International Journal of Education, Learning and Development
Vol.7, No.12, pp.1-10, December 2019
Published by *ECRTD-UK*
Print ISSN: 2054-6297(Print), Online ISSN: 2054-6300(Online)

GENDER PARITY IN MATHEMATICS AND ENTREPRENUERSHIP EDUCATION FOR NATIONAL DEVELOPMENT

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Lead Paper presentation in the 8th Annual Mathematics Association of Nigeria Conference

ABSTRACT: *The study discussed gender parity in mathematics and entrepreneurship education for national development. It focused on: gender parity in mathematics education for national development; gender parity in entrepreneurship education for national development. And concluded that there is wide variation in gender participation in mathematics education in Nigeria. Reviewed studies showed that female participation in mathematics oriented courses is at a very low level compare to the males. Also owing to the present demand of the society, there is increase need for job creators. Although, there is still disparities in female and male involvement in entrepreneurship but females takes the rule entrepreneurship education involvement. The study recommended that institution should design appropriate responses to gender gap that exist in mathematics oriented courses from the primary and beyond, and awareness campaigns on entrepreneurship needs, training programmes, mentoring, coaching and support networks should be provided.*

KEYWORDS: gender parity, mathematics, entrepreneurship education, national development

INTRODUCTION

Education is a vital tool that can be utilized not only for societal or national development but also for individual freedom from illiteracy, poverty, social vices among other factors that jeopardize national growth and development. The Nigerian Government has stated in the National Policy on Education that the country's educational goals shall be clearly set out in terms of their relevance to the citizens and the society, in consonance with the realities of the Nigerian environment and the modern world (FRN, 2014). Due to purpose, the Nigerian education system has been continually reviewed to suite present demands of the modern world. It is believed that education is the path which can lead to the full participation of individuals in the activities necessary for the development of the nation. Hornby (2015) regarded education as the formal process whereby society deliberately transmit its accumulated cultures , skills, norms, customs and values from one generation to the other. This amount to the reason Sustainable Development Goals (SDG) emphasizes the fact that individuals require knowledge, skills, values and attributes that empower them to contribute to sustainable development (UNESCO, 2017).

However, despite the pressing need of individual's contribution to national development, our society is faced with the problem of gender disparities in accessing or choosing certain educational programmes as careers. Government thus recognized that national and economic plans require a rapid move towards gender equality in all aspects of economy. Due to this need, on 25th of

September, 2015 the UN general assembly adopted the 2030 agenda for sustainable development which has seventeen (17) Sustainable Development Goals of which goal 5 targets gender equality. This implies that there should be equal access to all sectors of national developments such science, technology, agriculture, engineering, entrepreneurship, education and many more. So, one can conclude that this conference is geared towards the achievement of goal 5 of the Sustainable Development Goals.

In the contemporary world, gender equality has attained a trending topical issue especially among the females. The quest to attain gender parity with males in almost every sectors defining national development is uprising. European Institute of Gender Equality (2019) posited that gender parity is concerned with equality in terms of numbers and proportion of women and men, girls and boys. It is often calculated as the ratio of female and male value for a given indicator. Gender parity could be described thus as the measure of difference that exit in the involvements or contribution of female and male in various dimensions of the society. It is a statistical measure that compares a particular indicator among women to the same among men. This statistical measure of gender variety enables the researchers and policy makers to detect whether a given society is progressing or regressing.

Gender parity should not be not confused with either gender equality or sex ratio. Gender equality suggests situations where female and male have equal opportunities to realize their full human rights with capacities to contribute and benefit from everything made available by the society. Sex ratio provides detailed information on the ratio of men women in a particular industry whereas gender parity provides researcher information on the effectiveness and contribution of gender at a given time in a particular industry. For instance, New American weekly article (2019) has it that female-tech companies received just about $1.5 billion in venture capitalist investment last year compared to about $58 billion for male-led tech companies. So, gender parity doesn't just show the present ratio of gender in industry but also the contribution of the gender to societal development.

Mathematics Education according to Odili (2012) is the practice of teaching and learning of mathematics along with associated scholarly research. In the view of Azuka (2012) Mathematics education is describe the process of shifting from methods of teaching which has to do with acquisition of computational skills to the method of learning mathematics. He further stated that mathematics is mostly considered as a gizmo that contains the skill for solving real-life situations, organizing, simplifying, interpreting data and performing calculations that are necessary in fields such as science, business and industry for national development. This enhances the understanding of manipulation of numbers and its application not only for development of entrepreneurial skills but also in the world of work. Mathematics education equips the learners with the ability to think logically and spatially in order to critically analyze everyday situations and proffer solutions to life's problems.

Entrepreneurship education has the mandate to equip the youth with functional knowledge and skill to build up their character, attitude and vision. It has a vital role in developing an inter-dependent functional system that promotes creativity, opportunities and innovation (European

Commission, 2006). Entrepreneurship education is seen as a type of education that exposes learner on how to materialize ideas into useful actions. Manish and Sunil (2015) noted that entrepreneurship education is geared towards creating an attitude of self-reliance in an individual and not opportunity-seeking individuals. It fosters equipping individuals with entrepreneurial skills, attitude and ability to create and manage business ventures (European Commission, 2003). Over the last the years, there has being a large and successful efforts of extending education to all regardless of gender roles as against many traditions in Nigerian communities. From late 20th century women involvement in educational and societal activities has being on the long run but yet to be equated to that of the males. Mikkola and Miles (2007) noted that countries that the United Nation Development Program classifies as having low human development, female literacy rate ranges between 10-85% with a typical gender gap (the difference between the percentage of literate men and the percentage of literate women) of about 20%. It was further stated that "the higher the national income and development the smaller the gender gap". Gender concerns militate against the extension of equal opportunities to children and women and therefore, lead to frustration, apathy, violence and lop-sided development and underdevelopment (NPC & UNICEF, 2001). Therefore this study tends to discuss gender parity in Mathematics and entrepreneurship education for national developments.

Purpose of the Study.

The purpose of the study is to discuss gender parity in Mathematics and entrepreneurship education for national developments. Specifically the study focused on:

- Gender parity in mathematics education for national development
- Gender parity in entrepreneurship education for national development.

LITERATURE REVIEW

Gender Parity and Education System in Nigeria

It is stated in unequivocal terms that the philosophy of Nigeria' Education will be based on the development of the individual into a sound and effective citizen, the full integration of the individual into the community, and the provision of equal access to educational opportunities for all citizens in the country at the primary, secondary and tertiary level both inside and outside formal school settings (FRN, 2004). The aptness of the statement above in the education policy is primarily based on the importance of knowledge acquisition for every citizen to be self-reliant and for the development of skilled manpower. Every citizen implies every human being, both female and male as everybody has a role to play in his or her community. Education should not be restricted or preserved for a particular set of people. In Nigeria and in most of the countries of the world the right to education is encapsulated in many international human rights conventions. The World Conference on Education for All (WCEFA) held in Thailand in 1990, clearly outlined that every person regardless of the gender shall be able to have access to educational opportunities designed to meet their basic needs.

However, based on certain traditional values girls are ultimately denied access to education and withdrawal from school, as a result of the limited value put on educating the girl-child, compared

to the boy (Eneh & Nkamnebe, 2011). Yet, abounding evidences show that educating women lead to enhanced family income, health and hygiene, child education and wholesome up-bringing, as well as reduction in infant and maternal mortality rates. This is one of the underlying factors of the lop-sided development and underdevelopment, especially in the developing countries (Eneh, 2000).

UNESCO (2019) regards gender parity as a numerical concept which implies in educational term reaching the same proportion of boys and girls relative to their respective age group in education system and participate in different cycle. Over the decades, male have been in domination of the education system especially in Nigeria where many traditional rules disallow women education. Egwuoje (2002) affirmed that girls were not given the same educational opportunities as the boys and that they were discouraged from taking advanced courses in subjects such as Physics, Mathematics and Engineering which were concluded as feminine. Amin and Akogwu (2017) observed that women constitutes about 60 percent of the more than one billion adults globally who have access to education. However, World Bank (2012) noted that gender gaps in secondary education have closed in almost all countries. It further stated that gender enrolment in education is at the reversed in many countries such as Latin America, the Caribbean and East-Asia- boys and young men are now at disadvantaged. Though the gender gap in enrolment at the primary and secondary educational level in Nigeria seems to be closing gradually, but gender parity is yet to be obtained in tertiary educational level (Agu and Sam, 2013). Nigeria education system is rapidly approaching gender parity in the modern times as compared to the last two decades. Table 1 below shows how gender gap is gradually closing in Nigeria University Enrolment.

Table 1: Gender Gap in Nigeria University Enrolment over the last decade

	2003/2004				2004/2005			
Universities	Male	%	Female	%	Male	%	Female	%
Nnamdi Azikwe Univ. Awka	2,961	48.6	3,127	51.4	2,613	49.4	2,679	50.6
University of Benin	5,153	58.8	3,614	41.2	4,327	57.7	3,167	42.3
University of Ibadan.	2,105	60.4	1,381	39.6	1,789	57	1,350	43
University of Jos	815	64.4	450	35.6	998	62.8	590	37.2
University of Calabar	1,765	52.9	1,573	47.1	2,030	50.9	1,957	49.1

Source : Adopted from Agu and Sam (2013).

Although, in educational enrolment generally, gender disparities are gradually closing, but reverse is the case in the educational field that requires efficient mathematical competency.

Gender Parity in Mathematics education for national development

The term development can be understood as advancement of knowledge. It can also be viewed as the systematic use of scientific and technical knowledge to meet specific objectives or requirements. In today's world change is constant in all dimensions of life; development is rapidly ravaging the society in terms of science and technology. This change places a demand of utilizing scientific and mathematical skills in solving day-to-day problems. The underpinnings of everyday life are increasingly mathematical and technological. It is an empowering skill in daily business. Individuals who possess mathematical skills are likely able to compete effectively in the work and business world.

The knowledge of mathematics is being allied in various field of study most especially, when it is being successfully used in this twenty-first century in the development of science and technology leading to sustainable development. For instance agriculture is one of the important sectors that define sustainable national growth. In order for a farmer to function optimally, he/she needs direct application of mathematical skills such as measurement of land and areas, expenditure, seed rate, average return, marketing and so on to function optimally.

However, women economic empowerment has being one of the fey priorities for the government of Nigeria to achieve sustainable growth. A recent study by the International Labour Organization discovered that there is reducing gender gap in mathematics , which in turn increases labour participation and global employment by 189 million or 5.3% by 2025 (ILO, 2017). The brief survey conducted by the researcher in the department of Mathematics, Rivers State University, vividly shows that female participation in mathematics is extremely low. Table 2 below shows students admission in mathematic department Rivers State University and Ignatius Ajuru University of Education

Table 2: Students Admission in Mathematics Department Rivers State University and Ignatius Ajuru University of Education.

	2017/2018				**2016/2017**				**2015/2016**			
Universities	**M**	**%**	**F**	**%**	**M**	**%**	**F**	**%**	**M**	**%**	**F**	**%**
Rivers State University	43	70.5	18	29.5	22	73.3	8	26.7	22	75.9	**7**	24.1
Ignatius Ajuru University of Education	18	66.7	9	33.3	12	60.0	8	40.0	17	70.8	**7**	29.20

Source, Departmental Records (2019)

This shows that there is a wide variation in the enrolment of students in mathematics. In order for a country to attain advancement in science and technology, there is a need to eliminate gender based barriers that exclude a large portion of female students from the pursuit of mathematics oriented courses starting from primary school level and even in their homes.

Gender parity in entrepreneurship education for national development

Entrepreneurship education is a phenomenon that is continually gaining grounds in tertiary institutions. Entrepreneurship education according to European Commission (2003, 2004) entrepreneurship education is concerned about learning approach comprising all working methods that stimulate students' self-reliance, self-knowledge, creativity, energy, and ability to cooperate and communicate. It is a phenomenon that focuses on impacting skills in entrepreneurship to learners for venture creation. Such skills include innovation, creativity, and self-reliance among others. The characteristic of entrepreneurship education is basically to construct or facilitate entrepreneurial culture in the learners. Manish (2016) noted that entrepreneurship education is not limited only to boosting start-ups, innovation ventures and new job but also fostering leadership. The present nature of the society requires graduate who will initiate business ideas and turn ideas to money. The alarming unemployment conditions among young graduates and the changing needs of the society are enough reason why concepts of entrepreneurship education are implemented in tertiary institutions. The present society regardless of the gender, requires individuals who will be able to take initiative and responsibility.

The implementation of entrepreneurship education is basically to prepare learners for market needs and to bring closer cooperation with working conditions for the purpose of giving young people better opportunities to meet tomorrow's challenges (Leffler, 2014). Various academic researchers have proven that graduates of entrepreneurship program are not only increasing in number, they are instrumental in reshaping market understanding, technology and management leadership (GEDI, 2013; Alberta & Gary, 2013). More specifically, in the findings of Alberta, & Gary (2013) it was concluded that entrepreneurship education increased the probability of an individual being instrumentally involved in a new business venture by 25 percent over non-entrepreneurship graduates. Also, entrepreneurship students were 11 percent more likely than were non-entrepreneurship students to own their own businesses after graduation. On average, emerging companies that were owned by or employed entrepreneurship graduates had greater than five times the sales and employment growth than those that employed non-entrepreneurship graduate. By this, entrepreneurship education is an indispensable tool that could enhance the economic, society and technology development.

As concerning gender perspective on entrepreneurship education there is limited existing research (Leffler, 2006; Berglund & Holmgren, 2010). One of the key objectives of entrepreneurship education is to counteract the traditional gender structures and allows the students to develop special innovative abilities and interest in entrepreneurship regardless of the gender. Allison (2013) asserts that female entrepreneurship is a key driver of a country's prosperity; by creating the conditions for women entrepreneurs to flourish, countries are investing in their national well-being and competitiveness. OCED (2016) reports showed that countries are placing increasing attention on the gender dimension of entrepreneurship, recognizing greater levels of entrepreneurship among women and better access to resources by women entrepreneurs can contribute to innovation, job creation and social inclusion. Enhancing gender parity in entrepreneurship education is an advantaged tool which ensures that female and male participate in creation of businesses equally, one which increase women employment rates and simultaneously improves their position in the labour market, their economic independence, social status and personal

fulfillment, whilst increasing the competitiveness of Africa economies, particularly when this entrepreneurship is linked to innovation (Olinmah, 2018).

In the past decades, although researches affirmed that there is a bit increase in female participation in entrepreneurship education but their contribution to entrepreneurship activities was insignificant. The reason for this was found by Hisrich and O'Brien (1981) who stated that difficulties referring to access to credit, obtaining guarantees and overcoming a female negative image are possible factors that limits contributions of females in entrepreneurship. World Bank (2012) established women are more likely than men to work as unpaid family labourers or in the informal sector women farmers tend to farm small plots of land and less profitable crops than men. Kawira, Rambe and Dennis (2018) in a descriptive survey conducted to reveal the entrepreneurial intentions of female and male student, found that male students shows a stronger intentions towards entrepreneurship compare to the female counterpart. The study also showed that greater proportion of male students responded positively (attitudes) to entrepreneurship education than the female.

IMPACT OF GENDER PARITY IN MATHEMATICS AND ENTREPRENEURSHIP EDUCATION ON NATIONAL DEVELOPMENT

Economic Development.

Gender parity in Mathematics and entrepreneurship education will contributes to the increasing level of individuals who will want to own a business venture as well as science and technology. UNDP (2018) conducted a study on global and regional analyses of the economic impact of investing in gender inequality in education and labour force participation submitted that interventions in increasing female education attainment and labour force participation by 2030 will have contributed 3.6 percent or US $4.4 trillion, to global gross domestic product and will reduce the share of the global population living in extreme poverty by 0.5%. In other words, the active involvement of females in entrepreneurial world will not only lead to significant increase in the economy but also reduce the poverty level in the nation

Food Security and Improved Agricultural production.

Gender parity in mathematics and entrepreneurship education will enhance the realization of sustainable development Goals on terminating hunger, achieving food security, improving nutrition and agricultural production. Estimates by FAO (2011) in the United Nations pointed out that if women worldwide have equal access to opportunities, resources and production as men, they would increase their farm yields by 20-30 percent which could in turn raise total agricultural output by 2.5-4 percent and lift 100 million to 150 million people out of hunger. Amin and Akogwu (2017) stated that women access to science and technology education will lead to research into improved varieties which will eventually lead to improved productivity.

Increase in Science and Technology

Equal gender participation in mathematics will enhance the major anchor point of national development. Science and technology is one of the key priorities of measuring national development. When there is equal gender participation in mathematics and entrepreneurship, rise

in science and technology innovation is inevitable. Not only will new innovation in science and technology will arise but also the utilization of advanced tools for business enterprises will equally be on the high side. That is, application of science and technology to business enterprise will intensify.

CONCLUSION

The study concludes that there is wide variation in the gender participation in mathematics education in Nigeria. Studies showed that female participation in mathematics oriented courses is at a very low level compare to the males. Also, Owing to the present demand of the society, there is increase need for individuals who will take initiatives and responsibilities. Although, there is still disparities in female and male involvement in entrepreneurship but females takes the rule in involvement in entrepreneurship education.

Recommendation

- Institutions should design appropriate responses to gender gaps that exist in mathematics oriented courses so as to equally tap from feminine contribution to science and technology.
- Policies to reduce barriers to female participation and interest in mathematics should be developed from the secondary level and beyond. This may in turn enhance female enrolment to mathematics courses.
- In entrepreneurship education, policies to support firm growth, internationalization and innovation for both genders will be instrumental in facilitating business enterprises.
- Government should provide support for the development and implementation of awareness campaigns on entrepreneurship needs, training programmes, mentoring, coaching, and support networks, including professional advice on legal and fiscal matters.

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