The Employability Competencies Needed by Educational Technology Teachers' for Effective Teaching and Learning in the 21ST Century Workforce

[1]Mustapha Aliyu, [2]Abdulrahman Musa Ewugi
[1,2] *(Automobile Technology Department, Niger State College of Education Minna, Nigeria)*

Abstract: *This study was carried out to identify the employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century workforce. Specifically, the study determined the general employability competencies and the most important by ranking. Two research questions and one null hypothesis were formulated and tested at 0.05 levels of significance to guide the study. The descriptive survey design was used and the population for the study was made up of 17 educational technology teachers in the Niger State College of Education Minna (COEM) and the Federal College of Education Kontagora (FCE KNT). A structured questionnaire was used for data collection. The data collected were analysed using frequency counts, mean and t-test. The findings revealed that all the employability skills listed are needed, but integrity/ honesty ranked higher while taking a reasonable job risk was ranked lowest. It was recommended that employability skills should be given greater emphasis in training, educational technology teachers by ensuring that these skills are integrated into the curriculum of educational institutions to ensure that students' upon graduation acquire such skills so as to fit into the 21st century workforce.*
Keywords – *Competencies, Employability, Learning, Teaching, Technology teachers'*

I.   Introduction

The twenty-first century workforce is expected to be prepared for a global experience that is burdened with complex workplace relationships and demands. Preparing today for tomorrow, the educational technology plan for the future of students' by supporting the acquisition of knowledge in the content area, development and application of lifelong skills and preparation for success in the 21st century. Educational technologies are getting more and more intricate and the need for professional care is becoming imperative (Idris, Saba and Mustapha, 2014). In addition to these fundamental systems, New Jersey Department of Education (2007) states that numerous departmental technology-based initiatives are now fitted to in the educational sector to provide safety and comfort aids for technology education teachers. These include, among others teacher certification information system, student database and data collections, long range facilities plan and project application tracking system.

The 21st century technologies are often the most feared, but at the same time, it can be most fascinating aspects of education. The complex systems now in use have developed in a very interesting way (Flick and Bell, 2000). When any problem is experienced in educational technology, consultation of technology teacher is required for repairs. Technology teachers are set of professionals who use a wide variety of tools to adjust, test, diagnose, service and completely repair any fault for safe and reliable operation according to manufacturer's specification to achieve teaching and learning objectives. These technology teachers begin a job by reading the work order to locate the faulty operation and determine the appropriate repair using their sight, feel sound and smell (Reinhard, 2003).

For a technology teacher to be competent at work, some requisite skills are needed. Idris, Saba and Mustapha (2014) define skills as the ability to do something well, usually gained through training or experience. Most trained teachers leave school without the knowledge or foundation required to find and retain a good job as employers are not only looking for graduates with technical knowledge but also those with employability skills or those attributes of employees other than technical assets to the employer.

Employability competencies are the knowledge, skills, abilities, behaviour and other characteristics that an individual needs to perform work roles or occupational functional successfully (Mustapha, 2015). Such as communication, writing, self management, adaptability, time management, team work decision making, critical thinking abilities, leadership, initiative and enterprise, honesty among others. In todays economy, knowledge of information and communication, customer service and relation, innovation and high performance which formed employability skills are of premium.

Idris, Saba and Mustapha, (2014) define employability skills are defined as skills required not only to gain employment, but also to progress within an enterprise so as to achieve one's potential and contribute successfully to enterprise strategic directions. Employability is a non-technical ability and is part of the work skills which are as important as technical skill and should, be acquired by everybody in the field of education and related fields. Employers agreed that employability skill is important to be acquired by their employees to be outstanding in their field (Nishad, 2013). He also discovered that educational technology graduates have mastered their technical skill but employers feel dissatisfied of their employees because they lack motivation, communication, interpersonal, critical thinking, problem solving and entrepreneurship skills because these skills are enabling skills which are competencies allowing an individual to do things right and play a significant part in a working environment (Commonwealth of Australia, 2006).

Due to the impact of globalization, knowledge, economy, industry upgrade and rapid changes in workforces, college graduates today need to possess the employability skills so that they can meet today's complex workplace demands; and they should be able to demonstrate these skills prior to their graduation.

1.1 Statement of Problem

Employers frequently comment on the need for their employees to possess abilities other than those relating to the academic or technical knowledge of the discipline. According to Idris, Saba and Mustapha (2014), states that the employers place high value on getting good actors that possess both managerial and entrepreneurial accomplishments. Clanchy and Ballard (1995) observed that employability skills are not formally taught as part of engineering and educational technology curriculum content and students usually graduate without necessary employability skills. To overcome these phenomena, institutions and employers need to deliver a common intellect of which skills should be possessed by technology teachers in the 21st century as these skills are not job specific, but are skills which cut across all industries and all jobs from entry level to the top management level (Kathleen, 2005).

1.2 Purpose of the Study

The purpose of the study is to identify the employability competencies needed by technology teachers. Specifically, this study identified the:
i. The general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st Century workforce.
ii. The employability competencies that have been considered as more important to educate technology teachers

1.3 Hypothesis

The following null hypotheses were formulated and tested at 0.05 level of significance.
HO_1:   There is no significant difference between the mean responses of the respondents on the general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century workforce

1.4 Methods of Teaching Employability Skills

Employability Skills are transferable core skill groups that represent essential functional and enabling knowledge, skills and attitudes required by the 21st century workplace. (Overtoom, 2000). They are necessary for career success at all levels of employment and education. According to Carnevale et al. 1990, the skill groups across job families are as follows:
i.   Basic Competency Skills: reading, writing and composition.
ii.   Communication Skills: Speaking and listening.
iii. Adaptability Skills: problem solving, thinking and creativity.
iv. Developmental Skills: self-esteem, motivation and goal setting, career planning.
v.   Group effectiveness Skills: interpersonal skills, team work and Negotiation.
vi. Influencing Skills: understanding organizational culture and sharing leadership.

Also, according to the Conference Board of Canada, 2000. Employers want employees who:
i.   Value the importance of lifelong learning.
ii.   Communicate well (listen carefully and understand, speaks and write effectively).
iii. Think clearly, assess critically, act logically and make decisions.
iv. Have mathematical abilities and can solve problems.
v.   Use technology, instruments, tools and information system.
vi. Can access and apply specializes knowledge from other fields.
vii. Feel good about themselves and who know how to manage their lives well and with integrity.
viii. Have a positive attitude and behave in positive ways.

ix. Have personal ethics, display initiative and persistence.
x. Take responsibility and are accountable.
xi. Set goals and priorities and who manage their own time.
xii. Are adaptable, able to think creatively, and work successfully in a team.
xiii. Automatically include others in their decision making process.
xiv. Show respect for the opinions and concern of co-workers.

1.5 Teaching Employability Skills
SCANS, (1991) identified the teaching of employability skills using two methods.

1.5.1 Method 1: Developing/ teaching stand alone lesson: developing a complete lesson around an identified skill (i.e. Resume writing, communication skills and interviewing techniques).

1.5.2 Method 2: Infusing Employability skills into existing lessons: highlighting the importance of the skill as it relates to a current lesson and to general work requirements

1.6 Methods of Disseminating New Employability Skills
Ogieva (2003) identifies the methods of disseminating new Employability Skills into three:-
1. The individual method/personal contact.
2. Group method and;
3. Mass media.

1.6.1 The individual method/personal contact: Includes Industrial and Home visit, offices call, telephone calls and the use of letters and correspondence through an agent.
It has the following advantages
i. The individual receives more attention from the agent.
ii. And gets information faster.

Disadvantages
i. It wastes a lot of time.
ii. Many individuals cannot be reached.
iii. It is expensive.

1.6.2 Group Method: Includes organizing lectures, seminars and symposia and conducting tours.
It has the following advantages
i. A large group of people can be reached.
ii. It saves cost and time.
iii. It is not as tedious as in personal contact.
iv. Others learn from their colleagues

Disadvantages
i. The unserious ones can discourage the serious ones.
ii. All members may not be present at the same time.

1.6.3 Mass Media: Involves the broadcast through radio and television, Use of bulletins, newspaper, posters, pamphlets models, samples, and others
It has the following advantages
i. Large numbers of people can be reached.
ii. The information can last longer such as print media.
iii. Very useful to the deaf and dumb.

Disadvantages
i. It is a very expensive method.

II.   Methodology
In carrying out this study, the descriptive survey approach was used, where questionnaires are used to determine the opinion of the respondents on the issue under investigation. Yalams and Ndomi (1999) define survey research as the gathering of information about a large number of people or objects by studying a representative sample of the entire group through the use of questionnaires. In support of this, Nworgu, (1991)

stated that research design is a plan or blueprint which specifies how data relating to a given problem should be collected and analysed. Therefore, the survey research was considered suitable since the study will seek information from a sample that was drawn from a population using a questionnaire.

2.1 Population of the study
The target population for this study was made up of seventeen (17) educational technology teachers in Ibrahim Badamasi University Lapai (FCE KNT) and Niger State College of Education Minna (COEM). Since, the population is small, no sampling was used. Hence the whole population was used.

2.2 Instrument for Data Collection
The instrument used for data collection was a structured questionnaire developed by the researcher for this study. It consisted of two (2) parts in which the first indicates the introductory part of the respondents and the second part is made up of a section. All items are to be responded to by indicating the appropriate respondent's best perception using three point rating scales which include Highly needed (3 point), Moderately needed (2 point) and Not needed (1 point). The section contains (23) items which deals with the general employability skills needed by technology teachers for effective teaching and learning in the 21st century

$$\frac{3 + 2 + 1}{3} = \frac{6}{3} = 2.00$$

2.3 Method of Data Analysis
The analysis of data for the research questions and hypothesis was analysed using the mean and t-test. The mean was used to determine the degree of acceptance or rejection in research questions while t-test was used to test the hypotheses.

2.4 Decision Rule
The mean of 2.00 was used as decision points for every questionnaire item. Consequently, any item with mean responses of 2.00 and above was considered to be agreed and any item with a mean response of 1.99 and below was equally considered not agreed in Section A. Also the t-test was used to test the hypothesis at 0.05 levels of significance to compare the mean response of the respondents. A critical value of ± 2.13 was selected based on the 15 degree of freedom at 0.05 level of significant. Therefore, any item with t- calculated value less than the t- critical was regarded as not significant. While any item with t-calculated value equal or greater than the critical was regarded as significant.

III. Results

3.1 Research Question 1 and 2
What are the general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century?
Which of employability competencies has been considered as most important to educate technology teachers for effective teaching and learning in the 21st century?

Table 1: Mean responses of the Respondents on the general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century

$N_1= 6, N_2=11$

S/N	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_t$	REMARK	Rank
1.	Conveying information one- to- one	2.33	2.64	2.49	Needed	18th
2.	Communicating verbally with groups and peers.	2.56	2.40	2.48	Needed	19th
3.	Making an impromptu presentation	2.09	2.04	2.07	Needed	22nd
4.	Ability to write reports	2.44	2.85	2.65	Needed	10th
5.	Using proper grammar, spelling and punctuation.	2.25	2.58	2.42	Needed	20th
6.	Establishing good rapport with a subordinate	2.55	2.78	2.67	Needed	9th
7.	Identifying essential components of problems.	2.71	2.44	2.58	Needed	15th
8.	Sorting out the relevant data to solve problems	2.68	2.54	2.61	Needed	12th
9.	Take decision in a short period of time.	2.56	2.50	2.53	Needed	16th
10.	Assessing the long term effect of the decision	2.35	2.12	2.23	Needed	21st
11.	Computer skills	2.89	2.81	2.85	Needed	3rd
12.	Assigning/ delegating responsibility.	2.65	2.35	2.50	Needed	17th
13.	Allocating time efficiently.	2.63	2.73	2.68	Needed	8th
14.	Meeting deadlines.	2.55	2.64	2.60	Needed	13th
15.	Listening attentively.	2.73	2.69	2.71	Needed	7th

		$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_g$		
16.	Taking a reasonable job related risks.	2.03	2.01	2.02	Needed	23rd
17.	Self- Esteem	2.70	2.55	2.63	Needed	11th
18.	Application of technology	2.79	2.96	2.88	Needed	2nd
19.	Self- management.	2.75	2.77	2.76	Needed	6th
20.	Integrity/ honesty.	2.95	2.96	2.96	Needed	1st
21.	Consciousness.	2.85	2.81	2.83	Needed	4th
22.	Ability to work without supervision.	2.40	2.77	2.59	Needed	14th
23.	Work safety.	2.83	2.78	2.81	Needed	5th
$\bar{X}_g$			2.59		Needed	

Key: N_1= FCE KNT, N_2= COEM, $\bar{X}_1$= Mean responses of FCE KNT, $\bar{X}_2$= Mean responses of COEM and $\bar{X}_g$ = Grand Average Mean

The data presented in "Table 1" revealed that the grand mean ($\bar{X}_g$) value 2.59 of the items is above the cutoff point 2.00. Therefore, all the respondents needed all the employability skills listed for effective teaching and learning in the 21st century.

3.2 Hypothesis 1

HO_1:   There is no significant difference between the mean responses of the respondents on the general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century

Table 2: t – test statistical analysis of the respondents Administrators and Students in the general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century workforce

	N	Df	Mean	Standard Deviation	t- calculated	t- critical	Significance	Decision
FCE KNT	6	15	2.60	0.23	0.10	2.13	NS	Accepted
COEM	11		2.61	0.25				

From the table above, the calculated t-value 0.10 does not exceed the critical table value 2.13 at 0.05 level of significance for 15 degrees of freedom ($0.10 < 2.13$); therefore, the null hypothesis is accepted. Therefore, there is no significant difference between the respondents in the general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century.

IV.   Findings

The following are the findings of the study, based on the data collected and analysed; they are highlighted with regards to the research questions posed in the study by the hypothesis.

The findings revealed that all the employability skills listed are needed for good performance of educational technology teachers, but in the ranking, some have higher ranking while others have low.

The competencies ranked from 1st to 3rd are:

i.   Integrity/ honesty
ii.   Application of technology
iii.   Computer skill

The competencies ranked from 22nd to 23rd are:

i.   Making an impromptu presentation
ii.   Taking a reasonable job related risk

4.1 Discussion of Findings

The research findings also revealed that employers seek candidates with good character that is integrity/ honesty, because the employee of integrity/honesty will generally contribute positively to the effective teaching and learning as well as the growth of any formal and non formal organization. The word integrity is not used that much when speaking to someone or listening to another person's conversation (John, 2014). When looking into the definition of integrity a good word used is honesty. In the Old Testament part of the Bible, most of the verses contain the word integrity. It is important that we live by the word of God and being honest is one of the most important things to follow. This concurs with Proverbs 28:18 "Whoever walks in integrity will be delivered, but he who is crooked in his ways will suddenly fall".

The application of technology to perform tasks among employees who serve in the educational and production field is very significant as contemporary schools and industries used varied technologies to simplify operations. This coincides with Mustapha (2015) in Bunn and Stewart (1998) stated that technocrats agreed with the fact that the possession of technological skills is crucial to employability considerations in modern industries

and schools. They also revealed that 91% of respondents, in their research work, mentioned that basic technological skills could assist in vocational practices. Similarly, De Leon and Borchers (1998) noted that 80% of employers mentioned that the application of technologies to carry out duties is highly required. In addition, according to Yahya (2004), the application of technologies, tools and systems at work is considered important and required by the schools and industry.

Having a sound academic base in regards to speaking, reading, listening and writing is a plus and help in communication with students. Conscious skills are important to carry out duty, especially production works and works which involves technological tools. Mitchell (2001) stated that 80.6% of employers pointed out that they needed workers with computer skills will be to do well especially in teaching and learning.

Idris, Saba and Mustapha (2014) corroborated that that taking a reasonable job related risk is important because the future is uncertain and what we expect to happen may not turn to be correct. This was corroborated by Okwori (2004) define risk as the variation in the possible outcomes that exists in nature. Because the future is uncertain, what we expect to happen may not turn to be correct. Risk is ever present in all human affairs, be they economic, political, social or personal. Human activities are full of risk and uncertainty. The fact that the future cannot be predicted with certainty underlies the pervasiveness of risk.

V.   Conclusion

Based on the findings of the study, it was analyzed that employability competencies are the critical tools and traits, educational technology teachers need to succeed in the workplace and they are all elements that the teachers can learn, cultivate, develop and maintain. The effects of the result provide an answer to the general employability competencies needed by educational technology teachers for effective teaching and learning in the 21st century.

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