

The Role of Mathematics Education in the Development of Entrepreneurial Skills for Self Reliance among Nigerian Youths

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ABSTRACT

This study reviews the role of mathematics education in the development of entrepreneurial skills for self reliance among Nigerian youths. Though the present situation in the country has pose a lot of challenges to the government and to the youths who are mostly affected yet the study has revealed that mathematics education plays a significant role by providing the required numerical aid to an entrepreneur without being able to handle matters of mathematical relevance in business. It is therefore believed that the paradigm shift in the system of education: the review of policies on education to entrepreneurial base will tackle the problem of high rate of poverty, youth and graduate unemployment, overdependence on foreign goods and technology, low economic development among others. Hence, the place of mathematics education in shaping entrepreneurship for societal development should not be handled with levity. Consequently, mathematics education which is an intrinsic quality of entrepreneurship should be encouraged and strengthened at all levels of the Nigerian educational system.

Keywords: Entrepreneurship, mathematics education, development, skills

INTRODUCTION

Oviawe (2010) observes that Nigeria like most developing nations of the world is faced with myriad of problems and hearse realities which include poverty, unemployment, conflicts and diseases. These situations pose great challenges to the very existence of individuals in most developing nations thereby, calling for the training of educated men and women who can function effectively in the society in which they live in. The massive unemployment of Nigerian graduates from various institutions of higher learning is traceable to the disequilibrium between labour market requirement and lack of essential employable skills by the graduates (Diejomal and Orimolade, 1991, Dabelen, Oni and Adekola, 2000). The existing gaps in skills hamper youth development and in turn national development. Arogundade (2011) opines that the need for entrepreneurship education started emerging in the mid 1980s. This is because, before this period, unemployment and poverty were not a national concern as it is currently. However, he added that political instabilities and inconsistencies in the socio- economic policies of successive government lead to the emergence of high level of unemployment in Nigeria. In the mid 80s, the Nigerian economy collapse while youth and graduate unemployment escalated (Arogundade, 2011). There was large-scale lay off of workers and early retirement as a result of structural adjustment policies and bad economy in the country (Arogundade, 2011). In the face of this situation, entrepreneurship which

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should have salvaged the situation was not encouraged. It has been observed that tertiary education has not adequately included the philosophy of self reliance such as creating a new cultural and productive environment which will promote self discipline and productivity for the general welfare of individuals and society at large. It is pertinent to note that education can be a means to an end. According to Abubakar (2010), entrepreneurship has been identified as a means of providing employment and income generation in the country and a panacea to poverty reduction and pathetic unemployment situation. The concept of entrepreneurship is nebulous and many academic disciplines have contributed their perspective on the concept, including physiologist and economist. An economist views entrepreneurship in the context of the combination of resources, such as: labour, materials and other assets such that their value is greater as a group than individually. Omolayo (2006) defines entrepreneurship as the act of starting a company, arranging business deals and taking risk in order to make profit through the education skills acquired. The operational definition of entrepreneurship is the willingness and ability of a person or persons to acquire educational skills to explore and exploit investment opportunities, establish and manage a successful business enterprise.

The Role of Entrepreneurship Education in National Development

The role of education in the developmental effort of any nation cannot be overemphasized. The development of the educational sector facilities can stimulate the development in all other sectors. According to Sule (2004), education is a pure pathway to liberation of the mind and improvement of socio economic status of people. Entrepreneurial programmes if properly planned and executed will ensure that the issue of self-employment and job creation will increase. It has several multiplier effects on the economy, spurs innovation and fosters investment in people by creating new enterprises, new commercial activities and new economic sectors which generate jobs for people to the development of the society. Entrepreneurs introduced new technology for the advancement of the nation. Kolawale and Omolayo (2006) in (Arogundade, 2011) submit that many individuals have difficulties in translating their business ideas to realities and creating new business ventures because of lack of necessary information and skill needed to achieve their target. To this end, Nigerian curriculum was in the past oriented towards making graduates suitable for white-collar jobs. This underscores why millions of our youths and graduates roam about the street of major town and cities in search of white-collar jobs. However, Nigeria is re-positioning her curriculum to stimulate economic growth through a deliberate agenda of producing entrepreneurial graduates.

Development and Support of Entrepreneurial Skills in Schools

This shift from general education to specifically entrepreneurship education becomes necessary in view of the present realities and the need to develop and empower particularly the youth in the society. There is seeming consensus on the importance of entrepreneurship in ameliorating some socio economic problems especially poverty, unemployment and all sort of social vices in the society (Oviawe, 2010). Akpomi (2009) in Oviawe (2010) made an investigation on the modality of using entrepreneurial education as a strategy or instrument of channeling necessary energies of the Nigerian universities, faculties and students

away from paid employment to self employment which is therefore inevitable to build capacities. For entrepreneurs to succeed, emphasis must be placed on entrepreneurial education where students will be groomed on the basics of entrepreneurship and how to develop a good business plan.

The Role of Government Educational Policy and Entrepreneurship

Nigerian education system could be traced back to the colonial period. The policy on education then was aimed at producing Nigerians who can read and write to hold certain positions such as clerk, interpreters, inspectors etc, without any entrepreneurial or professional skill to stand on their own or even establish and manage their own ventures (Aladekomo, 2004 cited in Abubakar, 2010). But in the mid 70s, the government processed on small and medium scale industrial centers and some institutions were set up to support the activities of entrepreneurs in the country (Abubakar, 2010). Institutions set up were: Nigeria Industrial Banks (NIB), Nigerian Bank for Commerce and Industries (NBCI), Nigerian Agricultural and Cooperative Bank (NACB) and so on. Thirteen of such institutions were established in the country. The policy were deficient in the sense that it failed to take issues of self employment at tertiary levels but focused on primary and secondary schools only (Oviawe, 2010). Many governments view entrepreneurship as the solution to weak economic performance and job creation. The challenge remains that having a better understanding of the factors that determine entrepreneurship and the environment become necessary in order to motivate and support the growth of the entrepreneur.

Knowledge of the primary catalyst for entrepreneurship is essentially for understanding the micro-economy foundation that will lead to growth in emerging economies. While the relationship between individual savings and growth can be difficult to disentangle there is sufficient evidence to outline the powerful role that access to capital plays in driving productivity. Baumol (1990) observes that beyond the crucial relationship between the government policy and entrepreneurship, identifying the government policy instruments are beneficial in fostering entrepreneurship in particular country is a significant challenge. For instance, the policy instrument that would be deployed to support the emergence of entrepreneurship in the rural areas will differ from those used to support the development of technology firms in an urban area. More importantly, these policy instruments will need to take into account the different resource constraints and availability, the nature of existing networks and market capabilities.

Constraints of Entrepreneurship Education in Nigeria

According to Oviawe (2010), the following factors hinder entrepreneurship education in Nigeria, they include:

1. Poor knowledge based economy and low spirit of competition
2. Poor enterprising culture
3. Lack of entrepreneurship teachers, materials and equipment.
4. Unavailability of funds
5. Non-inclusion of entrepreneurship in the school curricular
6. Poor societal attitude to technical and vocational education development
7. Inadequate facilities and equipment for teaching and learning

8. Insensitivity of government to enterprise creation and expansion strategy.
9. Poor plan and execution of processes of action.
10. Isolated packet of ineffective programmes and management incompetencies

Mathematics Education and Methods

Mathematics education is the practice of teaching and learning mathematics with the associated scholarly research in contemporary education. Researchers in mathematics are concerned with the tools, methods and approaches that facilitate practice. In the 18th and 19th centuries, the industrial revolution led to an enormous increase in urban populations. Basic numeric skills, such as the ability to tell the time, count money and simple arithmetic, which were essential in this new urban lifestyle. Within the new public education systems, mathematics becomes a central part of the curriculum for an early age. By the twentieth century, Mathematics was part of the core curriculum in all the developed countries. In the 20th century, the cultural impact of the 'electric age' was also taken up by educational theory and the teaching of mathematics, while previous approach focused on "working with specialized problem in arithmetic" (Marshall, 1964). The emergent structural approach to knowledge had small children meditating about number theory and sets (Marshall, 1964). The methods used in any particular context are largely determined by the objectives that the relevant educational system is trying to achieve. The following methods, according to Mathematics Education are identified:

Conventional Approach: The gradual and the systematic guiding through the hierarchy of mathematical notations, ideas and techniques, starts with arithmetic and is followed by Euclidean geometry and elementary algebra taught concurrently. Requires the instructor to be well informed about elementary mathematics, since didactic and curriculum decisions are often dictated by the logic of the subject rather than pedagogical considerations. Other methods emerge by emphasizing some aspects of this approach.

Classical Education: The teaching of mathematics within the quadrivium, part of the classical education curriculum of the Middle Ages, which was typically based on Euclid's *Elements* taught as a paradigm of deductive reasoning.

Rote Learning: The teaching of mathematical results, definitions and concepts by repetition and memorization typically without meaning or supported by mathematical reasoning. A derisory term is *drill and kills*. In traditional education, rote learning is used to teach multiplication tables, definitions, formulas, and other aspects of mathematics.

Exercise: The reinforcement of mathematical skills by completing large numbers of exercises of a similar type, such as adding vulgar fractions or solving quadratic equations.

Problem Solving: The cultivation of mathematical ingenuity, creativity and heuristic thinking by setting students open-ended, unusual, and sometimes unsolved problems. The problems can range from simple word problems to problems from international mathematics competitions such as the International Mathematical Olympiad. Problem solving is used as a means to build new mathematical knowledge, typically by building on students' prior understandings.

New Math: This is a method of teaching mathematics which focuses on abstract concepts such as set theory, functions and bases other than ten. Adopted in the US as a response to the challenge of early Soviet technical superiority in space, it began to be challenged in the late 1960s. One of the most influential critiques of the New Math was Morris Kline's 1973 book *Why Johnny Can't Add*. The New Math method was the topic of one of Tom Lehrer's most popular parody songs, with his introductory remarks to the song: "... in the new approach, as you know, the important thing is to understand what you're doing rather than to get the right answer."

Historical Methods: According to Monograph Series in Mathematics Education (2012), teaching the development of mathematics within as historical, social and cultural context, provides more human interest than the conventional approach.

Standards Based Mathematics: A vision for pre-college mathematics education in the US and Canada, focused on deepening students understanding of mathematics ideas and procedures, and formalized by the National Council of Teachers of Mathematics which created the Principles and standards for School Mathematics.

Relational Approach: Uses class topics to solve everyday problems and relates the topics to current events (<http://www.math.unl.edu/~s-kfield1/203currentevent.htm%20>). This approach focuses on the many uses of math and helps students understand why they need to know it as well as helping them to apply math to real world situations outside of the classroom.

Recreational Mathematics: According to Singmaster (nd), Mathematical problems that are fun can motivate students to learn mathematics and can increase enjoyment (appreciation) of mathematics.

The Role of Mathematic Education in Entrepreneurship Development

Since entrepreneurship is about creativity and innovation, mathematics plays a significant role in its development. Venturing into a new business requires a careful appraisal to measure the viability of such venture. Such appraisal requires mathematical techniques to make it a reality. While undergoing feasibility and viability appraisal, mathematics skills are required to put in place the projected cash flow, budget, projected statement of income and expenditure and so on. The planning process which involves deciding today what will be done in future requires a good deal of mathematics because, for instance, if it is production venture, knowledge of the required quantity of production to be produce involves mathematics. Hence, the place of mathematical education in shaping entrepreneurship for societal development should not be handled with levity.

CONCLUSION AND RECOMMENDATIONS

Hitherto, Nigeria needs a rapid change to "catch-up" with the global economic trend. This work has emphasized on a strong mathematics education to train the youth on various skills which include: entrepreneurial skill, managerial, experience, record keeping, creativity, and innovation. Oviawe (2010) submits that through well planned and executed

entrepreneurship education, Nigerian youth will be productive and committed employees or employers of labour. Therefore this work is challenging policy makers on the need to refocus their policies towards problem solving rather than maintaining the status quo. Hence, it is concluded that the place of mathematical education in shaping entrepreneurship for societal development should not be handled with levity. Based on the above discussions, the following recommendations are made:

1. Government and relevant stakeholders should make such that entrepreneurial programs are integrated into educational programmes at all levels of education to provide the youths and graduates the necessary entrepreneurial skills to boast self-reliance.
2. Government should provide enabling environment in terms of capital and other facilities to encourage the development of enterprises.
3. The government should give adequate attention and support to entrepreneurial development by way of good economic environment which will encourage individual participation in business opportunities available and explore them.
4. Mathematics education which is an intrinsic quality of entrepreneurship should be encouraged and strengthened at all levels of the Nigerian educational system.

REFERENCES

- Abubakar, S.** (2010). Refocusing Education towards entrepreneurship development in Nigeria: a tool for poverty eradication. *European Journal of Social Science*, 5.
- Arogundade, B.** (2011). Entrepreneurship education: and corporative for sustainable development in Nigeria. *Journal of Emerging Trend in Educational Research and Policy Studies (Jeteraps)* 2 (1), 26 – 29.
- Baumol, W. J.** (1990). *Entrepreneurship: productive, unproductive and destructive*. *Journal of Political Economy*, 98 (5), 893 – 921.
- Diabelen A., Oni B. and Adekola A.** (2000): *Labour market prospects for university graduate of in Nigeria*. Washington D.C : World bank.
- Diejomal, U. and Orimolade W.** (1991). *Unemployment in Nigeria: Economic Analysis of Scope Trends and policy Issues*. *Nigerian Journal of economic and Social Science*, 13(2), 127 – 132.
- Marshall McLuhan** (1964). Understanding Media, p. 13. (http://www9.georgetown.edu/faculty/irvinem/theory/McLuhan-Understanding_Media-1-1-7.html).
- Monograph Series in Mathematics Education** (2012). Crossroads in the History of Mathematics education (http://www.math.umd.edu/TMME/Monograph12/Mono12_TOC.pdf). *The Mathematics Enthusiast*.
- Omolayo B.** (2006). *Entrepreneurship in theory and practice*. In F. Omotosho, T.K.O Aluko, O.I.Wale Awe and G. Adaramola (eds). *Introduction to entrepreneurship development in Nigeria*. Ado-Ekiti: UNAD Press.
- Oviawe J.** (2010). *Repositioning the Nigerian youths for economic empowerment through entrepreneurship education*. Ekpoma, Edo: Ozean publisher.
- Sulei, M.N.** (2004). *Sociology of education in perspective*. Jos: Deka Publisher.
- Singmaster, David** (Nd). The Unreasonable Utility of Recreational Mathematics (<http://anduin.eldar.org/%7Eproblemi/singmast/ecmutil.html>)