capitalism, and forms part of public discourse influencing individuals' cultural, social and vocational experiences. One of the major reasons adduced for the lack of coherence in the definition of employability is the divergent views of the stakeholders; the Industry, the Student, and the Institution (Tymon, (2013).; Uddin, 2013). Guilbert (2016) while describing employability noted that an individual has a successful career when he is continuously employable in the internal and external labour market during his working life. This definition of employability provides that individuals are responsible for being able to manage their careers across employment opportunities, and organizations which in-turn offers employment as long as the person is needed. Employability skills are required to gain employment, as well as to advance the venture in order to accomplish one's potential and contribute effectively to the advancement of the organization (Aida, 2015).

Hillage (1998) characterize employability as a person's capacity to secure job, maintain the job, advance in the performance of his roles, acquire new work if required, and secure appropriate and adequately satisfying work. McQuaid (2005) however, suggests that "employability remains a challenging idea as far as its utilization in both theory and policy are concerned. They contend that it has been used in the past century as both a predominantly labour supply and labour demand concepts. McQuaid (2005) sees the concept as being used in both forms. They suggest that the supply-side should focus on the initiative approach that builds value in the generation of a set of skills that supports national and institutional strategies and practices that can add to enhancing individuals employability development. Employers expect graduates to show the scope of more extensive skills and characteristics that incorporate group working, correspondence, administration, critical thinking and leadership capacities (Wilton, 2012).

Yasin (2017) defines Technical Education as a branch of education offered to provide opportunities for students who have a propensity for science and innovation training to meet the labour needs of the industry. He said further that Technical Education is aimed at meeting the labour needs of the Industry. These efforts enable the potential student to be trained and become professional and semi-professional workforce in various fields of technology and engineering. In spite of these obvious advantages, technical and vocational education is faced with many challenges that hinder its implementation and effectiveness. These challenges have direct consequences on both the trainee (student) and the society at large.

Researchers such as Hassan ((2010).; Kareem (2016). observe that lack of appropriate tools, machines; equipment and poorly trained

teachers are responsible for the poor implementation of Technical Education. In their opinion, the provision of adequate facilities for training in schools will guarantee employment opportunities for students after leaving school. On the contrary, from different studies, researchers like Salami (2013); Tsai (2013) and Tymon (2013) suggest further exploration of the concepts of employability so that the Skill-Gap between the School and the Industry can be reduced. Amusan (2016) further recommended constant re-modeling of the concept of educational curriculum to meet the challenges of society. In his own study, Emmanuel (2015) observed that the problem of unemployment in Nigeria seems to be unresolvable. Consequently, he recommended the restructuring of the Curriculum in order to overcome the problem of unemployment among the youths.

Based on the arguments and recommendations of scholars and researchers like Adebayo (2016); Cardoso (2014) and Tsai (2013), employability issues are very important to Nigeria contemporary higher education. There are also generic requirements that needed consideration by Higher Education Institutions in the process of developing means by which to prepare students for employment. Wilton (2012) suggested that Higher Institutions must go beyond the teaching of Technical and vocational skills because, nowadays, employers are looking for factors far beyond the possession of hard skills and academic qualifications for job recruitment. These unclear factors are elements of employability skills (David J. Finch; Melanie Peacock; Nadege Levallet; William Foster, 2016). Therefore, the teaching of employability skills must be comprehensive. This suggestion aligned with the recommendations of Yasin, Amin Nur, Ridzwan, Ashikin, & Bekri, (2013) that Technical Education should be remodeled in such a way that it will equip students with the skills and knowledge needed in the sophisticated workplace. This suggestion applies to Electrical Technology because it is a trade area found in Technical Education in Nigeria. Technical Education should be included, developed, and reinforced with the academic standards and benchmarks that teach the essential skills that students need for success in life (Yasin et al., 2013).

Concepts of Employability Skills

It has been argued that technical and vocational education plays a vital role in human resource development of any country by creating skilled manpower (Lawal, 2013). No nation can develop without an effective technical and skillful workforce in her economy. Tsai (2013) notes the two greatest worries of employers to be how to find good workers and training them. The difference between the skills needed for the job and those possessed by applicants, sometimes called the skills-gap, is of real concern to human resource managers and business owners willing to hire competent employees. The new way to solve the problem of unemployment today is eventually turning to employability skills (Daihiru (2014). This is about workers who have job readiness skills that help them to fit into the job system. Research conducted by Pierre (2012) in Grenada revealed that ninety-two percent of the respondents in the study believed that there are skills crises in Grenada and that Technical and Vocational Education will be better for their economic development. An important function of the TVET system is to equip its recipients with a combination of skills competence that is required for future economic conditions. To this end, the changes needed in the educational system requires the identification of existing changes in the system. This includes the weakness and the viewpoints about the future of the economy and the method of translating the views expressed into reality.

In particular, A. Tymon (2013) describes employment as those skills identifying with scholarly capabilities, subject knowledge, and business skills, practical and work experiences. Conversely, Hillage & Pollard (1998) opine that employability is not just about professional and scholastic abilities rather, it is about people applicable and useable labour market information data that enables them to make informed choices on labour market options that are available to them. Employability skills were therefore described as the 'soft skills' required to succeed and accomplish in the working environment (Tsai, 2013). An example of employability skills is; personal skills,

attitude, and behaviours. Likewise, the idea of capabilities is firmly identified with the more extensive meaning of employability. In the assessment of Mansour (2016) both the capabilities and the gained skills of graduates can substantially affect the capacity to effectively play out a given occupation. Mansour (2016) however noticed that numerous policymakers are presently setting more noteworthy emphasis on the connections between workforce improvement and the role of Higher Education. Along these lines, numerous organizations on employability skills tend to concentrate on selection rather than preparation. Therefore, no significant strategic financial cost can occur due to inappropriate hiring decisions. Higher Institutions and Organizations must know that building important employability skills involves more than finding work (Hasan 2014). Employability comprises of the advancement of individual techniques, qualities, and experiences (Mansour, 2016). Moreover, the mismatch between the supply of general employability skills and the related relevant skills is a key issue as higher institutions keep on graduating a greater number of graduates that cannot be absorbed by the labour market (Kochler, 2014).

Roland (2005) while explaining the concepts of employability opined that employability relates to both the unemployed people seeking work and those in employment, seeking better jobs in addition to their current job. However, employability remains a contested concept in terms of its use both in theory and policy. Roland (2005) avers that the term employability has been used as both a predominantly labour supply and a labour demand concept in the past centuries. A few analysts and policymakers embrace a narrow supply-side view, while others have a broad point of view on employability. The more broad view centers upon people's employability as far as their capacity to move into new work within the labour market. For example, such as moving from joblessness into a sustainable job or moving from one occupation into another. Consequently, the broad approach join factors, such as, the pursuit of employment and workers request conditions, which influence whether a man can really discover or change employment. These are sets arrangement of employability skills that are the focus of the narrow supply-side ideas of employability. This definition framework is in agreement with (Hillage, 1998 ; Mansour, 2016).

The concept of employability has a useful application to labour market inclusion policies (Kalfa, 2015; Kim, 2015). Particularly, employability is now focused on changing skills and employer's requirement such as the rise of 'soft' employability skills that are now being demanded by employers. The demand for generic skills, especially communication skills, has been a major requirement for many jobs. Therefore, interpersonal skills, personality, and appearance are very crucial in terms of the initial ability to access and maintain employment. (Tymon, 2013). Despite the substantial body of work done on the definition of graduate employability and the number of framework identifying list of knowledge, skills and attributes that graduates should possess, substantial gap still exists between the expectation of employers, graduates, students and staff about what, when and where requisites student learning should take place (Jollands, 2015). Jollands notes that very little research has been published about discipline differences in graduate employability. This again lends credence to Dacre Pool (2007) who sees employability as a long life issue; nobody is ever perfectly employed. There is always an aspect of a person's employability that requires improvement. A person's lack of employability might occur through joblessness particularly among older workers through idleness. Idleness has been expanding across the developed economies of the world. A general move towards more adaptable work markets and the rebuilding in such areas over the past quarter of a century have prompted an adjustment in the supply and demand conditions for employment.

There is an expanding reliance on School and Higher Education qualifications and related transferable skills and competencies. The decay of conventional education has left many people without employment and confronting them with various and different barriers to regaining employment (Bakare, 2011). The decline in the practice of traditional occupational due to the development of new technologies is one of the factors that gave rise to employability skills



in society as opined by many researchers. A major effect of employability is that it helps to overcome redundancy and idleness. Studies have shown that individuals without demonstrable, accredited human capital and work experience are often associated with employability problems found in most households and communities.

It has to be understood that a functional education only exists when the skills acquired at any stage of education becomes operational. When those trained have the opportunity to apply their skills in the labour market. However, they failed to mention Colleges of Education as part of a whole Higher Education system structure in Nigeria as cited in the National Policy on Education NPE (2013) and Amusan (2016) who called for re-modularizing of TVET curriculum at the University, Colleges of Education and Polytechnic level.

Tymon (2013) while assessing the perception of students on employability notes the lack of coherence in the meaning of employability. However, he observed that similarities exist among many of the definitions used, which is the same with that of Yorke (2006) who defines employability as a set of achievements, skills, understandings and personal attributes, that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits them, the workforce, the community and the economy. Alex Tymon (2013) further noted that while employers keep on complaining that graduate is not ready for the world of work, and lack some of the most basic skills needed for successful employment, the Universities are doing their best to develop employability skills of their students. The aim was to ensure that they are employable after graduation.

In simple terms, employability skills of Electrical Technology students are about being capable of getting and keeping fulfilling work (Tsai, 2013; Alex Tymon, 2013). More comprehensively, employability affords Electrical Technology graduates the capacity to move self-sufficiently within the labour market to realize their potentials through sustainable employment. This is because, employability depends on the knowledge, skills, and attitudes possessed by individuals, the way they use those assets, and present them to the employer and the context within which they seek work (Hillage, 1998).

METHODOLOGY/MATERIALS

The general aim of the study is to explore the best approach to enhancing sustainable jobs for Electrical Technology from Nigeria Colleges of Education. Specifically, the objective of the study is to develop a 21st-century employability skills framework for electrical technology students. The qualitative research design was used because of the need to get an in-depth view of the participants on the skills required by electrical technology students for 21st-century jobs.

DATA COLLECTION

The direct observable responses of the research participants was an interview protocol involving employers of labour and some academic members of staff in Colleges of Education in South Western Nigeria. The analysis was done thematically. Ten participants were involved in the study. The data for this research was collected through document analysis and interview. The educational research utilizes interview and inquiries about the respondent’s feelings, attitudes, motivation, experiences of individuals and accomplishments (Anderson, 2010 ; Ivankova, 2014).

The interview for employers was conducted at intervals because it was very difficult to bring all the employers to a single location because of the distance. For the academics, it was a flexible semi-focused group. A flexible interview schedule was employed to enable each participant to participate actively so that their views on employability skills could be recorded. The interview was conducted in English.

The open-ended interview was used to elicit self-report on employability skills from the participants. Personal contacts were used during data collection. The responses of the participants were audio- recorded with the aid of electronic media. This was followed

by its transcription and coding. The transcribed information was taken back to the participants for confirmation and authentication. This is to ensure that their opinion is not misrepresented.

Data triangulation is very important for a qualitative study. Triangulation enables researchers to combine qualitative and quantitative data in studying the same phenomenon for the purpose of greater credibility for the study (Denzin, 2016 ; Hussein, 2009). The data triangulation technique for this research was “triangulation within methods”. This means that the same method was used repeatedly for different participants. Their responses were recorded verbatim from different locations and compared for similarities based on the theme and issues raised. This is aimed at providing credibility for the collected data (Hussein, 2009).

DATA ANALYSIS AND FINDINGS

The documents are categorized into two; Journals and Policy documents. Based on the analysis of the documents and journal articles, five main competencies constructs required for Electrical Technology students in Colleges of Education were identified. The main constructs are classified into technical and non-technical skills which were referred to as visible competencies. The technical skills consist of Electrical-specific skills which include, construction, installation, troubleshooting safety, and direct current. The non-technical skills are generic or employability skills (Alex Tymon, 2013). They include personality skills, People Oriented skills, Applied Knowledge skills, Workplace skills, and Entrepreneurial skills. The sub-constructs consist of integrity, initiative, dependability, adaptability, professionalism, communication, teamwork, organizational, sensitivity, flexibility negotiation, numeracy, technology, scientific skill, critical thinking, information technology, problem-solving, decision making, planning and organizing, resource management, information usage, service-oriented, innovativeness, ability skill, resourcefulness, motivation and commitment, strategic and visionary. The hidden competencies consist of self-concepts and motives.

In order to have a holistic frame of competency for Electrical Technology students in Colleges of Education, it is pertinent to integrate the document analysis with the findings shared by the Employers and Academics. Table 2 represents the matrix of the documents analysis. Where,

Journal Articles	Policy Documents (all policy documents emphasizes hard skills)
JR1: Tymon (2013)	PL1: Nigeria Minimum Standard on Colleges of Education
JR2: Backa & Wihersaari(2014)	PL2: Nigeria National Policy on Education
JR3: Jackson (2014)	PL3: Institute of Electrical Engineers Wiring Regulations
JR4: Ismail (2015)	PL4: International Occupation standards
JR5: Habia (2015)	
JR6: Mitch (2016)	

Table 2: Findings of Document Analysis

Competency Document	JOURNAL ARTICLES (JR)						POLICY DOCUMENTS (PL)			
	JR 1	JR 2	JR 3	JR 4	JR 5	JR 6	PL 1	PL 2	PL 3	PL 4
TASKS PERFORMANCE TECHNICAL (Electrical specific)										
Electrical construction	*			*			*	*	*	*
Troubleshooting	*			*			*	*	*	*
Electrical installation	*	*	*		*		*	*	*	*
Testing and measurement	*			*			*	*	*	*
Wired devices	*		*				*	*	*	*
Dc power							*	*	*	*



Competency Document	JOURNAL ARTICLES (JR)						POLICY DOCUMENTS (PL)			
	JR 1	JR 2	JR 3	JR 4	JR 5	JR 6	PL 1	PL 2	PL 3	PL 4
Green technology										*
Transformers							*		*	*
Safety	*		*		*		*	*	*	*
NON-TECHNICAL (Employability)										
PERSONALITY										
Integrity	*		*		*					
Initiative	*	*		*	*	*				
Dependability	*	*	*		*	*				
Adaptability	*				*	*				
Professionalism	*	*	*	*	*					
PEOPLE ORIENTED										
Communication	*	*	*	*	*	*		*		
Teamwork	*	*	*	*	*	*				
Organizational	*	*	*	*	*	*				
Sensitivity	*	*								
Flexibility		*		*		*				
Negotiation	*	*	*	*						
APPLIED KNOWLEDGE										
Numeracy	*	*	*	*		*				
Technology	*		*			*	*	*	*	*
Scientific skill	*		*	*			*	*	*	*
Critical thinking	*	*	*							
Information technology	*	*	*	*		*				
WORKPLACE										
Problem - solving	*		*	*	*					
Decision making	*	*		*	*	*				
Planning & organizing	*	*								
Resource management	*									
Information usage	*	*	*							
Communication skill	*	*	*							
Service-oriented										
ENTREPRENEURIAL QUALITY										
Innovativeness	*	*								
Ability skill	*									
Resourcefulness		*								
Motivation & commitment	*	*								
Strategic & visionary	*									
MOTIVES										
Achievement	*			*						
Sense of worth				*						
SELF-CONCEPT										
Attitude	*			*						
Value	*			*						
LIFELONG LEARNING										
21 st -century skills		*		*	*					
14.0			*		*					

Table 3. Summary of Interview Findings Regarding Technical Skills

Sub constructs	EMPLOYERS						ACADEMICS			
	E P 1	E P 2	E P 3	E P 4	E P 5	E P 6	A P 1	A P 2	A P 3	A P 4
Electrical construction	*		*	*		*	*	*	*	
Troubleshooting		*	*				*			*
Electrical Installation					*	*		*	*	
Testing and Measurement	*	*		*			*	*		*
Wired device		*			*			*	*	
Green Technology	*	*			*	*		*	*	*
DC power		*			*				*	
Safety			*	*	*		*	*		*
Transformer	*	*							*	*

RESULTS AND DISCUSSION

The theoretical constructs and sub-constructs derived from document analysis was further strengthened and refined by the competency constructs and sub-constructs of the interview findings. The findings show that most of the journal articles spoke in favour of non-technical skills (employability skills) while the major emphasis of the policy documents like the National Policy on education, and the National Commission for Colleges of Education was on the hard skills (Technical skills). Majority of the interview participants also stressed the importance of soft skills for Electrical Technology students. Thus, a number of soft skills were mentioned as contained in the framework in figure 1. The framework is a product of the document analysis, and interview protocol with employers and Academics in the field of Electrical Technology. The study reveals that both technical and Non-Technical skills are important for an Electrical Technology graduate to easily and conveniently secure employment. This is as a result of the complexity and advancement in technology. Consequently, the employability skills framework required by Electrical Technology students in Colleges of Education in Nigeria is illustrated in Figure 2.

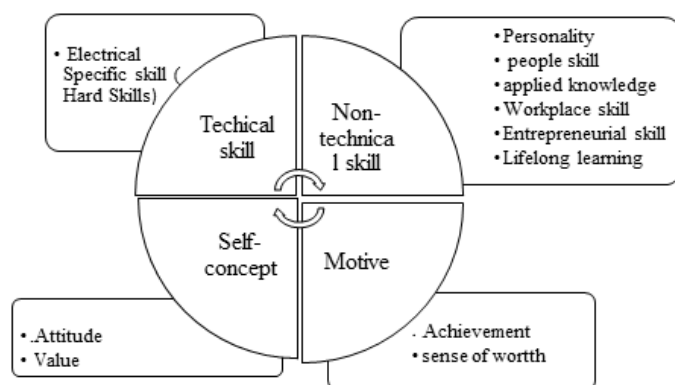


Fig 2. Employability skills Framework for Electrical Technology Students

CONCLUSION

The findings of the study show that both hard skills and soft skills are generally needed for electrical technology. It is evident that the over-dependence on hard skills and academic qualification is no longer relevant to today's work environment. This is suggestive of the recommendation of Jollands (2015b) that a discipline-difference employability skill should be emphasized. Tertiary education is universal. The students should be exposed to skills that will qualify them for employment anywhere across the globe. The inclusion of employability skills (soft-skills) in the curriculum of the Colleges of Education will generally reduce the lamentations from both the employers and the graduates as well. Equally, the lecturers will be



more comfortable that they are producing marketable and functional graduates in society. This will translate to a reduced unemployment and crime rate among the youths. This study recognizes that the broad framework can still be treated to a narrowed frame suitable to match students with the demands of the labour market. Consequently, there is the plan to expand the study to the use of Rasch Analysis Model to treat the misfit item. Rasch Analysis Model is a growing software which measures both person and item on a scale. It has the ability to isolate the noisy and misfit items during processing.

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