EMPLOYABILITY SKILLS FRAMEWORK FOR TVET GRADUATES EMPLOYMENT IN NIGERIA

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Abstract
The purpose of the study was to develop the employability skills definitions and framework for TVET graduates employments in Nigeria. The literatures from international definitions of employability skills were reviewed. The findings indicate the developed definitions and framework for TVET graduates employments in Nigeria. The definitions involve three themes including generic skills with eleven employability skills, core TVET skills with six employability skills and personal attributes with two employability skills. The indicators of each employability skills were identified. The framework indicates the importance of employability skills integration to TVET curriculum for the production of employable and marketable TVET graduates in Nigeria.

Introduction

Technical and Vocational Education and Training (TVET) is an integral part of general education which is intended for the preparation of individuals into the fields of occupations for effective participation in the world of work (UNESCO, 2002). TVET emphasizes the application of knowledge, attitudes and manipulative skills for specific occupational field or clusters of related occupational fields for economic developments (Palmer and King, 2006).

ILO conducted an empirical analysis of TVET and employment across 23 developing countries at almost the same time. The regression results revealed that the impact of TVET on employment was strong and the positive sign of TVET variables means that the increments of TVET cause the increments of employment in developing economies (Islam, 2004). The Nigeria National Policy on Education has linked the skills developments in TVET with employment when it stated that, it is expected that trainees completing technical college programmes in Nigeria shall improve the economy through the following three national policy options (FGN, 2004):

a) Secured employment in privates or governments organization
b) Set up their own business, become self-reliant and employ others
c) Pursue further education in advance craft or technical programs in polytechnics, colleges of education (technical) and Universities of technology

Paradoxically, TVET skills developments are being taught at university and other educational levels in Nigeria since early 1980's. However, to date unemployment is increasing annually among the citizens as shown in Figure 1.

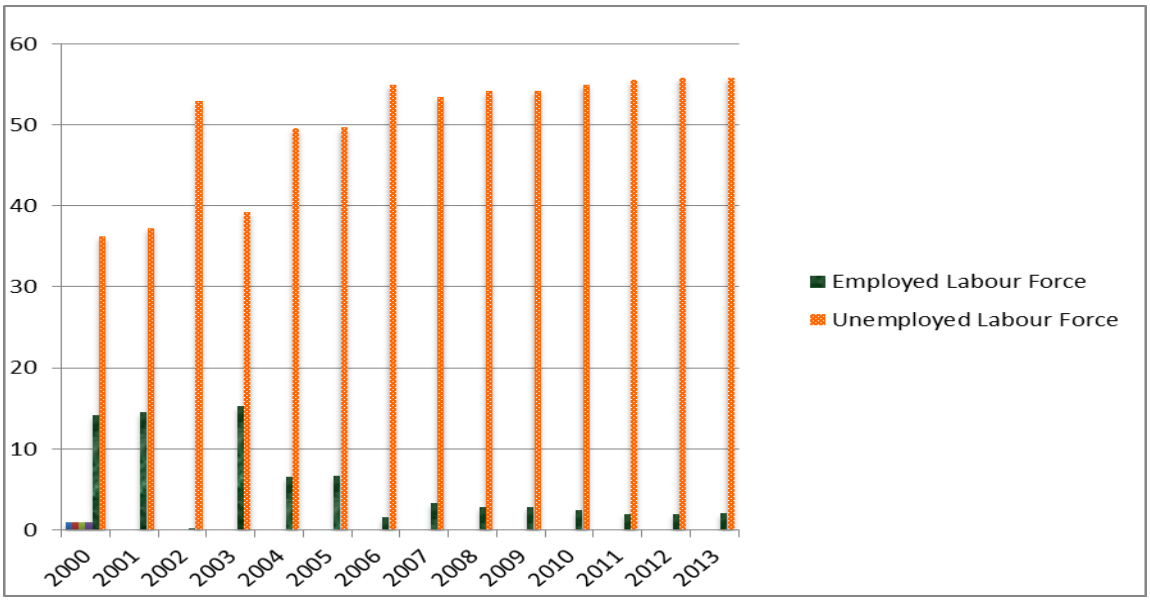

Figure 1: Employed and Unemployed Labour Force in Nigeria (2000-2013)

Figure 1 shows that the rate of employed labour force is decreasing while the rate of unemployed labour force is increasing annually.This provides impression that there are problems with the programmes in labour force training institutions including TVET programmes offered by Federal Universities of Technology in the country.

Government statistics had classified rate of unemployment in Nigeria based on educational levels of the citizens as shown in Figure 2.

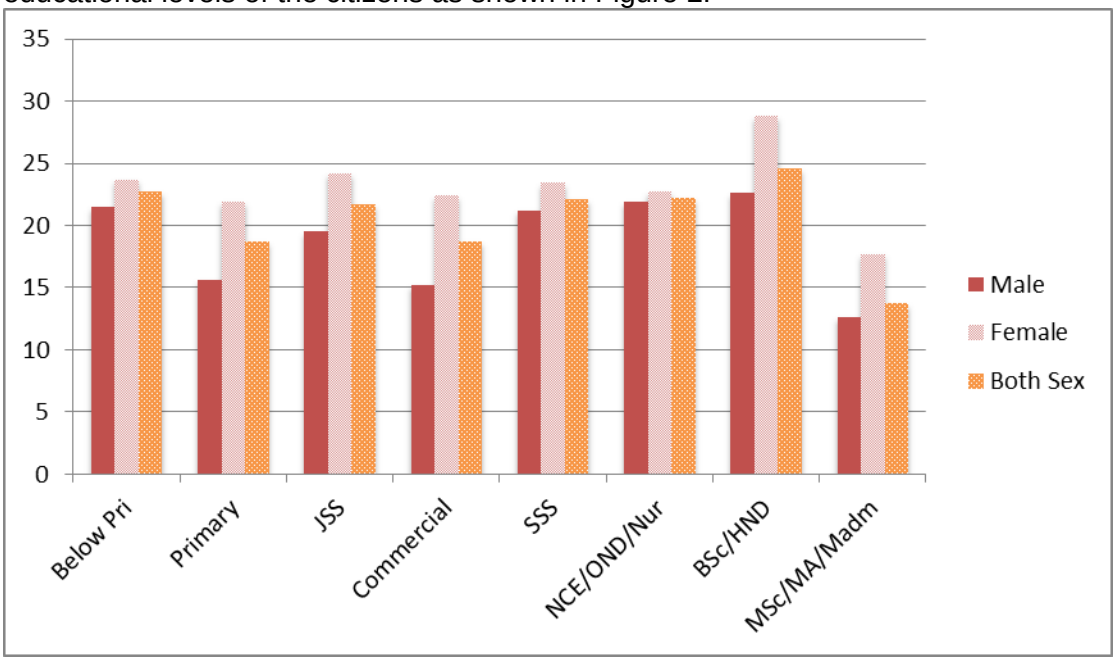

Figure 2: Unemployment Rate by Educational Level in Nigeria
Sources: National Bureau of Statistics, 2012.

Figure 2 shows bachelor degree graduates have the highest rate of unemployment among all educational levels where female rate is higher than male in all educational levels in Nigeria. It also indicates unemployment rate of university bachelor degree and equivalent

polytechnics HND graduates as (24.6%) higher than those who had below primary education (22.7%) and NCE, OND and Nursing (22.2%) in Nigeria in 2012. This high rate of unemployment of universities and polytechnics graduates promises the need for employability skills in Nigeria. The main cause of graduates' unemployment in Nigeria is due to the lack of incorporating employability skills into the curriculum of Nigerian tertiary institutions (Oresanya, et al., 2014).

Idris and Rajuddin (2012) investigated the level of importance and competencies of employability skills among the final year TVET students in Nigeria.This finding indicates the need for TVET institutions in Nigeria to focus and equip the students with the employability skills. This finding aligned with Oresanya, et al, (2014) which found that employability skills has not been incorporated into Nigerian curriculum.

The existing gap in the findings is that the concept of employability skills in Nigeria has not been incorporated into tertiary education system of the country (Oresanya, et al., 2014). There is need for TVET institutions in Nigeria to focus and equip the students with the employability skills (Idris and Rajuddin, 2012). This study is set to provide definition and framework of employability skills based on the international definitions for TVET curriculum and employment.

Despite the numerous research findings and integrations of employability skills into education systems of Asians, Americans, Europeans and Australian countries, there is no definition and framework of employability skills in Nigeria.

The essential theories supporting this study are Human Capital Theory which rests on the assumption that education and training raises the productivity of workers by imparting them with useful knowledge and skills that increases their lifetime earnings and profits of the enterprise (Becker, 1964). It stresses on the process of accumulating human capital itself to obtain knowledge and skills throughout educational activities such as Technical and Vocational Education and Training (TVET) programmes especially at university level (Alan et al., 2008). Becker (1993) stressed that education and training are the most important investments in human capital.Higher educational institutions can increase human capital by improving the knowledge and skills of their graduates (Knight and Yorke, 2003). This supports the development of employability skills framework for TVET curriculums of Universities in Nigeria.

Employability skills are those skills that TVET graduates need for getting, maintaining and performing well in workplace (Robinson, 2000). Employability skills are teachable and transferrable (Lorraine, 2007 and Yorke, 2006). This is because excellent academic degrees in TVET alone is not enough today for employment in a competitive world of work because employers need capabilities and competencies in generic skills in addition to core TVET skills (Zaharim, et al, 2010). Researches revealed the employability skills that make TVET graduates to gain employment and make them successful in their occupations including personal qualities, core skills and process skills (Lees, 2002), skills, understanding and attributes (Australian Learning and Teaching Council, 2011), skills, attributes and personal qualities (Precision Consulting, 2007), Personal attributes, personal skills and TVET Knowledge (Zaharim, et al, 2010). Three divisions of employability skills have different terminologies. Core TVET skills are called Technical Skills, Hard Skills, Core Competencies, and Core Skills. Generic skills are called generic capabilities, work skills, essential skills, basic skills, transferrable skills, key skills, enabling skills, and soft skills (DEST, 2007; Hiroyuki, 2004; Knight and Yorke, 2002 and Yorke, 2006). Personal attributes are called traits, generic green and personal qualities.

Zaharim et al (2010) compared the similarities and differences of employability skills enlisted by five International Accreditation bodies. These international accreditation bodies are ABET in USA, OSC in UK, EA in Australia, JABEE in Japan and ERTI of European Union as shown in Table 1.

Table 1: Employability Skills for TVET Graduates by USA, UK, Australia and European Union

United States of America	United Kingdom	Japan	Australia	European Union
Accreditation Board for Engineering and Technology	OSC Engineering Occupational Standard	JABEE	Engineers Australia	European Round Table of Industrialists
Understanding of professional and ethical responsibility	Ability to maintain engineering products	**Personal Skills** Self-assessment skills Leadership skills IT and computer skills; Visioning skills Personal presentation skills; Goal-setting skills Problem-solving skills Communication skills; **Attitudes** Vitality Cooperation Desire for challenge Ambition Curiosity Optimism Responsibility	Understanding of ethical and professional responsibilities and commitment to them	Civic mindedness Observing the community services
The broad education necessary for understanding the impact of TVET to global and local context	Ability to plan and manage engineering products		Professional attitudes	**Professionalism** Attention for achieving excellence
Recognition and ability to engage in lifelong learning	Ability to install engineering products		Capacity of Professional development and lifelong learning	**Initiative** Attention for creativity and curiosity
Knowledge of contemporary Issues	Ability to improve quality and safety of engineering products		Capacity for innovation and creativity	**Decision making** Attention for commitment and willingness to take risk
Ability to use modern techniques and skills Ability to identify, formulate and solve TVET problems	Ability to develop own TVET competences Ability to develop TVET products		Ability for documentation and information management	**Personal Discipline** Attention for responsibility
			Ability to work as effective team member or team leader in multi-cultural and multi-disciplinary teams	**Team Spirit** An individual group work ability
Ability to function on multi-disciplinary teams			Ability to work effectively alone	**Techniques of Learning** Ability to adapt to new situation and pick up new skills
Ability to understand the design of a system, components and process			Effective communication ability with TVET team and the society	**Basic Mathematics and Scientific** Understandings Ability to understand new technology
Ability to communicate effectively		**Traits** An entrepreneurial mind A balance personality Creativity Sincerity Individuality Flexibility Sensitivity Initiative		**Critical thinking** Ability to think and differentiate between facts and prejudices
Ability to apply knowledge of Science, Technology, Engineering and Mathematics (STEM).				**Mastery of local language** Ability to understand local language, basic spelling and construction of sentences
Ability to conduct educational research				

Table 1 indicates that in United States of America educational employability skills for TVET graduates was developed by the Accreditation Board for Engineering and Technology

(ABET). In United Kingdom, industrial employers required TVET graduates to have lists of competencies developed by OSC Engineering occupational standards. In Australia, undergraduates TVET students' employability skills and competencies were developed by the professional and accreditation body named Engineers Australia. In European Union, the list of general employability skills was developed by European Round Table of Industrialists (Zaharim, 2010). Zaharim et al, (2010) compared the employability skill definitions of the international accreditation bodies and developed the Malaysian Engineering Employability Skills (MEES) definition for engineers and related fields in Malaysia as shown in Table 2

Table 2: Malaysian Engineering Employability Skills (MEES) Framework

Code	Employability Skills
MEES 1	Communication Skills
MEES 2	Teamwork Skills
MEES 3	Lifelong Learning
MEES 4	Professionalism
MEES 5	Problem Solving and Decision Making Skills
MEES 6	Competency in Practice and Application
MEES 7	Knowledge of Mathematics, Sciences and Engineering Principles
MEES 8	Knowledge of Contemporary Issues
MEES 9	System Approach for Engineering and Related Disciplines
MEES 10	Competency in Specific Engineering and Related Disciplines

Source: Zaharim et al, 2010

Zaharim et al, (2010) further classified MEES framework into three main components of Employability skills as follows:

Personal Attributes
MEES1- Communication Skills
MEES2- Teamwork Skills
MEES3- Lifelong Learning Skills
MEES4- Professionalism
MEES5- Problem Solving and Decision Making Skills

Personal skills
MEES1: Communication Skills
MEES2: Teamwork Skills
MEES5: Problem Solving and Decision Making Skills
MEES6: Competency in Practice and Application
MEES10: Competency in specific engineering discipline

Knowledge
MEES3: Lifelong Learning Skills
MEES5: Problem Solving and Decision Making Skills
MEES7: Knowledge of science and engineering principles
MEES8: Knowledge of Contemporary Issues
MEES9: Engineering System Approach
In addition, the Common Wealth of Australia (2002) compared the employability skills of Mayer competencies of Australia, NCVC of UK, ES for Canada and SCANS for US as shown in Table 3.

Table 3: Employability Skills of Australia, United Kingdom, Canada and United States of America

Key Competencies of Australia (Mayer Key Competencies)	UK Core Skills (NCVC)	Canada Employability Skills Profile	US Workplace Know How (SCANS)
Team Working with Others	Personal Skills for Working with Others	Positive Attitude and Behaviour to work with others and adaptability	Interpersonal Skills
Using Technology	Information Technology	Use of Technology	Technology Systems
Solving Problems	Problem Solving Skills	Problem Solving and Decision Making Skills	Foundation Skills and Thinking
Planning and Organizing Activities	Personal Skills, Improving Own Performance and Learning	Thinking Skills and Responsibility Skills	Resources, Foundation Skills and Personal Qualities
Communicating Ideas and Information	Communication for Improving Own Performance, Learning and personal Skills	Communication Skills	Information as the Foundation Skills and Basic Skills
Collecting, analyzing and Organizing Information	Communication Skills	Thinking Skills	Information as the foundation and Basic Skills
Post Mayer Additions: Cultural Understanding	Modern Foreign Language	Manage Information by Working Safely with Numbers and Participate in projects and Tasks	
Using Mathematical Ideas and Techniques	Numeracy and Application of Numbers	Understanding and Solving Problems Using Mathematics	Basic Skills as Foundation Skills

Source: Common Wealth of Australia, 2002

Common Wealth of Australia (2002) developed the employability skills definition including 13 personal attributes and eight employability skills indicators of employability skills and themes of employability skills. The employability skills are technology skills, learning skills, self-management skills, planning and organizing skills, initiative and enterprising skills, problem solving skills, team work skills and communication skills. The employability skills definition is shown in Table 4.

Similarly, this study compared the employability skills of international communities in the literature review and developed the definition and framework of employability skills for TVET and employment as shown in Table 5 and Figure 3.

Table 4: Employability Skills Framework for Small and Medium Scale Enterprises in Australia

Theme	Employability skills	Indicators
Interpersonal skills	Communication	Listens and understands Speaks clearly and directly Writes clearly Negotiate effectively Reading independently
	Team work	Works well with peers, customers, supervisors and support staff Works across different ages Transfers effectively between individual work and team work Knows their own role as part of the team in the work situation Shows cultural sensitivity
Initiative and enterprises skills	Problem solving	Develops creative solutions Is practical Shows independence and initiative in identifying problems and solving them Problem solves in team Able to estimate and calculate Understand tables of figures and can interpret graphs Understands basic budgeting
	Initiative and enterprise	Adapts to new situations Develops a strategic vision
Learning skills	Planning and organizing	Manages time Manages self and work alone Resourceful Makes decision Understand relationships amongst workplace processes and systems Establishes clear project goals and deliverables Allocates people and other resources to tasks
	Self-awareness	Has a personal vision and goals Evaluates and monitors own performance
	Learning	Has enthusiasm for ongoing learning Willing to learn in any setting Open to new ideas and techniques Prepares to invest time and effort in learning new skills Acknowledges the need to learn in order to accommodate change
Workplace skills	Technology	Able to relate the use of technology to work Has basic computer skill Willing to upgrade technology skills Willing to use a range of technologies Uses technology to seek, process and present the information Uses physical abilities for the application of technology Relevant physical ability to apply technology

Source: Common wealth Australia, 2002b

Table 5: Employability Skills Framework for Small and Medium Scale Enterprises in Australia

Theme	Employability skills	Indicators
Generic Skills	Problem Solving and Adaptability Skills	1. Ability to adapt to changes 2. Ability to adapt to situation in change 3. Ability to identify problems 4. Ability to provide novel solution 5. Ability to solve problem without getting assistance from others 6. Ability to take to reasonable job related risk 7. Ability to monitor problem toward objectives in risky venture 8. Ability to organize alternate routes in meeting objectives 9. Ability to prefer taking up new challenges and responsibilities 10. Ability to identify and suggest alternative ways to achieve goals and get the job done. 11. Ability to Show independence and initiative in identifying problems and solving them 12. Ability to solve problem in team
	professionalism	13. Ability to undertake social responsibilities 14. Ability to undertake cultural and global responsibilities 15. Ability to undertake the environmental responsibilities 16. Ability to creative, innovative and see different point of view in solving problems 17. Ability to analyze and identify the root cause of the problem
	lifelong learning	18. Ability to recognize and undertake lifelong learning, 19. Ability to possess and acquire the lifelong learning 20. Ability to engage in lifelong learning 21. Ability to set their personal learning targets 22. Ability to plan and achieve the learning goal(s)
	Teamwork skills	23. Ability to work well with peers, customers, supervisors and support staff 24. Ability to works across different ages 25. Ability to transfer effectively between individual work and team work 26. Ability to know their own role as part of the team in the work situation 27. Ability to show cultural sensitivity 28. Ability to function effectively as an individual, 29. Ability to understand the role in a group, 30. Ability to work in a group as an effective team member 31. Ability to accept and provide feedback and considerate manner 32. Ability to work in a group with a capacity to be a leader
	communication skills	33. Ability to speak in clear sentences, 34. Ability to give clear direction 35. Ability to listen and ask question 36. Ability to Ideas presented with confident and effective 37. Speak and understand more than one language
	IT and Computer Skills	38. Ability to have basic computer skills 39. Ability to use of ICT knowledge in handling presentations 40. Ability to use computer knowledge in handling spreadsheet 41. Ability to use knowledge of ICT handling the internet

		42. Ability to use knowledge of ICT in handling email 43. Ability to use knowledge of computer in word processing
	Initiative and Enterprises Skills	44. Ability to generate series of options in solving problems 45. Ability to manipulate idea into action 46. Initiating innovative solutions 47. Identifying opportunities not obvious to others 48. Ability to be creative 49. Developing a strategic, creative, long-time vision 50. Adapting new situation
	Leadership Skills	51. Ability to take ownership and responsibility for the job 52. Ability to motivate others to work for common goals 53. Ability to give direction and guidance to others 54. Ability to lead people 55. Ability to delegate work to peer group
	Personal Organization and Time Management Skills	56. Ability to complete work in a thorough manner 57. It usually set priorities 58. It ability to meet the standard when performing a job 59. It has the capability of allocating time proficiently 60. Capable of using time and materials to the best advantage of the company
	Goal setting Skills	61. Develops creative solutions 62. Establishes clear project goals and deliverables 63. Allocates people and other resources to tasks 64. Able to estimate and calculate 65. Understand tables of figures and can interpret graphs 66. Understands basic budgeting 67. Understand relationships amongst workplace processes and systems
	Self-Awareness and Self- Learning skills	68. Has a personal vision and goals 69. Evaluates and monitors own performance 70. Has enthusiasm for ongoing learning 71. Willing to learn in any setting 72. Open to new ideas and techniques 73. Prepares to invest time and effort in learning new skills 74. Acknowledges the need to learn in order to accommodate change
Core TVET Skills	TVET system approach	75. Utilize a systems approach to design 76. Evaluate operational performance 77. Design systematically 78. Analyze engineering design 79. Demonstrate a knowledge and understanding of engineering system for management and business

		practice
	knowledge of contemporary issues	80. Continue learning independently in the acquisition for new knowledge, skills and technologies, 81. Use of information technologies 82. Use of communication technologies in the knowledge-based era 83. Use of computing technologies 84. Read news paper
	knowledge of STEM principles	85. Acquire knowledge of engineering fundamentals such as mathematics and sciences 86. Apply the knowledge of engineering fundamentals 87. Select and use proper tools and equipment for specific job/task. 88. Access, analyze and apply skills and knowledge of sciences and engineering. 89. Understand principles of education
	Problem solving and decision making skills	90. Undertake problem identification 91. Implement problem solving 92. Apply formulation and solution 93. Be creative, innovative and see different points of view in solving problems 94. Analyze and identify the root cause of the problem
	lifelong learning	95. Recognize the ability to undertake lifelong learning, 96. Possessing and acquiring the capacity to undertake lifelong learning 97. Able to engage in lifelong learning 98. Ability to set their personal learning targets 99. Ability to plan and achieve the learning goal(s)
	Competency in Specific TVET Disciplines	100. Acquire in-depth technical competence in a specific ETE discipline, 101. Apply technical skills in a specific ETE discipline effectively, 102. Ability to interpret design and conduct practical repairs 103. Ability to analyze and interpret data 104. Ability to use knowledge in handling multidisciplinary ETE problems
Personal Attributes	**Attitudes** 105. Responsibility 106. Vitality 107. Cooperation 108. Curiosity 109. Ambition 110. Optimism 111. Desire for change 112. Loyal 113. Commitment 114. Honesty 115. Positive self esteem 116. Enthusiasm 117. Reliability	

	118. Positive personal presentation **Traits** 119. Entrepreneurial mind 120. Creativity 121. Sincerity 122. Balanced personality 123. Individuality 124. Sensitivity **125.** Initiative

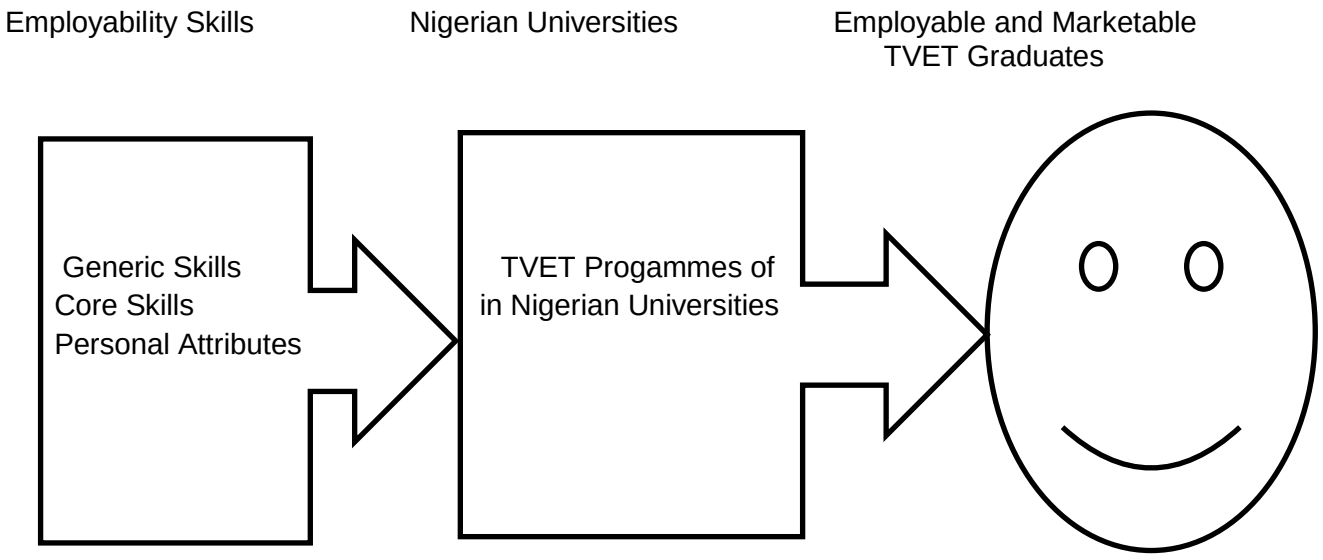

Figure 3: Employability Skills Framework for TVET Graduates of Nigeria

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