



Evaluating Self-Efficacy Expected of Polytechnic Engineering Students as a Measure of Employability

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Abstract

In the face of increasing unemployment partly due to decreasing employability skills of Nigeria polytechnic students, many graduates of Nigeria polytechnic have a dwindle self-efficacy. 420 HND 2 polytechnic engineering students in north central states of Nigeria were surveyed. Data were collected using questionnaire consisting of 4 Likert-type statements. Student's self-efficacy was measured by asking students to rate themselves from 1 ("No confidence") to 4 ("Complete confidence"). The self-efficacy of engineering students in Nigeria polytechnic were examined using mean and standard deviation. The mean score for Self-appraisal, Occupational Information, Goal selection, Planning and Problem solving are as follow (3.32), (2.97), (3.28), (3.082) and (3.012) respectively with self-appraisal scoring higher than the others. These findings enhance our understanding of the importance of self-efficacy in the development of employability skills of polytechnic engineering students in Nigeria, more importantly self-appraisal had the highest mean score. The practical implication is that the teaching style will have to shift from being teacher-centred leaning to student-centred learning in order to address and accommodate the need of student's self-efficacy.

Key words: Self-efficacy; Employability; Employability skills; Nigerian polytechnics; Engineering students

1. Introduction

Self-efficacy is the beliefs about ability to function and accomplish specific tasks without assistance from others, to make decisions and belief in them, in others words it is the confidence to achieve goals through personal efforts, persistence in the face of challenges and coming out with original solutions (Bezuidenhout, 2011). Self-efficacy is what an individual believes he or she can accomplish using his or her skills under certain circumstances (Yang & Lu, 2007).

Self-efficacy was developed by Albert Bandura, his emphasis was on behavioral change, His proposal was that personal, and environmental elements influences one another to determine motivation and behavior (Crothers, Hughes, & Morine, 2008). More simply, (Redmond, 2013) self-efficacy can be said to be the believe of an individual to achieve using his or her ability under certain situation. Social Cognitive Theory (SCT) is known as social cognitive approach to personality, it involves a mutual relationship of the social environment with the person's conscious cognition. (Denler, Wolters, & Benzon, 2014) noted that classroom learning is shaped by factor within the academic environment, especially the reinforcement experienced by oneself. The further stressed that learning is affected by students own thoughts and self-beliefs and the interaction of the classroom context. It implies that a person consciously select construct actions and decides the final behavior. For this purpose they can access concrete events as well as symbolic representation of activities, goals and future occurrences

Another assumption within SCT is that people have the ability to influence their own behaviour and the environment with particular goals in focus (Baneck, 2012). For every learning the learner has attributed on himself a personal agency. Simply put, he determine the way he should learn. There are four core features of personal agency. They include:

Intentionality: Intentionality refers to representation of the future course of action which means the learner projecting into the future in doing something with the learning acquired, (futuristic projection).

Forethought: Learners use forethought to envision the future, identify desired outcomes and generate plan of action. Planning is a dimension of agency, this is the temporal extension of the personal agency in future. It leads to anticipatory consequences.

Self-reactiveness: This refers to one’s reaction to his behaviour and being able to manipulate it. There are dual focuses to self-reactiveness known as self-regulation and self-reinforcement (Zimmerman & Schunk, 2001). Self-regulation refers to the ability of an individual to actualize goal to give shape to appropriate courses of action and to regulate their execution, while self-reinforcement refers to self-produced consequences of an action. A person possesses an internal standard of feedback for one’s own performance.

According to Brian, (2014), people behave in the way they execute their initial beliefs; thus, self-efficacy theory functions as a self-fulfilling prophecy. It has influence over people’s ability to learn, their motivation and their performance, as people will often attempt to learn and perform only those task for which they believe they will be successful in it (Lunenburg 2011). Self-efficacy beliefs can influence factors such as motivation and commitment levels as well as an individual’s willingness to take on difficult tasks. From (Yorke & Knight, 2007) perspective, students should have the confidence in themselves that they can make a difference. Students need to believe that by working hard they are able to enhance their own abilities and potential outcomes (Holker, 2010). People with high-levels self-efficacy in most cases are likely to succeed in tasks and goals, while people with low self-efficacy usually submit to self-doubt at the end, limiting their goal achievement. Hence, self-efficacy beliefs influence people’s behaviors and actions (Cole, Holtgrave, & Ríos, 1992). Self-efficacy theory is an important dimension of employability (Knight & Yorke, 2002). It is a tool that helps the individual build confidence for work. Self-efficacy has been also recognized as a useful learning vehicle that can be used in an educational and employability contexts (Lees, 2002). This should be encouraged and nurtured. Students, who have self-efficacy belief in their own ability to produce, organize and undertake tasks will have an effect on their performance. (Knight & Yorke, 2003) considers that it is not enough to have a range of cognitive, social, emotional and behavioral sub-skills, but that these have to be integrated into the challenges that are faced. Therefore, self-efficacy will play an important role in personal development, which will be significant for graduate’s employability.

2. Self-efficacy and Employability

Self-efficacy, self-confidence and self-esteem have always been confused for each other. (Pool & Sewell, 2007b) explained that they provide a crucial link between knowledge, understanding, skills, experience and personal attributes and employability. It is however important to note the differences between the two. Self-esteem is one’s ability to attach value to himself unconditionally, It is referring to yourself that you are a human being. It is also the ability of the individual to refer to himself with absolute importance that he is special, unique and precious. It is there all the time, no-one can take it away from you, your belief, and your faith. Powers of thought, emotion, speech and movement controls our self-esteem. You can do things positively no matter what you think about yourself, the ability to esteem yourself leads one to self-confidence.

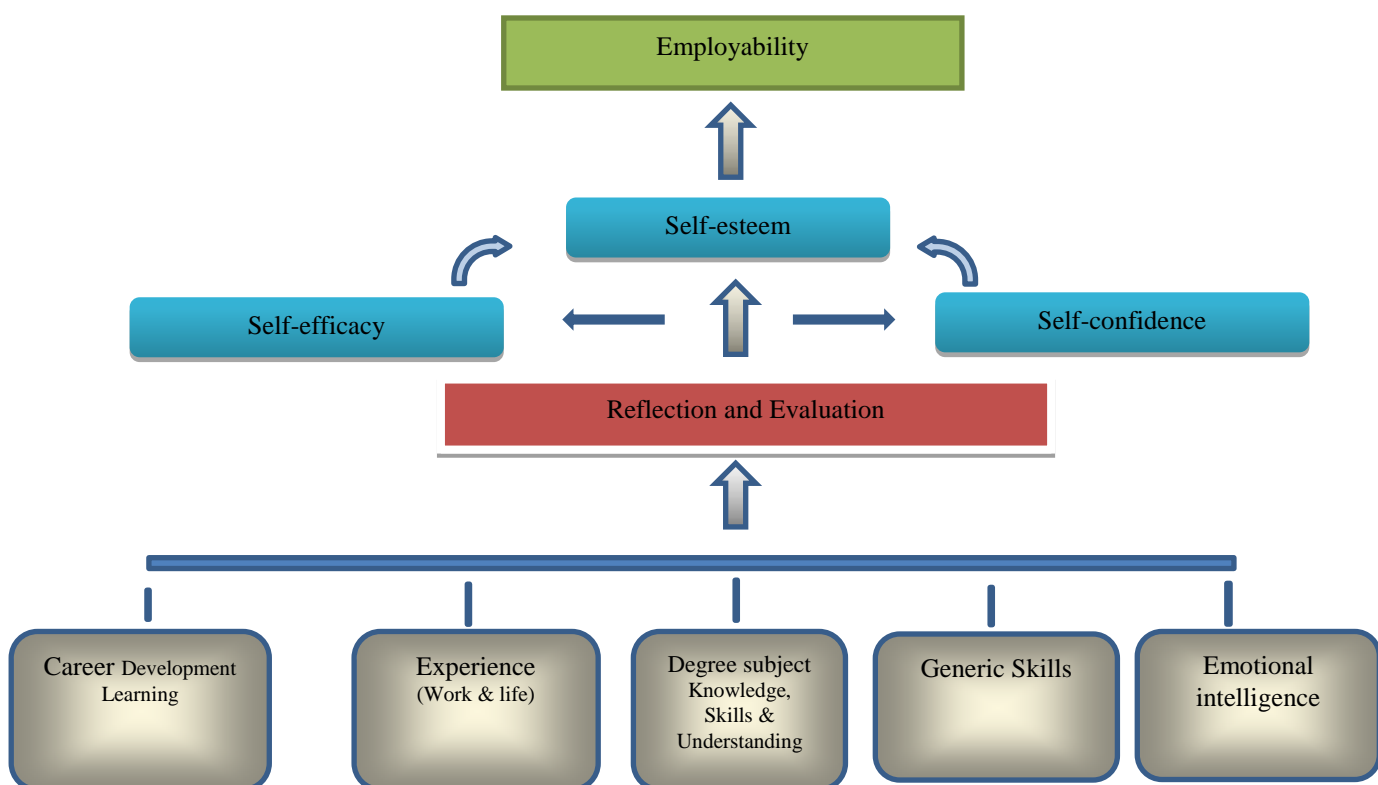


Figure 1. The CareerEDGE model of Graduate Employability

This model can also be known by the components mnemonics of CareerEDGE, it is valuable in that it can be used to explain the concept of employability to those new to the subject, and to students and their parents as well as appealing to academics. (Pool & Sewell, 2007) argued that by providing students to access and develop these five components and then reflect on and evaluate such experience, it will result in the development of higher levels of self-efficacy, self-confidence and self-esteem, this factors of course are known to be very critical in the employment of young graduates (Pool & Sewell, 2007; Yorke, 2006).

Pool & Sewell, (2007) also agree that the relevance of this model lies in its simplicity. It can be explained to students or the lecturer and even the parents with ease. The model can also serve future relevance for planning useful curriculum and can demonstrate to the employers the valued role the tertiary institutions play in moulding young graduates for employability. Also it brings out how important the employers of labour and higher institutions can cooperate and contribute to increase qualitative employability. This will be beneficial to all the relevant parties (Nicola Symington, 2012) This study attempts to determine factors influencing employability among polytechnic engineering students in Nigeria. The beliefs this students have in acquiring necessary skills for employment is considered as being important as this will determine their success in life. Bandura, (1995) describes self-efficacy as the “beliefs in one’s capabilities to organize and execute the courses of action required to manage prospective situations”. Self-efficacy beliefs can influence factors such as self-concepts, skill confidence, general feelings and commitment levels as well as an individual’s willingness to take on difficult tasks. In the technical and vocational domain where task may look complex, difficult and demanding, self-efficacy gives confidence to the individual to accomplish such task no matter how complex. Job performance is an important factor to be considered as the ultimate aim of any training is of commensurate or greater output. Bandura, (1977) stressed performance outcomes, or past experiences, as the most important source of self-efficacy. Positive training can influence the employability of an individual and also job performance. If one has performed well at a task previously, he or she is more likely to feel competent and perform well at a similarly associated task (Bandura, 1977).

In addition, an individual’s employability assets include their knowledge, skills and attitudes, both the Bandura Self-efficacy and social cognitive theory and the human capital theory. These are main determinants that have been stated to have influenced employability. Linking this to contemporary times investment in human capital, is any action that helps improves an individual’s skills and abilities which can lead a reliable employment of the individual improving the wage value in the labor market (International Labour Office, 2010). This is achievable through quality higher education which gives students the confidence and skills needed to succeed in the job labour market. Education helps to foster this belief in students so that they can do and become all they are meant to be in life (United Nations, 2013). The propositions of human capital theory were that the skills that people acquire are a form of capital, which is referred to as human capital. Education is the principal instrument for providing the skills required by the economy and also for improving the overall levels of efficiency, productivity, technological and managerial performance of the labour force (Little, 2002). Education has recently been re-theorised under human capital theory as primarily an economic device seeing individuals as human capital and various economic metaphors such as technology change, innovation, production and education should be used to develop this capital (Akinyemi & Abiddin, 2013). Existing schools infrastructures should be made relevant to meet the challenge of the time. Excellence in education, no doubt, is a challenge that stands in our way to developing a credible pool of human capital. It is obvious that schools and teachers are succeeding in creating environments from which students derive interest and satisfaction and some excitement from the learning tasks they encounter. The interest orientation formed by the school experience endures and transfers to the workplace (Little, 2002).

(Mantz Yorke & Knight, 2007) suggest that employability should be considered in terms of the attributes of students in this four areas: subject understanding, of generic skills application, metacognition and efficacy beliefs. It is expected that graduates should possess these attributes ensuring they have the capability of being effective in the workplace benefiting themselves, their employer and the wider economy. This is why many countries include the delivery of skills in the regular school curriculum. Employers of labour are looking for graduates who can articulate and provide evidence for these skills, achievements and attributes, drawing on both academic and extra-curricular experience. Skills include: self-management, team working, business and customer awareness, problem solving, communication and literacy, application of numeracy, and application of information technology.

3. Objectives

The main objective of the study was to examine the self-efficacy attributes of engineering students in Nigeria polytechnic.

3.1 Research Question

What are the self-efficacy attributes of engineering students in Nigeria polytechnic.

4. Methodology

This study is a quantitative survey design. Final semester HND 2 students of mechanical, electrical, civil, and computer engineering of federal and state polytechnics in Nigeria were surveyed. The study was conducted in north central geopolitical zone of Nigeria. To assess students’ self-efficacy, it was operationalized into 4 measures. Items for self-efficacy were adapted from the instrument used by Gregory Reddan (2009) Improving Exercise Science students’ self-efficacy in making positive career decisions. The measures are self-appraisal, occupational information, goal selection, planning and problem solving, each of the measures consist 5 items required for assessing Self-efficacy. The

questionnaire consists of 4 Likert-type statements. Student's self-efficacy will be measured by asking students to react to these items. Each item related to the self-concept and will be rated by respondents from 1 ("No confidence") to 4 ("Complete confidence").

Statistical analysis was performed using SPSS software (version 22). Fifty respondents from a Federal Polytechnic in Nigeria were drawn from students of Four Engineering Departments (Mechanical, Electrical, Civil, and Computer) for the reliability test. The results of the analysis shows that the entire items for self-efficacy met the recommended Cronbach alpha, indicating that all the items measured their construct. The Cronbach alpha was 0.900 which is greater than 0.7. The results of the reliability test conformed with the suggestion in Pallant (2010) and Nunnally (1978). Both authors suggested a minimum level of 0.7 Cronbach alpha values for a large items scale.

5. Results and Discussions

The total number of students surveyed consist of 420 respondents out of which about 6% are female while about 94% are male. According to their marital status about, 06% of the respondents are married, while about 094% are single. In term of age of the respondents, the age distribution were divided into four groups, and ages 26 to 35 is the age group with the largest participants which comprised of 50.95% of the sample population, while about 47.62% of respondents are within the age 16-25. The analysis further shows that those within the age 36-45 are about 0.95%, while the participants within the age 46-55 are about .48%. This shows that majority of the participants are within the age 26-35 years, followed by those with age bracket 16-25. Those within the age 36-45 and 46-55 are about 0.95% and 0.48% of the total sampled population respectively.

From the data respondents were distributed into their field of study, about 43.3% of the participants were studying for Mechanical Engineering, 38.1% are into Electrical Engineering, while about 12% are studying for Civil Engineering, and 6.2% are students of Computer Engineering. Another characteristics of respondents is institutions of study and this shows that about 34% of the participants are students of Federal Polytechnic Idah, 28% study at Federal Polytechnic Bida, 18.3% at Federal Polytechnic Nasarawa, 11.9% of the participants are students of Federal Polytechnic Offa and 06% of the participants are students of Benue State Polytechnic Benue.

Table 1. Demographic Characteristics of Respondents

Profile	Frequency	Percentage (%)
Gender	398	94
1. Male	25	06
2. Female		
Marital Status		
1. Single	395	94
2. Married	25	06
Age		
1. 16-25	200	47.62
2. 26-35	214	50.95
3. 36-45	04	0.95
4. 46-55	02	0.48
Field of Study		
1. Mechanical Engineering	204	28.9
2. Electrical Engineering	50	7.1
3. Civil Engineering	210	29.8
4. Computer Engineering	134	19.0
Polytechnic of Study		
1. Federal Polytechnic Idah	143	34
2. Federal Polytechnic Bida	121	28
3 Federal Polytechnic Nasarawa	77	18.3
4. Federal Polytechnic Offa	50	11.9
5. Benue State Polytechnic Benue	29	06.9

Table 3. Distribution of respondents answer to related items to Self-efficacy (n=420)

Variable	Items	No Confidence	Low confidence	Moderate Confidence	High Confidence	Mean	SD
Planning	Draw up a plan of goals you wish to achieve for the next 5 years	2.9	13.6	51	32.6	3.13	0.748
	Organise steps needed to successfully complete your chosen diploma program	2.4	10.5	56.7	30.5	3.15	0.695
	Build a good career resume	2.4	14	58.6	25	3.06	0.695
	Identify employers of labour, industries and institutions applicable to your career possibilities	1.7	14	59	25.2	3.08	0.674
	Successfully handle work interview procedures	2.1	17.4	59.5	21	2.99	0.686
	Total						3.082
Problem solving	In a situation of academic trouble in an aspect of your chosen deploma you can determine steps to taken	1.4	16	57.6	25	3.06	0.681
	Even when you get frustrated you can persistently work on your career goal	1.4	18.1	56.9	23.6	3.03	0.689
	Select a different deploma if you did not like the first one you entered for	2.1	23.1	57.4	17.4	2.9	0.694
	Change occupation if you are not plesed with your first choice	1.2	18.6	57.1	23.1	3.02	0.682
	Identify alternative diploma programs if you are unable to get your first choice	1.4	17.9	55.2	25.5	3.05	0.7
	Total						3.012

6. Conclusion and Recommendations

This study set out to examine the self-efficacy of engineering students in Nigeria polytechnic. Overall, the results indicate that engineering students in Nigeria polytechnics have acquired high level of self-efficacy scoring above average in all constructs that were used to measure self-efficacy. These results are in agreement with those obtained by Reddan, (2009) who findings indicate positive trends in students' perceptions in regards to their believe of self-efficacy. It also agree with O'Donnell & Media, (2015) who argued that self-efficacy measurements encourage confidence, self-advocacy and student ownership of learning. Some other important findings from this study indicate that student from Nigerian polytechnics have good ability of goal selection, students indicated that their goal solving ability is also high. Pool & Sewell, (2007b) argued that self-efficacy skills are known to be very critical in the employment of young graduates. The most striking result to emerge from the data is that self-appraisal scored the highest mean which is in support of Yorke & Knight, (2007) prospecting that the personal qualities required of students is the confidence that they can make a difference in their career. It imply that, through proper self-appraisal students become more aware of their own self-efficacy beliefs, and the impact that these can have on their employment prospects is enormous. These findings also indicate that there is room for improvement on the self-efficacy of students giving room for better employability skills. The practical implication of this study provides significant benefits not only for the government of Nigeria, but also to the administrators of Nigerian Polytechnics who should ensure that the teaching style should shift from teacher-centred learning to student-centred learning in order to address and accommodate the need of the students self-efficacy.

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