

EMERGING ISSUES ON WOMEN ENROLMENT IN ODL: A CONCEPTUAL CRITIQUE

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Abstract

Studies in gender enrolment have been growing all over the world. The trend has shown that the female gender prefers soft core courses over hard core Science oriented courses. All these studies have been carried out using the conventional mode of learning as case studies. This paper takes a cursory look at the underrepresentation of women issues and stereotype and other factors that has resulted in low representation of women as raised in such studies and make a checklist as to ascertain if the same culture has been reproduced in the Open and Distance (ODL) mode bearing in mind the mode of delivery in ODL towards the attainment of its viable vision statement.

Introduction

Studies over the last decades have shown that globally, enrolments in higher education have increased. Sub-Saharan Africa has put into place some efforts geared towards the increment in the rate of enrolments; but the issue of gender disparity is still lingering as of old. Morley, Leach and Lugg, (2008) are of the opinion that though the African region has experienced the highest growth in terms of enrolments, participation in higher education remains among the lowest. However, the growing rate of enrolment has been accompanied by problems of gender disparities which have continually shown in the area of access and participation.

Female enrolment and participation as well as rate of dropout have really contributed to gender disparities in education at all levels. Nowhere is this more felt than in the field of science and technological

based courses. A lot of literature shows underrepresentation of females in the field of Science and Technology. (Schwedep, 1996; EFA, 2002; Ellis, 2003; McCarthy, 2003; Cavallaro, Hansen and Wenner, 2007; and Kishore, 2008; OECD, 2008; Schiebinger, 2010; Ceci and Williams, 2011; Tacsir, 2014). Of the same view are McGregor and Harding, (1996) as quoted in Aderemi, Hassan, Siyanbola and Taiwo (2013). They observed that in Japan, women made up less than 8% of scientists and engineers in the USA, women have the highest number in metallurgical and chemical sciences; Industrial engineers have 17%; Chemical engineers has 15% of women; for metallurgical / metal engineers there are 12% of women; Chemical engineers have 15% women. Other scientific and technological based courses such as Mining, Aerospace, Petroleum, Nuclear, Agriculture,

Civil, Electrical / Electronics, Mechanical, Marine, Naval and Architect have women representation of less than 11% combined. Moreover, CPS, (2001) reported that women represent 51.6% of medical scientists, 44.4% of biological life scientists but accounted for a small portion of geologists and geodesists (24%), physicists and astronomers (7.7%). Hyde, Lindberg, Linn, Ellis and Williams (2008) also reported male variance at all grades of science and technology courses in their study.

The under-representation of women in scientific fields as seen above could be because curricula for such programmes contain hard components which could be discouraging to women. Nguyen and Pudlowski, (2012) observed that some science courses have a greater balance between the hard and soft components, with the inclusion of non-technical and technical subjects, thereby attracting women, unlike core engineering and technological based courses which contain more of hard core subjects. OECD, (2008). Ceci and Williams, (2011), observed that women are drawn to fields that are more related to people than to numbers, such fields include the Nursing or other care giving professions. The NSF, Science & Engineering Indicators, (2014), also noted that women remain underrepresented in the science and engineering workforce, although to a lesser degree than in the past, the greatest disparities occur in engineering, computer science, and the physical sciences.

Open and Distance learning was set up in Nigeria to provide access to people of all ages and gender. Part of its mission is not only to provide accessibility but affordability and reach the marginalized irrespective of the geographical location in which they belong. This is in a bid to level the playing field in education between the "privileged"

and the "less privileged", as well as to bridge the gap between the genders. However, with the introduction of ODL to the education system in Sub-Saharan Africa, the problem of access and participation of female gender still persists. It is in view of this that this study set out to investigate the underlying issues that characterize the underrepresentation of female mostly in scientific and technological based courses in higher education in Africa using NOUN as a case study. Even with the robust vision and promises of ODL.

The efforts of Government in the Enrolment and Participation of female in Higher Education

Though the Nigerian constitution of 1999 does not enshrine the right to education; the article 18 however, provides the following: *1. Government shall direct its policy towards ensuring that there are equal and adequate educational opportunities at all levels; 2. Government shall promote science and technology; 3. Government shall strive to eradicate illiteracy; and to this end Government shall as and when practicable provide the following: i free, compulsory and universal primary education; ii. free secondary education; iii. free adult literacy programme* .(Nigerian Constitution of 1999)

The above section of the constitution shows the importance the Nigerian government accords education. Studies have shown that some factors contribute to inequality to equitable access to university education. Factors such as socio-cultural, Customs and Local traditions, - (Odeyemi & Oje, (2009), Agu, (2004), and Ezema, (1999); Religion - (Alumode, 2010). Other factors include socio - economic and poverty (Adeyemi & Akpotu, 2004). All these factors contribute in no measure to

illiteracy. It is, therefore, pertinent that they be reduced to the barest minimum.

On the local level, the Federal Government of Nigeria (FGN) in her bid to curb illiteracy and increase enrolment, created the Federal Teachers Basic Education (FTB) implemented by the Universal Basic Education (UBE) Commission. The FTB was introduced in 2006 with the aim of addressing the shortage of teachers in the sub-sector of quality of teachers across the country. With its inception comes the introduction of matching fund known as 'counterpart funding' to assist and improve funding, thereby reflecting previous allocation to the education sector by each state in the Federation. As at 2010, the FGN in her bid also to increase access to education established nine new universities in the six geopolitical zones of the country.

At the international level, efforts by the FGN to increase enrolment and participation of women include the International Development Partners (IDPs) headed by UNESCO. The IDPs comprise UNICEF, World Bank, African Development bank, USAID, DFID and JIGA. Thus far, these collaborations have helped in strengthening the states' Education Sector Planning, Management and Information Systems (EMIS), girls' education and teachers' development. These were done through matching grants, counterpart funding, technical aids and project specific assistance.

Other efforts to reduce female under-representation includes that of UNICEF of 2001 with the setting up of African Females Education Initiative (AFEI); this was done through public awareness campaign, rallies and seminars to

raise awareness for female education. UNICEF also collaborated with the FGN in July 2003 in launching the strategy for Acceleration of Female's Education Project (GEP). This is a joint initiative aimed at eliminating disparity in all levels of education not later than 2015. (NCO, 2007).

All these efforts, though well-articulated are still bedeviled with challenges and gaps- in governance, institutional capacity, financing, implementation, equity, quality, learning outcomes, monitoring and evaluation. It is bedeviled with low commitments in the enforcement of policies. Nevertheless, it has reduced gender gaps to two third of what it used to be. The 2010 Annual School Census (ASC) shows enrolment of 2,693,323 numbers of learners (i.e. 50.7% males and 49.3% females); 20,663,805 in primary school (i.e. 53.4% males and 46.6% females), this shows 87.3% gender parity. This growth in enrolments has, however, been accompanied by gender disparities in access and participation. Disparities that reflect lower participation and transition rates of female students from secondary to higher education are very high. Available data show that though expansion in secondary enrolment has led to reduction in gender disparities in most regions, the disparities remain larger in secondary than in primary education (UNESCO, 2009). In comparing enrolment into primary school with secondary school as well as tertiary institution, it is an established fact that gender parity still remains because fewer females enroll and complete primary school, in fact increase in enrolment for females does not culminate to higher enrolment at secondary and tertiary institutions as shown below:

Table I: Enrolment of Primary School Age according to Sex in Nigeria (2000-2010)

YEAR	FEMALE GROSS %	MALE GROSS %	GROSS % OF DISPARITY
2000	87.71	107.60	19.89
2001	86.95	104.55	17.60
2002	88.59	106.64	18.05
2004	92.14	109.21	17.07
2005	93.31	110.00	16.69
2006	95.25	110.15	14.90
2007	88.44	99.70	11.26
2008	80.12	89.76	9.64
2009	78.52	87.48	8.96
2010	79.28	87.10	7.82

Source: Mundi- www.mundi.com/facts/nigeria/school_enrolment (Adapted)

Table II: Enrolment into Secondary School in Nigeria according to Sex (2000-2010)

YEAR	FEMALE GROSS %	MALE GROSS %	GROSS % OF DISPARITY
2000	22.23	26.26	4.03
2001	24.27	28.94	4.67
2002	25.26	32.92	7.66
2004	30.66	38.08	7.42
2005	31.35	37.41	6.06
2006	30.65	37.24	6.59
2007	27.50	35.39	7.89
2008	32.00	38.05	6.05
2009	36.38	41.51	5.13
2010	41.21	46.78	5.57

Source: Mundi- www.mundi.com/facts/nigeria/school_enrolment

(Adapted)

Evidence has shown that enrolments in tertiary institutions have continued to rise in many Sub-Saharan African countries, however enrolments into sciences, Engineering, as well as manufacturing disciplines continues to show disparities. Studies such as Emunemu & Ayeni, (2003) referred to in Nwajiuba, (2011) and Oyebade (2008) have shown that there is a disparity in level of equitable access to university education in Nigeria. Furthermore, at the

heart of increase in enrolment, is a clear inadequate access of females to scientific oriented courses and this, to Okolo, (2001) shows clear inequality in higher institutions. In conducting a study on trend and pattern of gender enrolment in Nigeria, Adeyemi & Akpotu (2004) deduced a gap between male and female enrolment in all aspects of the tertiary institutions, and also a wide gap between science and non-science based courses in the tertiary institutions. Oke (2000) and Salman (2001) observed that

females opted for the least resistance disciplines, that is, those disciplines that are designated for female such as Liberal Arts, Nursing and Education. The female would rather shy away from science based courses

such as Engineering, Mathematics, Physics and Medicine. The table below shows the yawning gap between enrolments of both genders into tertiary institutions according to courses:

Table-III: University Enrolment in Nigeria according to Gender and Course of Study (2007-2008)

COURSES	NO. OF MALES	%	NO. OF FEMALES	%	TOTAL NO.
Arts	52416	65.8	27190	34.2	79606
Education	67822	66	35012	34	102834
Law	24492	64.4	13588	35.7	38080
Agriculture	32513	67.2	15872	32.8	48385
Engineering Technology	51479	79.1	13410	20.7	64889
Dentistry	1943	69.3	862	30.7	2805
Social science	78387	66.7	39128	33.3	117515
Environmental Science	26217	77.7	7519	22.3	33736
Pharmacy	6509	71.1	2634	28.9	9143
Science	75043	75.9	23320	24.1	98863
Medicine	29721	65	15988	35	45709
Veterinary Medicine	2983	79.7	761	20.3	3744

Source: National University Commission Data Bank, Abuja

As shown in the table above, there is a yawning gap between female and male enrolment in tertiary institutions in Nigeria. And nowhere is it felt much than in the science oriented courses. According to a data from Federal Ministry of Education (FME), it was recorded that in the 1999-2000 session, there were zero enrollments for females in technical courses such as Mechanical Engineering, Plumbing, Fabrication and Welding (FME, 2005). Similarly, in Nigeria, in the same year, female students constituted only 27 percent of those in science and technology programmes in the universities; and as such in other countries of the world, women comprised less than 30% in the science disciplines (UNESCO, 2009).

A survey of Higher education faces

an increasingly hostile and complex issues pertaining to enrolment in conventional education in Africa. This still remains a great challenge all over Africa, including Nigeria, where closer survey of university education shows serious constraints in the issues of enrolment. In Africa alone, it is said that 10.1 million people are out of school. In Nigeria, 16% of the population accounts for school children of which 26% are not able to complete the cycle of education while there are an astounding 40 million illiterates. (EFA: Profile, 2007) All these have put a peg in the current efforts of developing the educational sector to meet the goals of both the Millennium Development Goals (MDGs).

The demand for university education is growing in leaps and bounds. This is as a

result of high birth rate in some parts of Africa. Nigeria alone is witnessing exponential population growth. According to the EFA profile on Nigeria on Global status (2007), the high rate of population growth has put immense pressure on the country's resources and overstretched public services and the available infrastructure. An after-effect of population growth is the increased enrolment rate which has created a challenge in ensuring quality education and satisfactory learning outcomes as available educational resources are more thinly spread. The EFA profile still exposes the fact that despite the heavy investment on infrastructure over the recent years, the number of educational facilities available remains inadequate for the eligible number of education seekers.

With the above stated problem of enrolment, it has shown that the needed institutional responses and initiatives are those that go beyond access and address the gendered cultures of higher education institutions; this can be mitigated by providing practical support mechanisms that could enhance chances of retention and completion. It is in view of the foregoing that the Federal Government established the National Open University of Nigeria as another mode of intervention in bringing access to all. The question is whether the mode of delivery has been able to live up to expectations according to its mission statement.

Open and Distance Learning and its Visions: Leveling the Playing Field?

The distance learning mode of education is the binominal crossing point between education and technology. It is the current technological revolution that is not characterized by the centralization of knowledge and information but by their

application for the construction of knowledge. The mode of education is supposedly to help in the democratization of access to higher education and the overcoming of gender inequality. The Distance learning mode has taken advantage of technologies ranging from satellite television, video conferencing, cable, audiotapes, computer systems, fax, correspondence courses, home study, and independent study (Floyd, 2003). It is in view of its all-encompassing benefits that many nations decided to opt for it so as to increase the enrolment rate of her citizens.

The world all over has more than sixty Open Universities, each with various mission statements. The vision and mission statements of most of these institutions across the globe are embedded in providing seamless access and learner-centric education using available Information Technologies. For the National Open University of Nigeria (NOUN), the provision of highly accessible and enhanced quality education anchored on Social Justice, Equity Equality and National Cohesion, through comprehensive reach that transcends all barriers is the mission statement.

The promises of ODL include the increment in access and affordability for excluded groups by lowering barriers, bringing schools closer to the marginalized communities and developing "second chance" programmes. Van den and Schlusmans (1989) in Onwe, (2013) highlighted the characteristics of ODL as expected by the society as being: less expensive; enabling people to take part in cultural life; relieving the overpopulation of traditional universities; enabling massification of learning while working; making people gain more qualifications to enable for survival in today's employment world; and opening access to university

education for those without formal entrance qualification.

All the promises are supposed to be at the advantage of women but the reverse is the case. Many factors were postulated through researches (Nguyen & Pudlowski, 2012; Olaleye, 2010) carried out on conventional universities on under-representation of women in science courses. Some factors that were highlighted include – the nature of science; intellectual inferiority; socio-cultural beliefs; societal perception; status prospects; attitudinal misconception; women's reproductive responsibility as well as gender typing of school subjects. All and more of these were observed to militate against gender equality in science oriented courses in the university.

Emerging Issues: Still as before?

ODL with its promises still shows persistent under-representation of women in

science courses. Kupazynski and Mundy, in their (2015) study on the role of women in distance learning noted that lack of support, quality of courses, lack of technology, as well as lack of understanding of the educational knowledge involved, plus a perception that woman may not know as much about technology as men, may be responsible for the under representation of women in science oriented courses in ODL. In line with the issue of women enrolment in ODL, is another study carried out by Giebelen, Bennand and Ameida, (2015), where it was revealed that women represented 54.9% of the majority of enrolments but are underrepresented in science oriented programmes such as engineering and computer science with 20.3% and 18.8% of their enrolments. The table below shows enrolment into science based courses in NOUN according to gender.

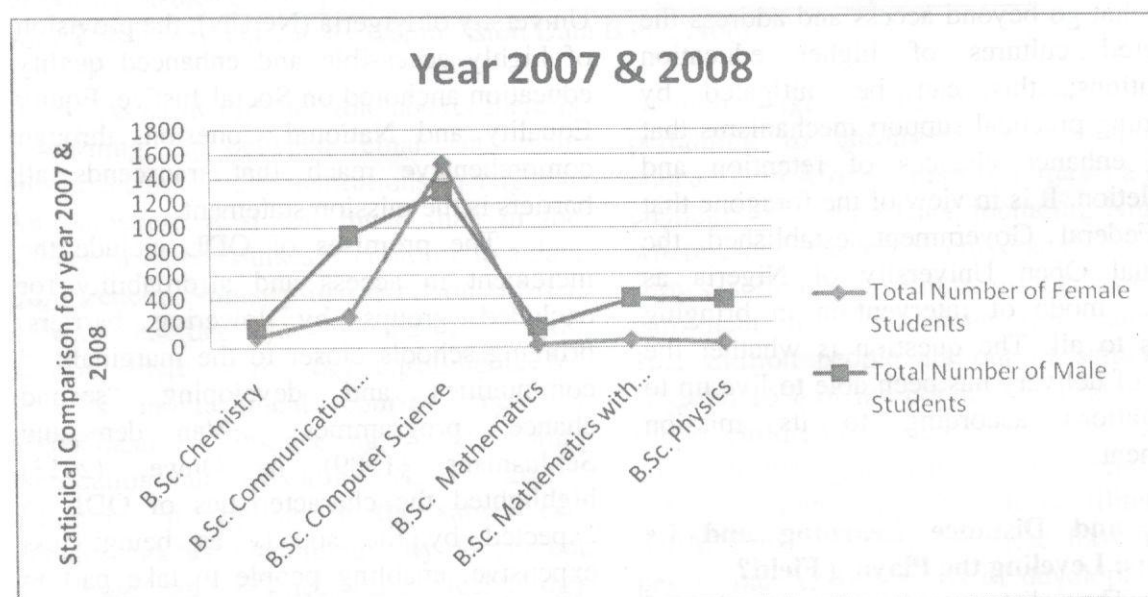


Figure 1: Gender comparison of Active students in School of Science (NOUN): 2007-2008

Source: Directorate of Exams and Assessment, NOUN, Nigeria.

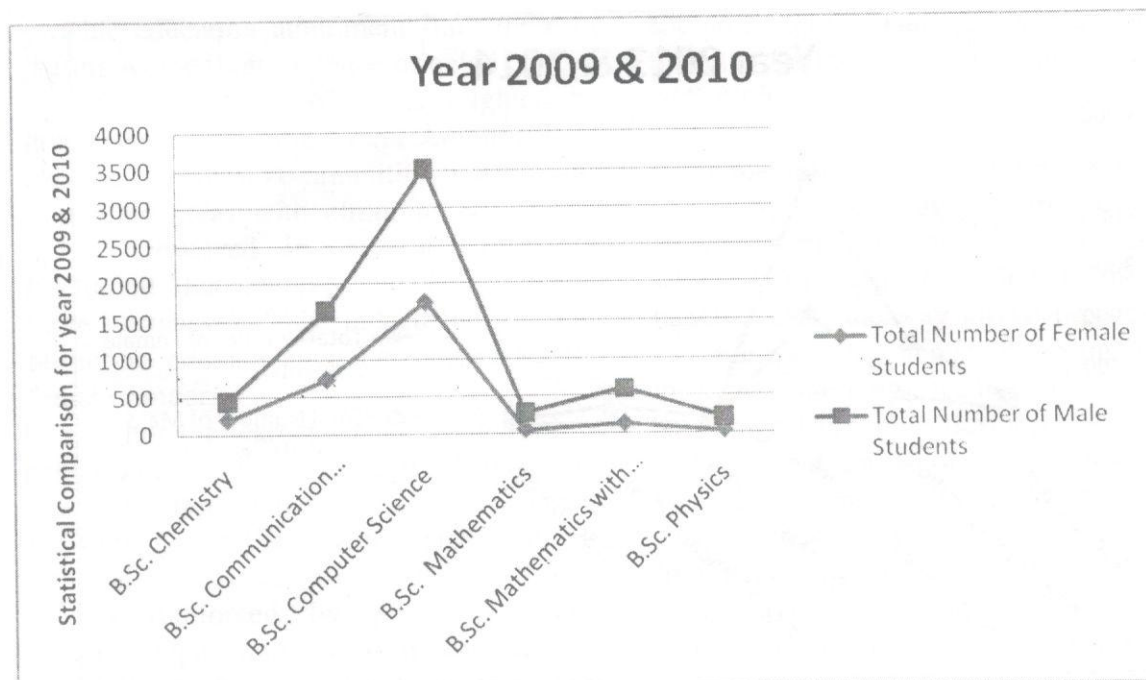


Figure 2: Gender comparison of Active students in School of Science (NOUN): 2009-2010

Source: Directorate of Exams and Assessment, NOUN, Nigeria

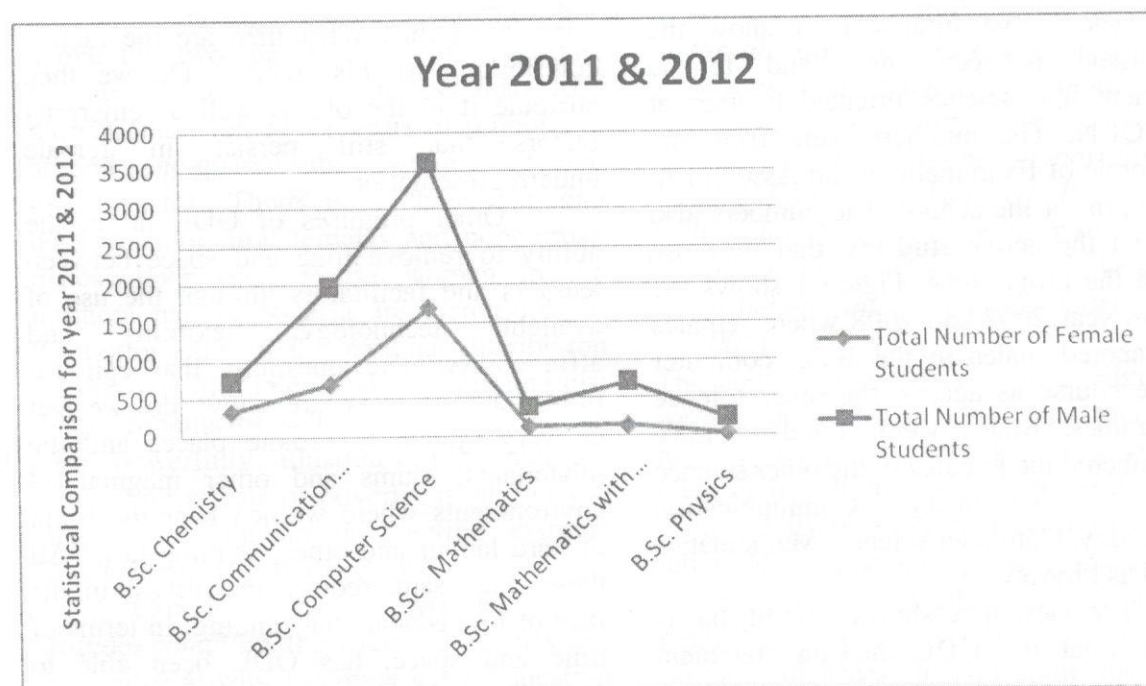


Figure 3: Gender comparison of Active students in School of Science (NOUN): 2011-2012

Source: Directorate of Exams and Assessment, NOUN, Nigeria

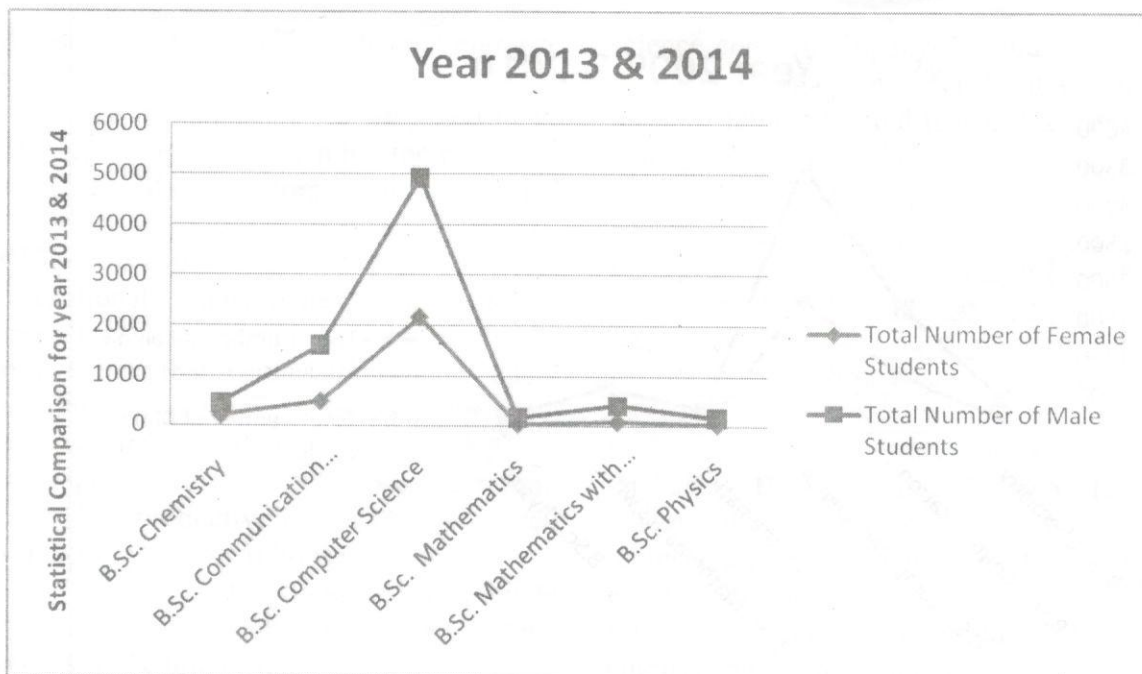


Figure 3: Gender comparison of Active students in School of Science (NOUN): 2013-2014

Source: Directorate of Exams and Assessment, NOUN, Nigeria

The above figures 1- 4 show the comparison between male and female enrolment into science oriented courses at the NOUN. The numbers were from the Directorate of Examinations and Assessment (DEA) arm of the school. The numbers also represent the active students, that is, those still on the programme. Figure 1 shows the trend in year 2007 and 2008 where females outnumbered males in the B.Sc. computer science course as against the other science programmes. Males were found to have outnumbered the females in the other science courses: Chemistry, Communication Technology, Computer science, Mathematics as well as Physics.

The view here shows a trend that is against what the ODL mission statement stands for- as being favorable to women, as giving equal access to the female gender. However, the enrolment trend shows the

opposite of this. What then are the factors contributing to this trend? Do we then attribute it to the old as well as emerging factors that still persist in female underrepresentation?

Other promises of ODL lie in the ability to remove time and space between learners and facilitators through the use of available technology, flexibility and affordability. The questions that call for immediate answers are; how do we get delivery system to remote places and the inhabitants; slums and other marginalised environments where women bear the brunt of hard labour and other daunting task? All these, they said, require incentives; in the face of low educational funding. In terms of time and space, has ODL been able to penetrate the insurgency bedeviled areas in Nigeria and some other parts of the world filled up with the displaced? How do we

provide education attainment (talk more of getting women) into science oriented courses for the lives that have been blighted by hunger, poverty and low expectations? What about the pastoral communities where living in remote areas with children and women heavily involved in tending cattle and livelihood that involves movement across large distances? This indeed is a major barrier to educational opportunities for the female gender.

For the learners involved in ODL in urban places, the advantage of time and space are often challenged by failure to offer relevant curricula with provision of appropriate delivery method and this is always reinforced by poor educational policies. Open and Distance learning is a delivery mode of education that uses technology. With the rate of penetration of internet bandwidth in urban areas, what will be the fate of those women in rural areas? In Nigeria, the average poor rural female is just above the two-year threshold for extreme education deprivation, with less than 40% the national average for years of school and around one-quarter the average for rich urban males. There is a three-year gap between poor rural females and poor urban males. Poor rural Hausa women in the northern part of Nigeria are identifiably at the bottom end of the national distribution for opportunities in education, averaging just a few months of schooling. The Nigerian case powerfully illustrates the mutually reinforcing effects of poverty, rural location and cultural factors in creating extreme disadvantage. (UNICEF, 2009)

Experience has shown that social attitudes condition, the effects of poverty and the degree at which parents value education influence the prospects of participation in school. Invariably, parents sometimes determine the type of course the female child

should enroll for. This type of interaction is a potent source of marginalization in education.

Conclusion and Recommendation

New learning environments are informing present and future trends from which both facilitators and learners can benefit. Also, the way global networks and communities of interest are being created through emerging technologies tend to encourage learners to develop new, creative and different forms of communication and knowledge creation outside the formal system, (Kerr, 2007). It is of utmost importance for women gender to be carried along in the mainstream of such growth.

Global support for development, while on the rise, remains well below what is needed to make achieving the MDGs a reality, particularly in countries that are unable to work towards poverty reduction. International bilateral support for education amounts to about \$4 billion a year, with much of this money going towards secondary and university schooling. International support for basic education is less than \$1 billion a year – less than \$2 a year for every school-aged child in the developing world. We need to do better. And we can do better (DFID, 2005)

The above statement is so true. Nigeria, as well as most African nations has found it so hard to work towards alleviating poverty. ODL, with all its juicy promises have not followed its mission of accessibility to the letter. New epistemology that has and still emerging through ODL seems not to have contributed much to the women folk's problem of access to education, mostly the enrolment in science based disciplines. As ODL mode continues to play a major role in the massification of learning with the aid of

emerging technologies, control should shift from the facilitator to a learner centric system. It is, therefore, pertinent for providers of ODL to closely follow and influence the development of serious research on how the institutions can evolve with ways of using the few technologies to engage the women folk irrespective of where, when and purpose of their existence. One of the roles of education is that of engagement; the women folk should be able to have a way of engaging in any course of their choice mostly, science courses so as to be able to contribute their own quota to the development of the nation.

It is, therefore, recommended that more research has to be embarked on so as to learn about women's personal experiences in ODL. This will further assist in finding ways to attract greater number of women to participate in science oriented courses through ODL in the future. As the above graph shows the enrolment of women in such programmes in NOUN, this invariably shows that it is a male dominated field, it is, therefore, important that prompt action be taken in order to remedy the situation.

References

- Aderemi, H. O; Hassan, O. M.; Siyanbola, W. O & Taiwo, K. (2013). Trends in Enrolment, Graduation and staffing of Science and technology education in Nigeria tertiary institutions: A gender participation perspective. *Educational research and review journal* 8(21): 2011-2020
- Adeyemi K.&, Akpotu N. (2004). Gender Analysis of Students' Enrolment in Nigerian Universities, *Humanity and Social Sciences and Law*, 48(3) 365-370.
- Agu, S.(2004). Gender equality, education and women empowerment: *The Nigerian challenge. Multidisciplinary journal of Research Development*, 8(2); 1-6.
- Alumode, B.E. (2010). Improving access to and equity in university education in Nigeria. *Nigerian Academy of Education Year Book*, 6; 230-249
- Cavallaro, M., Hansen, S., & Wenner, M. (2007, Fall). Bridging the gender gap. *Barnard Magazine* Ceci, S. J., and W. M. Williams. (2011). "Understanding Current Causes of Women's Underrepresentation in Science." *PNAS* 2011, 108(8): 3157-62.
- CPS (2001) Current Population Survey. U.S Bureau of Labour Statistics, Division of Labour Statistic NE Washington, DC
- Davis-Kean, P., Jacobs, J., Bleeker, M., Eccles, J., & Melanchuk, O. (2007, June 25). *How dads influence their daughters' interest in Mathematics* : University of Michigan Science daily. Retrieved November 27, 2014, from <http://www.sciencedaily.com/releases/2007/06/070624143002.htm>
- DFID, 2005. *Girl's Education: Towards a better future for all*. Available at <https://www.girlseducation.pdf> Accessed on 3rd February 2015.
- Ezema, P. A. (1999). Equalizing opportunities in Nigeria for the acquisition of English for national

- development. In J. A. Aghenta & Ismail (eds) *Equalizing opportunities in Nigeria*. Zaria: Tamaza Publishing Company Ltd
- Federal Ministry of Education (2007) Statistics of Education in Nigeria: 1999-2005. Abuja, Statistics and NEMIS Branch, Federal Ministry of Education Nigeria.
- Floyd, D. L. (2003). Distance learning in community colleges? Leadership challenges for change and development. *Community College Journal of Research and Practice*, 27(4), 337-347.
- Giebelen, E., Bennand, E. G & Almeida, J. F. (2013). *Higher education in distance learning and female participation: UFPB virtual case*. Accessed 27 October, 2015 at http://www.abed.org.br/revistacientifica/English/2013/7B_Artigo_Rbaad_Ingles_2ed.pdf
- Hyde, J. S., Lindberg, S. M., Linn, M. C., Ellis, A. B., & Williams, C. C. (2008). Gender similarities characterize math performance. *Science*, 321, 494 – 495.
- Kerr, B. (2007). *A challenge of Connectivism*. Transcript of Keynote Speech, Online Connectivism Conference. University of Manitoba. http://ltc.unimanchester.ac.uk/wiki/index.php?title=kerr_presentation
- Kishore L. (2008). Girls, women in Science & Technology education. Merinews online publication.
- Kupczynski L. & Mundy, M. (2015). *Role of Women in Distance Learning*. Accessed 30 November, 2015 at http://www.westga.edu/~distance/ojdla/summer182/kupczynski_mundy182.html
- McCarthy G. (2003). Where are the women in Australian Science. Australian Science and Technology Heritage Centre. Accessed 5th March 2015 at <http://www.austehc.unimelb.edu.au/wisaabout.html>.
- Morley, L., Leach, F. & Lugg, R. (2008) 'Democratizing Higher Education in Ghana and Tanzania: Opportunity Structures and Social Inequalities', *International Journal of Educational Development* 29(1): 56-64
- Nguyen D. Q & Pudlowski Z. J. (2012). Enrolment of women in Engineering and Technology degree Programmes in Australia in 3rd WITE Annual Conference on Engineering & Technology education. Pattaya, Thailand, 6-10 February 2012
- Nigeria Country Office (2007) Information Sheet: Girls' Education. Accessed 2nd March 2015 at [http://www.unicef.org/wcaro/WCARO-Nigeria-FactSheets-Girls_Education_OECD_2008_\"Encouraging_Student_Interest_in_Science_and_Technology_Studies.\"_Paris:_OECD_Publishing](http://www.unicef.org/wcaro/WCARO-Nigeria-FactSheets-Girls_Education_OECD_2008_\)
- Odeyemi. O., & Oje. A. (2006). Women's Situational Constraints, Poverty and the Street Children Phenomenon: Millennium development Goal Factor. *Adult Education in Nige-*

Onwe, O. (2013). Policies and Practice of ODL Models in the Sub-Saharan African Countries: A Literature survey. *American International Journal of Contemporary Research*, Volume 3(8), 123-124.

Olaleye, F. O. (2010). Women in science and Technology: A case study of three Universities in the South Western States of Nigeria. In *Reforming Higher education in Africa*.

Schwedes H. (1996) "Science by whom" in World Science Report 1996. Paris: UNESCO.

Schiebinger, L. 2010. "Gender, Science and Technology" Background paper for the Expert Group meeting on Gender, Science and Technology, United Nations Division for the Advancement of Women (DAW, part of UN Women) and United

Nations Educational, Scientific and Cultural Organization (UNESCO), Paris:, France, 28 September -1 October 2010.

Tacsir, E. 2014. "I'm Sorry, Miss: You've Missed! Information on Wages and Career Choice". Forthcoming as UNU-MERIT Working Paper. Paper presented at 5th MEIDE Conference, San Jose, Costa Rica, 24-26 June 2010

UNESCO (2009). EFA Monitoring Report: Overcoming Inequality: Why Governance Matters, UNESCO Publishing/Oxford University Press

UNICEF (2009). *Girls Education in Nigeria*. Accessed 20th July, 2015 at <http://bellevillecollege.edu/liberalarts/sir/images/Nigeriafinal.pdf>