The Role of Numeracy Skills in Graduate Employment in Nigeria

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ABSTRACT

This review presents the role of numeracy skills in graduate employment in Nigeria. The aims are to show how numeracy skills enhance graduate employability, and outline how it can be improved in an emerging global society. With the dearth of public service jobs and the current drive for private sector driven economy, technologically based companies have emerged with different demands for employment. Also, the desire for optimal productivity from employers demands the graduates to possess apart from the knowledge in the course of study, numeracy skills to enhance their versatility for different job assignments and also reduce redundancy. Hence, this work has revealed that though the problem of lack of adequate numeracy skills may not be unconnected with poor academic background, it is depriving so many a graduate of mouth watery means of livelihood in Nigeria. Based on the foregoing, it is concluded that graduates with poor numeracy skills are likely to remain unemployed when compared to those with competence in numeracy skills. Therefore, identifying numeracy deficiency in undergraduates will help in understanding the students' fears and as such the students can be encouraged to consider the necessity of developing numerical skills.

Keywords: *numeracy, mathematical skills, employability, versatility, productivity*

INTRODUCTION

It is obvious today that many employers expect their job applicants to possess some required skills, understanding and attributes to improve their chances of securing jobs and also becoming successful in their chosen careers. Such requirement defines the degree of employability of the applicants. It is evident that currently being literate may not be enough to gain employment, the reason many graduates roam the streets in search of jobs even after they have acquired basic qualifications in required fields or professions. In the current dispensation, what employers want is an applicant who with right working environment can be optimally productive. And as such, gaining employment goes beyond the ability of the graduate to secure a job, but rather, it is about the capacity to function successfully in a role and be able to move between careers, thus having the ability to remain on the job (Forrier and Sels, 2003).

The post-independence Nigeria had focused on being literate to be employable, this involves the ability to read and write and understand arithmetic. But several years later

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the demand for creativity, productivity, versatility and competence has further pushed up this ceiling, being forced by need for quality and competitiveness. Also, the changing work environment caused by the introduction of technology has created additional requirements for being employed. Alongside these new requirements, is numeracy which is the ability to apply simple numerical concepts (Brooks and Pui, 2010), which consists of understanding basic arithmetic like addition, subtraction, multiplication and division. Fundamental numeracy skills include the understanding of the real number line, time, measurement and estimation (Reyna, Nelson, Han and Dieckmann, 2009). Speaking further, they maintain that this also includes the ability to identify and understand numbers, computational skills and compare numerical magnitudes. At a more sophisticated level, the skills may include understanding ratio concepts like fractions, percentages, proportions and probabilities. At this level, the skills can be divided into two categories: which are analytical skill, which is the ability to understand numerical information that is required to interpret charts and graphs and statistical skills, the ability to apply higher statistical computation like conditional probabilities.

It is so pathetic these days that a good number of Nigerian graduates are having serious problems with numeracy skills. It is so serious that it has gone to the extent of a graduate pressing calculator to seek answer for such mental sum as eight divided by two. What is the difference between twenty and two can be so frightening to some graduates such that goose pimples accompanied with sweat from hair to toe will baptize them in the interview halls, even at work places. This problem though may not be unconnected with poor academic background is depriving so many a graduate of mouth watery means of livelihood in Nigeria

According to Reyna, Nelson, Han and Dieckmann, (2009) numeracy is essential for day to day evaluations. From daily financial transactions, calculation of changes you get from purchases, measuring quantities, comparing objects or how to find out which product gives a better value based on weight or price. Most of these occur daily in many jobs that higher skills are not required. From petrol attendant dispensing fuel to store keepers computing profits or loss. From labourers measuring the area of work covered for the day to phone booth operators checking theirs airtime balance after calls.

Also most graduate jobs still require basic skills in numeracy as well as the higher skills irrespective of the field of graduation. Doctors need to know the amount of drugs dispensed, teachers must compute the assessments of their students, and road safety corps will need to find percentage increase or decrease in road traffic incidents for different years or seasons, electoral officers will need to collate election results. Formal research on numeracy and employability shows recent high demand of numeracy skills by employers. According to (Cameron, 2010), from 500 directors that participated in a research to identify skills valued in graduate employability, 70% of the respondents thought that numeracy skills are very important with a further 21% thinking that numeracy skill is very important.

Until recently, numerical reasoning has been of the requirements designed for degree program admissions in Nigeria universities, polytechnics and colleges of education in form of aptitude tests. Many employers use psychometric numerical reasoning tests to screen applicants before the formal interview for jobs. It is also a common practice for the

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recruitment process in major government agencies. Basic numeracy skills form part of the early childhood learning process alongside literacy skills. But the development of such skills may be affected by several factors. Some of these factors are: childhood influences and socioeconomic status, (Ciampa, Osborn and Peterson, 2010), parenting, home learning environment, age and literacy, (Bullock, 1994). Studies show that children who are brought up in families with high socio-economic status are exposed to a better learning environment and are properly motivated to develop abilities to learn. Obviously the socio-economic status is associated with parenting.

Also, parents are the child's first teachers, which can influence the child's numercy skills negatively or positively depending on their numeracy skills. Learning environment can also be affected by the status of the parents. It determines the kind of toys the child plays with, the kind of early school the child attends, etc. Studies on childhood numeracy (Ciampa, Osborn and Peterson, 2010) showed that children under the age of 5 have the best opportunity to absorb basic numeracy skills; and that after the age of 7, achieving the numeracy skills becomes less influential. Another report showed that depending on the level of literacy or numeracy at a young age, the growth of literacy or numeracy for the future can be predicted (Purpura, Hume, Sim and Lonigan, 2011).

Basic Components of Numeracy

Numeracy is divided into three components namely: Context, Content, and Cognitive and affective (Ginsberg, Manly and Schmidt, 2006).

Context: This refers to the use and purpose which an adult takes on a task with mathematical demands. The sub-components include:

(i) Family and personal: as a parent, household manager, consumer, financial and healthcare decision maker and hobbyist.

(ii) Workplace: as a worker to perform tasks on the job and to be prepared to adapt to new employment demands.

(iii) Further learning: as a person interested in the more formal aspects of mathematics necessary to further education or training.

(iv) Community: as a citizen making interpretation of social situations with mathematical aspects such as the environmental crime or politics.

Content: This component refers to the mathematical knowledge that is necessary for the tasks confronted. This is broken down into the following subcomponents.

(i) Number and Operation Sense: a sense of how numbers and operations work and how they relate to the world situations that they represent.

(ii) Patterns, Functions and Algebra: an ability to analyse relationships and change among quantities, generalize and represent them in different ways and develop solution method of numbers, operations and equations.

(iii) Measurement and Shape: this describes the knowledge of the attributes and shapes, how to estimate and/or determine the measure of these attributes directly or indirectly and how to reason spatially.

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(iv) Data, Statistics and Probability: this is the ability to describe population, deal with uncertainty, assess claims and make decision thoughtfully.

Cognitive and Affective: This refers to the process that enables an individual to solve problems and thereby link the content to context. The subcomponents are:

(i) Conceptual Understanding: an integrated and functional grasp of mathematical ideas;

(ii) Adaptive Reasoning: the capacity to think logically about the relationship among concepts and situations;

(iii) Strategic Competence: this is the ability to formulate mathematical problems, represent them and solve them;

(iv) Procedural Fluency: the ability to perform calculations effectively and accurately by using paper and pencil procedures, mental mathematics, estimation techniques and technological aids.

Effects of Numeracy on Versatility and Redundancy

As described earlier, gaining employment goes beyond a graduate securing a job. Staying employable on the secured job is equally important. Job losses are mostly related to redundancy. Redundancy refers to a situation where a person or his service are no more cosidered useful. The lack of additional useful skill leads to being declared superfluous at the workplace instead of being redeployed to another area which additional skills can be employed. Some companies will not require the services of a professional accountant or statistician to do basic financial arithmetic and data analysis that can be done by their computer operator or their receptionist. Computations like profit/loss, percentages, averages and variations can be handled by numerically skilled graduate employee; this creates additional role for the graduate, increasing the employees influence within the workplace. Most employers will seek to employ an individual that can take on other assignments alongside the primary job assignment. In such a case, numeracy can be an additional advantage and aids versatility.The cognitive and affective component of numeracy adds additional quality to a graduate, since the graduate is empowered with analytical skills and the potential to adapt to different job assignments. This additional skill boosts the chances of the employee to escape redundancy.

Most work places today are technologically rich with almost every task expected to be handled by computers. Primary knowledge or basic skills must be developed to enhance the understanding and use of technology. In a digitalized world, a graduate needs to be numerate to be familiar with such working environment. Several computer packages used in the workplace requires basic numeracy skills, in which Microsoft EXCEL is an example. A graduate without numeracy skills is disadvantaged in situations where greater number of job opportunities requires numeracy skills. Since numeracy skills are related to the understanding and use of technology, the more the workplace becomes technologically rich, the more such employee becomes closer to redundancy.

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Improving Numeracy

Even though a lot of employers depend on numerical reasoning tests (aptitude tests) in screening of graduates applicants for job placement, there may be no correlation between success in aptitude tests and actual workplace application of numeracy. Due to aptitude tests, most graduates are now involved in developing their numerical skills, while searching for jobs. Many may have to develop interest in the area of study that did not relate directly with their course of study. The actual approach to improving numeracy should go beyond the hasty interest in learning only when it has to do with securing jobs as graduates. There is a need for the higher institutions of learning to be involved in the training of their graduates (undergraduates) on basic numeracy skills required for employability. The following are suggestions that institutions may implement to improve the numeracy skills of their graduates.

Identifying the numeracy deficiency in undergraduates*:* Numeracy skills play a huge role in the choice of courses many students choose as careers while in school, (Steen, 2007). Many move away from courses that may involve mathematical skills and this may further move them completely away from the opportunity of developing numerical skills. Identifying numeracy deficiency in undergraduates will help in understanding the students' fears and as such the students can be encouraged to consider the necessity of developing numerical skills.

Identifying the level of need of numeracy in each course of study*:* Numeracy skills needed in each area or course of study may be slightly related. Identifying this need for each profession will help to enhance graduate numeracy skills for their chosen careers. For example,the type of numeracy skills needed by a medical doctor may be different from the numerical skills needed by a journalist.

Expanding the curriculum to accommodate in each course of study numeracy skill development: Depending on the deficiency and need, a necessary percentage of the cause requirement should also include basic numeracy skills as it relates to that course. Continuous learning of numeracy skills related to course of study will increase proficiency in such skills.

Creating time for practical tests in numeracy skills to evaluate their progress: Periodic tests including mental tests will help sharpen the numeracy skills during undergraduate years and familiarize them with basic skills required to gain employment.

CONCLUSION

From the findings of this study, it is concluded that graduates with poor numeracy skills are more likely to remain unemployed when compared to those with competence in numeracy skills. Most professions have numeracy requirements associated with them for optimal productivity. These skills can be developed during their undergraduate years in the institutions as they prepare for future careers. A process that develops numeracy skills alongside the undergraduate course of study will greatly enhance their ability in numeracy. Lack of

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numeracy skills affects optimal productivity in the workplace and it is a huge factor in career achievement and failures according to (Brooks and Pui, 2010).

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