

UNDERGRADUATE STUDENTS PERCEPTION ABOUT THE IMPERATIVENESS OF MATHEMATICS EDUCATION IN EMPLOYMENT GENERATION

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Abstract

This study was an attempt to empirically analyse undergraduate students' perception about the imperativeness of mathematics education in employment generation. The sample of this study included a total of 300 undergraduate students (150 science and 150 non - science) randomly sampled from universities (2 affiliate and one main in Enugu Metropolis. The research design adopted for the study was a descriptive survey design. The research instrument was a self-designed questionnaire on undergraduate students' perception on imperativeness of mathematics education for employment generation. One research question and one hypothesis were formulated. The research questions were answered using percentage and one hypothesis was tested using t-test analysis. The result respectively indicated no significant difference between undergraduate science and undergraduate non- science students' perception about importance of mathematics education for employment generation. It was concluded that undergraduate science and undergraduate non –science student perceive equally that mathematics education is a window to employment opportunities. The paper recommended among other things, the need for sensitization of mathematics education and its immense practical values for employment generation.

Introduction

Mathematics is an integral part on the total education process which is very useful to mankind. The most obvious reason, to us for teaching and learning mathematics is that it is necessary for a person to have some knowledge of mathematics in order to live

as a useful man and effective member of the society. Ukeje (1997) while writing on the important role played by mathematics in social, economic and technological development of any country, emphasized that without mathematics, there is no science and without science there is no modern technology and without modern technology, there is no modern society. According to him, mathematics education is, therefore, essential in the technological development of Nigeria. Furthermore, mathematical skills are crucial for a wide array of analytical, technological, scientific, security and economic applications. Therefore mathematics education is a necessary ingredient for employment generation and sustainability in Nigeria. Consequently, based on the foregoing, the basic problem of this study was on mathematics education for employment generation and sustainability. Mathematics education in the contemporary education is the practice of teaching and learning mathematics. In Federal Republic of Nigeria (2014), the importance of mathematics education were clearly stated. There include among others, preparation for useful living in the society, and preparation for higher education. Odilli (1986) summarized the importance of mathematics education thus:

1. Preparing individuals for life. The power of mathematics in character building, through active involvement, personal success, works with others self-expression and self-criticism cannot be over looked.
2. A necessary condition for a happy life. This is the act of economic living, not only on terms of money economy, but in the economy of every single act of life-Like the economy of time which is most valuable asset of man.
3. Mathematics helps to raise a generation of people who can think for themselves, respect the views and feeling of others through the application of the four main mathematics methods of scientific, intuitive, deductive and inventive techniques used in investigating interpreting and making decisions.
4. Preparation of people for a useful living: Knowledge of counting, viz addition, subtraction, multiplication, division, weighing measuring, selling, buying are process of mathematics that have practical value in life.
5. Mathematics serves as a language: Mathematics involves the use of carefully defined terms and concise symbolic representation and precision to communication, e.g. $5+4=9$, means the same thing for everybody, no matter your tribe or race. Furthermore, a survey of the relationship between mathematics and other subjects show that anyone who wants to pursue these subjects should have a clear understanding of mathematics. Employment generation is the creation of activities which fall under the rubric of job creation which includes short term opportunities that yield quick impact, sustainability, long term impact and the development or more enduring livelihood in the public and private sectors through education and training focused on relevant skills and competences.

Ukadike (1997), shared the view that mathematics is indispensable because it has application in all other human activities including schools, science and technology based

subjects. It has become the central intellectual discipline of the technological society. As such mathematics is one of the most important subjects in Nigeria which is made compulsory because of the contemporary challenges, it poses in society and human needs in this present era of technological advancement and in the realization of Nigerian vision of the year 2020. Mathematics education has helped in no small measure to the generation of employment in Nigeria of present. The teaching and learning of mathematics and its branch statistics have provided a wide variety of career because mathematics education have provided individuals with the problem solving technique, computing and communication skills which employers want. Mathematics education has generated employment in various areas of endeavour. The knowledge of mathematics has created job opportunities in areas as diverse as banking, insurance, investment, environment modeling, and metrology, computing information, education or research. In the finance industry, positions like portfolio optimization, option pricing and stock market prediction require mathematical calculation.

Mathematics education has generated employment opportunities for those that are competent. This is so because the handling of large amount of money requires the use of sophisticated mathematics techniques to limit risk. Other areas mathematics education has generated employment are in the electricity industry where the present deregulation of the electricity industry has created a high demand for mathematics and environmental systems. Mathematics education has equally generated employment in the areas of communication which involves interpreting complex financial information for company report and the perspectives, in the areas of designing television and newspaper weather predictions, the design of fuel-efficient automobiles and airplanes. All these require mathematics education. Hence mathematics is the ultimate portable skill for employment generation. The efforts towards employment generation in Nigeria can be traced back to the early 1980s. It is on recorded history that the Banbagida led government (1983-1993) initiated the National Directorate of Employment (NDE), the Obasanjo led third Republic (1999-2007) came up with the National Economic Empowerment and Development Strategy (NEEDS) and the government of Goodluck Jonathan led government of vision 20:2020 also had employment generation as the major focus. It is a well-recognized and accepted fact that successive governments have made concerted efforts to initiate programmes and policies or employment generation in order to reduce poverty and improve the lives of people.

Despite the efforts of the various governments towards employment generation, employment has remained one of the most politically pressing challenges of Nigeria. It is disheartening that Nigeria's unemployment rate is spiraling upwards year in year out and this has been a significant contributor to the dramatic rise in social unrest and sophisticated crimes (Bakare, 2013). Reasons for the scenario of unemployment in Nigeria have been attributed to the rising population growth rate (Agada, 2011). Olagunju (2009) observed that mathematics education at all levels is voted for National

Development and employment generation in the 21st century. Realizing the imperativeness of mathematics education, Mustapha(2002) opined that a combination of physics and other science subjects is the driving force for engineering and industrialization which have capacity for employment generation. In a related study, Yusuf (2005) observed that a combination of mathematics and chemistry is the driving force for chemical industries that can create employment opportunities for people. Therefore, the overwhelming conclusion of most research studies is that mathematics education is a window of opportunities for employment generation for the teeming population youth in Nigeria. Due to the above important reasons, efforts have been vigorously geared towards equipping the critical mass of Nigerian youths with functional mathematics education.

Research studies conducted by Gears (2011) and Rothwell (2012) on online analysis of perception about importance of mathematics education for job creation among students in mathematics education fields and non mathematics education fields find no significant difference. Concomitantly, Olaniyan and Opayinka (2012) document A.O significant difference in teachers' perception about importance of mathematics education as a key driver of employment generation. Thus, the point of concordance of the research studies is that there is a general consensus among student's professionals that a large number of public career opportunities exist in mathematics education fields. But normally, the results of public school examination such as WAEC and NECO in mathematics education subjects have been dismally poor. (chukwusa and Udoye, 2011;Olaniyan and Olosunde 2012). This situation as described above is capable of circumventing all efforts aimed at generating employment through mathematics education.

Statement of the Problem

The high rate of unemployment amongst youths in Nigeria is an issue of national concern. Research studies have consistently indicated that unemployment can be generated if appropriate mathematics education knowledge and skills are acquired. However, research studies have not focused on perception of undergraduate students about the importance of contributions of mathematics education in generating employment opportunities. This is a disturbing scenario to which experts and experienced educators in the field of science education must be sensitive to. It is against this background, therefore, that the study was motivated to investigate perception of undergraduate students on the imperativeness of mathematics education in generating sustainable employment.

Purpose of Study

The purpose of study was to investigate undergraduate science and undergraduate non-science student's perception about importance of mathematics education in sustainable

employment for teeming population of youths in Nigeria. It is hoped that findings from this study would be significant for governments to be sensitive to popularizing the study of mathematics education subjects in the school systems.

Research Question

Is there any difference between undergraduate science and undergraduate non-science students' perception about importance of mathematics education in generating employment opportunities?

Hypothesis

There is no significant difference between undergraduate science and undergraduate non-science students' perception about importance of mathematics education in generating employment opportunities.

Methodology

Research Design: The research design adopted for the study was a survey design. The population for this study consisted of all undergraduate students of Enugu State University of Science and Technology (ESUT). The sample comprised 300 undergraduate students in the Department of Science and Computer Education, ESUT, Agbani this was sampled. Randomly sampled from 1,060 students in the department. By using stratified random sampling techniques, 300 undergraduate students (150 science and 150 non-science) were sampled from each of the university to give a total of 150 undergraduate science students. The instrument for data collection in this study was a self-designed questionnaire on undergraduate student's perception about importance of mathematics education and Employment Generation tagged (USPMEG). The instrument had two sections: Section A requested for the demographic data of the respondents while section B contained item questions on which respondents were required to tick against the 20 item questionnaire.

To ensure face validity of the instrument, the draft questionnaire was subject to vetting by two experts in the field of measurement and evaluation. The experts suggestions were included in the final draft of the instrument. The reliability index of the instrument was found to be 0.83 using Cronbach Alpha. The researcher with help of some lecturers and participants administered the questionnaire to the sampled respondents. Instructions were given to the respondents and the questionnaire copies were retrieved by the researcher. The return rate was 100% and was found very satisfactory. The data collected was subjected to percentage and the research hypothesis was tested using t-test statistical analysis.

Results

Research Question: is there any difference between undergraduate science student and undergraduate non-science students’ perception about importance of mathematics education in generating employment?

Table: Results for Research Question 1.

| SN | Task Items | Total No | Science Students undergraduate | | Non Science Students Undergraduate | |
|----|--|-------------|--------------------------------|------|------------------------------------|------|
| | | | No | % | % | % |
| 1 | Mathematics education is a window of opportunities for employment generation. | 270 | 140 | 51.9 | 130 | 48.1 |
| 2 | Mathematics education is a strong force for employment generation. | 268 | 145 | 54.1 | 123 | 45.9 |
| 3 | Mathematics education is the driving force for industrialization that engenders job opportunities. | 283 | 150 | 53.0 | 133 | 47.0 |
| 4 | Mathematics education prepares individuals for Care in adverse range areas. | 224 | 124 | 55.4 | 100 | 44.6 |
| 5 | Mathematics education is essential for a variety of career opportunities. | 240 | 128 | 53.3 | 112 | 46.7 |
| 6 | Mathematics education facilitates the establishment of medium and small scale industries that engenders employment | 265 | 138 | 52.1 | 127 | 47.9 |
| 7 | Mathematics education contains necessary information to generate employment. | 265 | 152 | 53.3 | 133 | 46.7 |
| 8 | Mathematics education is the key driver of employment generation. | 272 | 146 | 53.7 | 126 | 46.3 |
| 9 | Mathematics education is a leading provider of | 255 | 153 | 60.0 | 102 | 40.0 |

| | | | | | | | |
|----|--|-----|-----|------|-----|------|--|
| | employment. | | | | | | |
| 10 | Mathematics education is essential to achieve sustainable employment generation. | 246 | 128 | 52.0 | 118 | 48.0 | |
| 11 | Mathematics education has immense practical values in generating employment. | 190 | 100 | 52.6 | 90 | 47.4 | |
| 12 | A large number of employers are seeking individuals with mathematics education background. | 284 | 154 | 54.2 | 130 | 45.8 | |
| 13 | The More students we train in mathematics education, the more jobs will be created. | 276 | 150 | 54.3 | 125 | 45.7 | |
| 14 | Mathematics education develops creative problem solving and technical skills that will help employment generation. | 262 | 136 | 51.9 | 126 | 48.1 | |
| 15 | It is important for every individual to have access to mathematics education since it generates employment. | 240 | 128 | 53.3 | 112 | 46.7 | |
| 16 | Mathematics education plays a vital role in generating employment. | 261 | 138 | 52.9 | 123 | 47.1 | |
| 17 | If every individual is mathematics education minded, unemployment would not have assumed the worrisome dimension in Nigeria. | 226 | 121 | 53.5 | 105 | 46.5 | |
| 18 | A workforce with sufficient mathematics education knowledge and skills would generate employment. | 250 | 130 | 52.0 | 120 | 48.1 | |
| 19 | Appropriate mathematics education | 285 | 148 | 51.9 | 137 | 48.1 | |

would be needed to generate employment.

| | | | | | | |
|----|---|-----|-----|------|-----|------|
| 20 | There is need to inspire young people to take an interest in mathematics education. | 268 | 142 | 51.9 | 123 | 45.9 |
|----|---|-----|-----|------|-----|------|

Table 1 showed slight differences and deviations in responses to items (1-20) from the analysis of the percentage recorded. The implication of the questions raised above revealed that undergraduate students’ perception about importance of mathematics education for employment generation differ and generally higher for undergraduate science students in the sampled schools.

Hypothesis: There is no significant difference between undergraduate science and undergraduate non-science students’ perception about importance of mathematics education in generating opportunities.

Table 2:t-test Result between undergraduate science and undergraduate non-science students’ perception about importance of mathematics education for employment generation.

| Group | N | X | SD | Df | Calculated value | Critical t-value |
|------------------------------------|-----|------|-----|----|------------------|------------------|
| Undergraduate science students | 150 | 7.11 | 2.5 | 19 | 0.2564 | 1.96 |
| Undergraduate Non-science students | 150 | 6.22 | 2.1 | | | |

From table 2 above, the calculated t-value of 0.2564 is less than the critical value of 1.96 at 0.05 level of significance with 19 degrees of freedom. This is the evidence to accept the hypothesis that there is no significant difference between undergraduate science students and undergraduate Non-science students’ perception about importance of mathematics education in generating employment opportunities.

Discussion

The findings of the study have shown that undergraduate science students have a higher perception about importance and contributions of mathematics education in

generating employment opportunities as evidenced by the results in table 1. However, on the whole, the differences in mean perception scores between undergraduate science and undergraduate Non-science are not statistically significant. Therefore by implication this means that irrespective of academic discipline students are generally sensitive to the fact that mathematics education is the pivotal for employment generation. The findings of this study corresponds with the findings of the previous research studies (Gears 2011; Rothwell 2012).It also been seen from table 2 that there is no significant difference in perception of undergraduate science and undergraduate non-science students about importance of mathematics education for employment generation. By implication, this means that the two groups perceived on equal level the importance and contributions of mathematics education for employment generation. However, the result of the test of the hypothesis seems to have corroborated the findings of the previous research studies (Olaniyan and Opayinka 2012) that found no significant difference in teachers' perception about importance of mathematics education as a driving force for employment generation. Many reasons may account for this result. The major factors might be due to the influence of Mathematics education in the contemporary society that affect what we often take for granted.

Conclusion

The findings from this study showed that undergraduate science and undergraduate non-science students perceived the importance Mathematics education on equal level for employment generation in the march towards sustainable employment generation, Mathematics education is a pre-requisite for the employment generation.

Recommendations

1. Capacity building workshops should be organized for students to upgrade their Mathematics education quality learning and provide job creation interventions.
2. Tertiary institutions should provide functional Mathematics education and training that would lead to employment generation.

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