STUDENTS' PERCEPTION OF EMPLOYABILITY SKILLS FOR UNEMPLOMENT REDUCTION AND SUSTAINABLE GROWTH: IMPERATIVE FOR MATHEMATICS TEACHING

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Introduction

Employability can be seen as the capability of getting and keeping satisfactory work. It can be said to be a set of achievements, understandings and personal attributes that make individuals more likely to gain employment and to be successful in their chosen occupations. Employability skills on the other hand are the skills and capabilities that make graduates more likely to gain employment and be successful in their chosen occupations as they navigate their way through a dynamic labour market (Wels, 2013). Wels stressed that to be competitive; one has to demonstrate to employers that he/she has the discipline-specific technical skills they require, as well as the broader range of employability skills.Confederation of British Industries (2008) explained employability skills as a set of attributes, skills and knowledge that all labour market participants should possess to ensure they have the capability of being effective in the workplace in order to benefit them, their employer and the wider economy. These skills are also referred to as transferable skills (because skills developed in one area of one's life can be transferred to other areas) or personal skills. In the context of one's career planning and development, they are called career management skills.

Employability skills are necessary for obtaining, sustaining and progressing in a job. They include among others: Analytical skills, Written Communication, Verbal Communication, Investigating, Numeracy, Planning and Organizing , Problem Solving, Teamwork, Information Technology (IT), Technical Skills (UKCES, 2010).

Employability skills such as analytical, numeracy, IT, Problem Solving and a host of other skills are developed through Mathematics. Attainment in mathematics and numeracy has been a problem in the recent years. Howsonet al.,(1995) observed that the problem first came to light for STEM subjects in the early 1990s. The authors went ahead to explain that only recently, the

Conservative Party announced that HMS Vorderman was steaming to the rescue of mathematics teaching in schools and the Cambridge Primary Review made a case for embedding numeracy within the broader curriculum. In between, came the Leitch report (2006) review which concentrated on the desirability of improving numeracy skills for employability, albeit at the lower levels of attainment.

There have been several surveys recently carried out by employers and organizations on the employability skills needed by graduates. These studies include Graduates' Employability Skills (2007). In the study, The Institute of Directors (IoD) commissioned a survey of 500 directors in order to identify skills valued in graduate employees. They found that 77% of respondents thought that numeracy skills are very important and a further 21% thought that numeracy skills were quite important. This ranked numeracy skills as 6th in importance out of the 28 skills that were surveyed. Problem solving skills were considered slightly less important. In addition, 21% said that their graduates demonstrated numeracy skills only occasionally or never while only 33% said that they demonstrated numeracy skills always.

In another survey by CBI (2008), application of numeracy was among the seven employability skills identified in the CBI survey of Chief Executive Officers (CEO's). Both the CBI and IoD surveys rated general employability skills as a graduate's most valuable asset. Just 30% of respondents demand a degree in a specific discipline and this is much more likely in engineering, science, technology and mathematics.

The problem of this study bothers on the fact that in developing countries, especially the poorest ones, the challenges are profound and complex. Policy makers acknowledge the critical role of a strong human resource base in complementing other investments and policies to boost productivity and economic progress. Yet while these countries report lower average levels of educational attainment than industrialized countries, in some countries significant number of those with high levels of formal qualifications end up unemployed, working in jobs that under-utilize their skills or migrating to other countries. The result is a misallocation and waste of resources that these countries can ill-afford. Developing countries like Nigeria are, therefore, in urgent need of new strategies and approaches that focus more explicitly on the links and coherence between investments in skills development and employment and productivity that will enhance sustainable growth, hence, mathematics teaching strategies that enhance the development of these skills.

Although we have been talking about skills as a part of the collection of qualities that combine to make one an individual, this does not mean that these skills are fixed, or difficult to change. **Employability skills can be**

acquired, developed and improved through mathematics teaching for graduates' unemployment reduction.

Therefore, this study focused on assessing the extent students perceive these employability skills that will help in reducing unemployment and enhance sustainable growth through mathematics teaching. Specifically, the study sought to determine the:

1. male and female students' perception of basic IT as an employability skill for unemployment reduction and sustainable growth
2. male and female students' perception of analytic ability as an employability skill for unemployment reduction and sustainable growth
3. male and female students' perception of mathematics numeracy as an employability skill for unemployment reduction and sustainable growth

The following research questions guided the study:

1. What is the male and female students' perception of basic IT as an employability skill for unemployment reduction and sustainable growth?
2. What is the male and female students' perception of analytic ability as an employability skill for unemployment reduction and sustainable growth?
3. What is the male and female students' perception of mathematics numeracy as an employability skill for unemployment reduction and sustainable growth?

The study was guided by three null hypothesis tested at 95% confidence interval

1. There is no significant difference between male and female students perception on the knowledge of basic IT as an employability skill for unemployment reduction.
2. There is no significant difference between male and female students perception of analytic ability as an employability skill for unemployment reduction
3. There is no significant difference between male and female students perception of mathematics numeracy as an employability skill for unemployment reduction.

Method

The study adopted a descriptive survey design, and study area was Michael Okpara University of Agriculture Umudike, Abia State. Michael Okpara University of Agriculture, Umudike (MOUAU) is one of the three specialized Universities of Agriculture established by the Federal Government of Nigeria in 1992. The University is located in the well-known agricultural training and research community of Umudike in the South-Eastern part of Nigeria.

The population for this study consisted of all 200, 300 and 400 level science education students of MOUAU numbering 469. Krejcie& Morgan, 1970 Table for determining sample size for a finite population was used to determine a sample size after which Simple random sampling technique was used to select (157 males and 53 females) giving rise to a sample size of 210 respondents used for the study.

The instrument used for data collection was a 12- items questionnaire titled:" Students' Perception of Employability Skills for Unemployment Reduction and Sustainable Growth'' (SPESURSG) designed using the Likert scale model and validated by three experts in instrument construction. The instrument had a reliability coefficient of 0.81 and was administered to a simple randomized sample of 36 students (27 male and 9 female) respondents in the study area. There were two sections in the instrument; Section A sought the demographic variables of respondents while section B sought information on employability skills that can be developed through mathematics teaching for unemployment reduction in the study area. Respondents were asked to indicate the extent of agreement either "high" or "low" with regards to the statements. Any item with a mean of 1.5 and above will be accepted as having a positive answer, while any mean below 1.5 is rejected and hence regarded as a negative answer. Hence, 1.5 is considered as a cutoff point.
Data analysis was carried out using Mean and**Chi-Square** statistics as follows:

Research Question 1

What is the male and female students' perception of basic IT as an employability skill for unemployment reduction and sustainable growth?

Results

Table 1: Mean rating on the students' perception of basic IT as an employability skill for unemployment reduction and sustainable growth

S/N	Items	$\bar{x}_1$	SD_1
1	Entering data into spreadsheet is easy	1.694	0.467
2	Using the internet to find information is easy	1.806	0.401

3	Designing a web page is very easy	1.528	0.506
4	Writing and debugging of program is easy	1.583	0.500
	Grand mean/ Standard Deviation	**1.653**	**0.4685**

The data in Table 1 showed the analysis on the students' perception of basic IT as an employability skill for unemployment reduction. The data revealed that all the items have the mean rating between 1.528 and 1.806 which were above the cutoff point 1.50 and were accepted. The respondents accepted that the knowledge of basic IT as an employability skill for unemployment reduction and sustainable growth is very important.

Research Question 2:

What is the male and female students' perception of analytic ability as an employability skill for unemployment reduction and sustainable growth?

Table 2: Mean rating on the students' perception of analytic ability as an employability skill for unemployment reduction and sustainable growth

S/No	Items	$\bar{x}_1$	SD_1
1	I have the ability to debate	1.806	0.401
2	I can argue a case to a reasonable extent	1.889	0.319
3	Interpretation of complex material is an easy thing	1.639	0.487
4	I can pick out inconsistencies in reasoning	1.778	0.422
	Grand mean/ Standard Deviation	**1.778**	**0.407**

In Table 2, responses on the students' perception of analytic ability as an employability skill for unemployment reduction were analyzed. The data showed that all the isolated items have the mean rating between 1.639 and 1.889 which were above the cutoff point 1.50 and were accepted. It shows that the respondents accepted that the analytic ability as an employability skill will reduce unemployment in the study area.

Research Question3

What is the male and female students' perception of mathematics numeracy as an employability skill for unemployment reduction and sustainable growth?

Table 3
Mean rating on the mathematical numeracy as an employability skill for unemployment reduction and sustainable growth

S/No	Items	$\bar{x}_1$	SD_1
1	Interpreting statistics is easy	1.944	0.232
2	Constructing statistics is easy	1.917	0.280
3	I can analyze data with ease	1.833	0.378
4	I can present data in graphical format	1.889	0.319
	Grand mean/ Standard Deviation	**1.896**	0.302

Data presented in Table 3 revealed that all the items had their grand means ranging from 1.833 to 1.944 which are above the cutoff point of 1.50 and were accepted. This implies that the mathematical numeracy is an employability skill for unemployment reduction and sustainable growth.

Hypotheses 1

There is no significant difference between male and female students' perception on the knowledge of basic IT as an employability skill for unemployment reduction

Table 4: Chi Square result of male and female respondents' perception of knowledge of Basic IT as employability skill for unemploymentreduction

Items		Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Item1	Pearson Chi-Square	2.138[a]	1	0.144	0.223	0.148	
	Likelihood Ratio	2.443	1	0.118	0.223	0.148	
	Fisher's Exact Test				0.223	0.148	
	Linear-by-Linear Association	2.079[c]	1	0.149	0.223	0.148	0.126
	N of Valid Cases	36					
Item2	Pearson Chi-Square	0.532[a]	1	0.466	0.652	0.426	
	Likelihood Ratio	0.584	1	0.445	0.652	0.426	
	Fisher's Exact Test				0.652	0.426	
	Linear-by-Linear Association	0.517[c]	1	0.472	0.652	0.426	0.319
	N of Valid Cases	36					
Item3	Pearson Chi-Square	0.929[a]	1	0.335	0.451	0.283	
	Likelihood Ratio	0.945	1	0.331	0.451	0.283	
	Fisher's Exact Test				0.451	0.283	
	Linear-by-Linear Association	0.903[c]	1	0.342	0.451	0.283	0.196
	N of Valid Cases	36					
Item4	Pearson Chi-Square	2.571[a]	1	0.303	0.405	0.203	
	Likelihood Ratio	2.806	1	0.301	0.403	0.203	
	Fisher's Exact Test				0.405	0.203	
	Linear-by-Linear Association	2.333[c]	1	0.304	0.405	0.203	0.103
	N of Valid Cases	36					

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Table 4 the test of hypothesis using Chi Square statistic revealed that there is no significant difference between the opinion of the male and female respondents on the 4 items isolated. The items recorded Chi-Square statistic,χ^2values less than tabulated value of 3.84 at 0.05 levels of significance respective items. It implied that there was no significant difference between male and female students on students' perception on the knowledge of basic IT as an employability skill for unemployment reduction. The null hypothesis for each item was therefore, accepted.

Hypotheses 2

There is no significant difference between male and female students' perception of analytic ability as an employability skill for unemployment reduction

Table 5: Chi Square result of male and female respondents' perception of analytic ability as an employability skill for unemployment reduction

Items		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Item1	Pearson Chi-Square	0.532[a]	1	0.466	0.652	0.426	
	Likelihood Ratio	0.584	1	0.445	0.652	0.426	
	Fisher's Exact Test				0.652	0.426	
	Linear-by-Linear Association	0.517[c]	1	0.472	0.652	0.426	0.319
	N of Valid Cases	36					
Item2	Pearson Chi-Square	0.000[a]	1	1.000	1.000	0.702	
	Likelihood Ratio	0.000	1	1.000	1.000	0.702	
	Fisher's Exact Test				1.000	0.702	
	Linear-by-Linear Association	0.000[c]	1	1.000	1.000	0.702	0.447
	N of Valid Cases	36					
Item3	Pearson Chi-Square	0.040[a]	1	0.841	1.000	0.586	
	Likelihood Ratio	0.040	1	0.841	1.000	0.586	
	Fisher's Exact Test				1.000	0.586	
	Linear-by-Linear Association	0.039[c]	1	0.843	1.000	0.586	0.307
	N of Valid Cases	36					
Item4	Pearson Chi-Square	3.429[a]	1	0.064	0.160	0.073	
	Likelihood Ratio	5.323	1	0.021	0.087	0.073	
	Fisher's Exact Test				0.160	0.073	
	Linear-by-Linear Association	3.333[c]	1	0.068	0.160	.073	.073
	N of Valid Cases	36					

In table 5 the testing of hypothesis of no significant difference between male and female students' perception of analytic ability as an employability skill for unemployment reduction was done. The result revealed that the Chi-Square statistic value was less than tabulated value of 3.84 at 0.05 levels of

significance on all respective items. This indicated that there was no significant difference between male and female students on their perception of analytic ability as an employability skill for unemployment reduction. The null hypothesis (H_{02}) for each item was therefore, accepted.

Hypotheses 3

There is no significant difference between male and female students' perception of mathematics numeracy as an employability skill for unemployment reduction

Table 6

Chi Square result of male and female respondents' perception of mathematics numeracy as an employability skill for unemployment reduction

Items		Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Item1	Pearson Chi-Square	0.706[a]	1	0.401	1.000	0.443	
	Likelihood Ratio	0.615	1	0.433	1.000	0.443	
	Fisher's Exact Test				0.443	0.443	
	Linear-by-LinearAssociation	0.686[c]	1	0.407	1.000	0.443	0.386
	N of Valid Cases	36					
Item2	Pearson Chi-Square	0.121[a]	1	0.728	1.000	0.590	
	Likelihood Ratio	0.114	1	0.735	1.000	0.590	
	Fisher's Exact Test				1.000	0.590	
	Linear-by-Linear Association	0.118[c]	1	0.731	1.000	0.590	0.442
	N of Valid Cases	36					
Item3	Pearson Chi-Square	0.267[a]	1	0.606	1.000	0.475	
	Likelihood Ratio	0.254	1	0.615	1.000	0.475	
	Fisher's Exact Test				0.627	0.475	
	Linear-by-Linear Association	0.259[c]	1	0.611	1.000	0.475	0.324
	N of Valid Cases	36					
Item4	Pearson Chi-Square	1.500[a]	1	0.221	0.553	0.298	
	Likelihood Ratio	2.464	1	0.116	0.339	0.298	
	Fisher's Exact Test				0.553	0.298	
	Linear-by-Linear Association	1.458[c]	1	0.227	0.553	0.298	0.298
	N of Valid Cases	36					

In table 6, the testing of hypothesis of no significant difference between male and female The table also showed the result of the Chi-Square statistic,λ^2values less than tabulated value of 3.84 at 0.05 levels of significance on all respective items. Thus, the null hypothesis of no significant difference between male and female students on the students' perception of mathematics numeracy as an employability skill for unemployment reduction was upheld.

Discussion

The results on Table 1 revealed that students accepted that acquiring basic IT skill reduces unemployment and enhances sustainable growth. The result agreed with the view of Wels (2013) and Skills You Need (2013) who reported that most people need some IT skills to find work today. Acquiring basic IT skills and being familiar with using a computer may open up a wide range of employment opportunities and increase your marketability in the workplace.

Furthermore, in Table 2 items 5, 6, 7 and 8 were all accepted by the respondents. This implies that analytic skills which involve ability to debate, arguing a case to a reasonable extent, interpretation of complex material and picking out inconsistencies in reasoning are very important employability skill for unemployment reduction and growth sustainability.

Again, table 3 revealed that numeracy skill is an employability skill for reduction of unemployment. This is in line with Tariq and Durrani (2009) who suggested that graduate employers, undergraduates and their tutors (from a diversity of academic disciplines) recognize the importance of numeracy skills to employability. Competency in a range of numeracy skills is important to students in obtaining employment linked to their graduate aspirations, particularly within certain employment sectors. Furthermore, results of several studies revealed the importance that employers attach to graduates' numeracy skills and the extent to which employers use numeracy tests in graduate recruitment. These studies thus highlight the potential for poor numeracy skills to limit any graduate's acquisition of employment, irrespective of their degree subject; especially since numeracy tests are used predominantly in recruitment to the types of jobs commensurate with graduates' career aspirations and within sectors that attract graduates from across the diversity of academic disciplines, including the arts and humanities.

Conclusion

Mathematics implies a broad understanding and appreciation of what mathematics is capable of achieving. It is important to note that the mathematics one studies and the mathematics one needs to know are two different things. The need to make this distinction rests with the fact that not every contents of mathematics one has been exposed to as a student can be applied in one's daily life and job market. In a highly competitive economy, there is little chance that unprepared graduates will be successful in obtaining employment and then performing their jobs. Little wonder result of the study showed that almost all the respondents perceived analytical, numeracy, and Information Technology (IT), being investigated in this study as employability

skills that can be developed through mathematics teaching for unemployment reduction and sustainable growth.

Today's mathematics teaching must prepare students for their tomorrows by equipping them with essential mathematical knowledge and skills that will help them to meet up with the 21st century employers' demand thereby reducing unemployment and enhancing growth sustainability.

Recommendations

Based on the findings of this study, the flowing recommendations were made:

1. Mathematics teachers should teach in a way that numeracy skills such as basic computation, ability to approach practical problems with different mathematical techniques, ability to locate, understand, and interpret basic written information in documents such as manuals, graphs, and schedules among others are emphasized.
2. Mathematics teachers should also teach in a way that information technology skills such as choice of procedures, tools or equipment including computers and related technology, employment of computers to acquire, organize, analyze and communicate information, and demonstrate some proficiency with standard software are emphasized.
3. The study equally recommends that stakeholders of mathematics Education programmes in universities should incorporate in their curriculum the inculcation of those mathematical skills that are in line with employability skills which are in high demand by the labor market. This can be achieved by placing greater emphasis on the way instructional deliveries are made.

References

Confederation of British Industry, (2008).*'Taking stock' CBI Education and Skills survey*.Retrieved on 3rdJune, 2017from www.voced.edu.au/ content/ngv%3A4835

Council for Industry and Higher Education (2008*) Graduate Employability: What do employers think and want? Studio 11 Tiger House, Burton Street, London.*

Council for Industry and Higher Education (2008) *Degrees of Skill: Student Employability Profiles: AGuide for Employers*. Retrieved on 3rd June, 2017from www.celt.mmm.ac.uk/Itia/ Issue 18/camero.php

Employability Skills (2010). A Research and Policy Briefing, UKCES. Department for Education and skills (2003) *Skills for Life: The national strategy for improving adult literacy and numeracy skills*.

Retrieved on 3rd June, 2017 from https:/ en. wikipedia.org/wiki/Skills_ for_Life

Howson, A.G., Barnard, A.D., Crighton, D.G., Davies, N., Gardiner, A.D., Jagger, J.M., Morris,

D., Robson, J.C., Steele, N.C. (1995) *Tackling the Mathematics Problem*; report of the London Mathematical Society, the Institute of Mathematics and its Applications and the Royal Statistical Society. Institute of Directors (2007) *Graduates' employability skills*

Krejcei & Morgan (1970) .Table for determining sample size for a finite population.

Leitch (2006)) '*Review of Skills. Prosperity for all in the global economy – world class skills*'Crown copyright.

Plastrik, P., Seltzer, M.B. & Taylor, J.C. (2003), *Changing Labor Markets: A Systems Approachto Reform*, Jobs for the Future, Boston, MA.

Rosenbaum, J. (2002), "Beyond empty promises: Policies to improve transitions into college and jobs", Office of Vocational and Adult Education, U.S. Department of Education

Skills You Need (2013) Employability Skills - Skills You Need for a Job. Retrieved on 3rd June, 2017 from https://www.skillsyouneed.com/ general/employability-skills.html

Tariq, V and Durrani, N (2009) *Every Student Counts: Promoting Numeracy and Enhancing Employability* A National Teaching Fellowship Scheme Project MSOR Connections 9(1)

Wels, B (2013) Essential employability Skills. Retrieved on 3rd June, 2017 *from https://career-ready.blogs.latrobe.edu.au/2013/08/16/8-essential-employability-skills/*