

Comparative Analysis of Gender Disparity Enrolment in Surveying Training in Tertiary Institutions

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Keywords: Millennium Development Goals, Female Surveyors, Gender Mainstreaming Policy, Gender Parity.

SUMMARY

Globally, the growing importance of gender equality has been recognized and accepted thus leading to formation of goals and policies to get it accomplished. In achieving this gender equality, education has been found to be an effective tool of realization. This importance was recognized and realized in the Millennium Development Goal (MDG) agenda and made the MDG to place emphasis on how to bridge gender disparity within the period of 15 years (2000 – 2015). This paper therefore, focused on the study of pattern of gender enrolment in a Nigerian tertiary institution course (surveying) between 2000 and 2015. It aimed at examining the achievement of the MDG so far, as compared to gender enrolment in the tertiary institution pre-MDG implementation. Records of students' enrolment in Kaduna Polytechnic for 30 years (1985 – 2015) were used to assess the extent of achievement of the MDG target in surveying training. Analysis of results revealed that, gender parity index has not been reached in any of the surveying courses despite the critical progress in bridging gender gaps due to lower enrolment of female students as against males in all courses. This paper concluded that the MDG targets are yet to be achieved and cannot be achieved based on 2015 benchmark. Recommendations such as re-visitation of admission policy on lifting embargo on locality and merit, re-vitiation of Pre-National Diploma in the technical institution, free Elementary Surveying training for female students immediately after secondary education (before the release of WAEC, NECO, NABTEB, etc) among others will go a long way in sustaining and bridging gender equality in surveying training.

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1.0 Introduction

Globally, the growing importance of gender equality has been recognized, accepted and become a matter of concern. The growing disparity has become so endemic that the society is finding it difficult to proffer solutions (Opatoyinbo, et al., 2015). Major reason is rooted in tradition and cultural practices which play fundamental role in ascribing status to men and women. UNESCO (1995), in addition to this statement said that the gap between the male and female literacy rates is not just about men and women and the educational opportunities provided for them, but it is also a statement about the society's development, and its capacity and willingness to provide such opportunities

Today, inequalities still persist in certain regions of the world and more prominent in some sectors, of which education is one. This imbalance is noticeable in gender enrolment at all levels and types of education, as well as across various disciplines and programmes, especially at the tertiary level.

In Nigeria, women constitute more than 50% of the population, and are supposed to be well represented in science and technology. Vocational and technical education have been considered to be an easy access to what gives an individual the skills to live, learn and work as a productive citizens in a global society. Unfortunately the enrolment of female in vocational and technical courses in Nigerian tertiary institutions is not encouraging. Studies showed that gender disparities are more prevalent at the tertiary level of education particularly in Nigeria and other developing countries. Although, it is true that the Nigeria government is fair in location of tertiary institutions spatially to all parts of the country so as to increase access, however, the National Policy on Education does not make any special provision for the female gender.

The most important issue, however, appeared to be that of how gender equity could be achieved to meet up with the target set time 2015 of the Millennium Development Goals (MDGs). The first indices considered by Ejumudo (2013) for this achievement is through school enrolment at the primary, secondary and tertiary levels. Career in technical education has been traditionally characterized as gender biased in favour of males, with the ratio of girl to boys as; 3:4, 2:4 and 1:5, for primary schools, secondary schools and tertiary level enrolment respectively (UNICEF, 1990). Unfortunately, gender bias is still been evident in technical education in areas such as program enrolment. This is more noticeable in surveying as a career.

Gone are those days when surveying use to be a tasking profession. With the advent of new technologies such as the Internet, global-positioning systems, laptops, satellites and cell phones, the profession and practice of surveying changed in the last 15 to 20 years. Surveyors can collect data and supervise their field teams even from their office and often spend up to 70 per cent of their time there. This makes the practice of surveying to be less cumbersome. However, available evidence showed that females are still under-represented in the fields of surveying (SURCON, 2015). The cause of this under-representation can be traced to poor enrolment of female students in surveying courses in the tertiary institutions. Surveying, which has been believed to be the bedrock of all meaningful development, supposed to have greater percentage of women for sustainability of many nations, Nigeria inclusive considering her women population. Unfortunately the enrolment of female in surveying courses in Nigerian tertiary institutions is discouraging.

The year 2015, the target date to achieve the Millennium Development Goals, has elapsed. It is now time to assess to what extent the gender component incorporated in MDGs has been achieved in surveying courses in Nigeria tertiary institutions, particularly the MGD 3 (gender equality and women empowerment). Although efforts have been made by the Nigerian government, private sectors and Non-Governmental Organizations (NGOs) such as Women in Technical Education and Employment (WITED), Women In Surveying (WIS) and others on gender gap bridging to encourage more female participation in surveying courses, the imbalance still remains. Therefore, there is need to make more effort because the inequality still exists, especially in Nigeria.

This paper therefore focused on the study of pattern of gender enrolment in a Nigerian Polytechnic between 1985 and 2015. It examined the achievement of the MDG so far, in Nigeria tertiary institution. Most importantly, the study focuses on the extent to which this MDG agenda on bridging gender disparity has been achieved in the training of females in Surveying as against the earlier 15 years before the proclamation of MDG goals.

Records of Surveying students enrolment before the implementation of the MDG from 1985 - 2000 as against 2000-2015 after the MDG implementation in Kaduna Polytechnic was used to assess the extent of achievement of the MDG target. Analysis of results revealed that, there still exist reasonable gaps between female and male enrolment in the surveying education, with lower female enrolment at all level of the study.

1.2 Need for Emancipation of Female Surveyors

The emancipation of a female Surveyor is paramount to the emergent and sustainability of any meaningful development in the society. In developing countries, especially in Nigeria, available evidence suggested that females are under-represented in the fields of Surveying. Information from Surveyors Council of Nigeria (SURCON) showed that total number of Registered Surveyors in Nigeria as of 2014 was 2730 (2534 (92.82%) males and 196 (7.179%) females) (SURCON, 2015). The Gender Parity Index (GPI) was 0.0773480663. This statistics is far below the Gender Parity Index (GPI) level that is supposed to be between 0.97 and 1.03.

The importance of land ownership cannot be overemphasized in any society so also the knowledge of the land ownership. In most countries, land in dispute has always been the order of the day

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associated with loss of lives. Had it been that just one person (irrespective of the sex) in the family or community has the knowledge of surveying; a lot of lives would have been preserved. More importantly, it will be discovered that land ownership doesn't worth the live or blood of anybody.

Other issues that necessitated the need for emancipation of female Surveyors include:

- i. Single Parenting where in many cases females are the breadwinners in the family. Farmer (1985) estimated that one-half of the female in the labour market were single heads of households due to divorce, separation, or widowhood. Various insurgencies such as war, bombing, for example in Nigeria made some women to become breadwinners unplanned for. Other factors include unforeseen circumstances, culture, the attitude of some husband (irresponsibility), e.t.c
- ii. Solutions to Brain Drain in the Tertiary Education System with lack of Lecturers and Instructors since females are born teachers.
- iii. Diversion of economic dependency to land and land resources – Land Reforms. Greater number of Surveyors especially female Surveyors are required for this assignment.
- iv. Seeking for alternative means of revenue generation by the government, the practice of surveying can make the difference especially in exploration and exploitation of earth resources. Female surveyors can be companion.
- v. Female expertise in skill workmanship and craftsmanship. The nature of women facilitates quick understanding of trade and habits.
- vi. Female role as custodian of wealth and wealth creation. This can give female exceptional role of conserving and managing data.
- vii. Female surveyors are needed to fill gap in Local Government Areas(Authorities), State and Federal Ministries and Government Parastatals, not to mention private practitioners and companies

. 1.3 Brief History of Kaduna Polytechnic

The idea to start a Technical Institution in Northern Nigeria started as far back as 1951. This resulted in the establishment of Kaduna Technical Institute in 1956. The establishment of Kaduna Technical Institute in Kaduna was as a result of the acceptance by the British Government, on the recommendation of the Higher Education Commission, which suggested the upgrading of Yaba Higher College to Technical Institute and proposed Technical Institutes in Kaduna and Enugu.

The Northern Nigeria Executive Council by its meeting of 17th August, 1962, Conclusion No. 1, redesignated the Technical Institute, Kaduna as the Polytechnic, Kaduna. It became Kaduna Polytechnic in 1968 by the Federal Government Decree No. 20 of 1968 and revised in 1979 by Decree NO. 79. On 27th August, 1991, the institution was taken over by the Federal Government under Decree No. 40 of the same year.

The vision of Kaduna Polytechnic is to be recognized as a unique polytechnic of international repute, setting high standard in education, training and innovation. The mission is to be an innovative institution of repute, empowering people to compete successfully in the global arena of work by providing relevant research centre, technology driven and skill-oriented education with entrepreneurial outlook.

The institution was established with the objective of providing diverse instruction, training and research in technology, the sciences, commerce, the humanities and programmes of in-service instruction for members of the public service in Nigeria. In 1968, it amalgamated two training centres, namely; the College of Science and Technology and Staff Development Centre, with Survey Unit joining later. These formed the nucleus of its four-college structure then.

Today, the institution has five colleges on four separate campuses, namely College of Arts and Social Sciences (CASS) in Television Village, Kaduna (the bye pass campus), College of Business and Management Studies (CBMS) on the Golf Course Road, Kaduna, College of Environmental Studies (CES) on Aliyu Makama Road, Barnawa, Kaduna, College of Engineering (COE) and College of Sciences and Technology (CST) on Tundun Wada Campus (Main Campus). (Kaduna Polytechnic Handbook) Surveying and Geoinformatics Department is in College of Environmental Studies (CES).

1.4 Surveying and Geoinformatics Department in Kaduna Polytechnic

The Surveying and Geoinformatics Department was first established in 1970 as the survey unit with only certificate courses in surveying and cartography. The survey unit later became Topographic Science Department. In 1972, the first set of Diploma students in surveying was admitted. In 1974, diploma courses were introduced in photogrammetry and cartography. In 1976, Higher Diploma course in Land surveying was introduced. In 1987, with the approval from the then Licensing Board of Surveyors in Nigeria, the first Post-Higher National Diploma (Post-HND) programme in Nigeria was established with the commencement of the professional Diploma course in surveying (PDS). This has been its structure up to 2005, with one Head of Department and three Sectional Heads. All the programmes are two-year duration courses and accredited by the National Board for Technical Education (NBTE) and the Surveyors Registration Council in Nigeria.

The advent of information technology and methodologies available to the surveyors and surveying profession changed the nomenclature of land surveying to surveying and geoinformatics. This new direction led to various workshops and seminars paper presentation. One of such was the curricula review workshop held in Federal School of Surveying, Oyo, Nigeria, in March 1998, sponsored by National Board for Technical Education. Among the recommendation that came out were change of curricula and nomenclature. In response to this demand, the National Board for Technical Education, in 2005, called for the change of all surveying programmes in Polytechnics to Surveying and Geoinformatics (Ayeni, 2006). This changed Land Survey programme in Kaduna Polytechnic to Surveying and Geoinformatics.

In 2013, at a stake holder meeting held in the Topographic Science Department, a recommendation was made to split the department of Topographic Science to three departments. This include: Department of Surveying and Geoinformatics, Department of Photogrammetry and Remote Sensing and Department of Cartography and Geographic Information System (GIS).

In 2014, Topographic Science Department was splitted to two departments namely; Department of Surveying and Geoinformatics and Department of Cartography, Geographic Information System (GIS), Photogrammetric and Remote Sensing. This made Surveying and Geoinformatics section to become a full fledged department.

2.0 Indices for Assessing the Level of Attainment of the Millennium Development Declaration in Respect of Gender Equality

The international community pledged to eliminate gender disparities at all levels of education by 2015 as part of the Millennium Development Goals (MDGs) (UIS, 2010). Millennium Development Declaration in respect of Gender Equality (goal 3), aimed at promoting gender equality and empowerment of women through the elimination of gender disparity in primary and secondary education, preferably by 2005, and in all levels of education not later than 2015. One of the universal tools used to assess the extent of attainment of this goal was the Gender Parity Index (GPI). The Gender Parity Index (GPI) is a socioeconomic index usually designed to measure the relative access to education of males and females. The Gender Parity Index (GPI) reflects females' level of access to education compared to that of males. This is calculated for each school phase. The achievement of the gender goal is defined as a GPI value ranging from 0.97 to 1.03 (UIS, 2010). Gender parity in education is reached when the females' gross school enrolment ratio divided by the corresponding ratio for males is between 0.97 and 1.03. A GPI equal to 1 indicates parity between females and males. In general, a value less than 1 indicates disparity in favour of males and a value greater than 1 indicates disparity in favour of females.

Gender Parity Index (GPI) in surveying training in Kaduna Polytechnic is used to test the accomplishment and attainment of this goal 3. This study therefore collected and analyse baseline data from surveying student enrolment as a basis for assessing progress in the implementation of the MDGs from student enrolment list 1985 to 2015

3.0 Material and Method

This study uses explanatory and expository approach to examine the achievement of the MDG so far, as compared to gender enrolment in the tertiary institution pre-MDG implementation. The study uses secondary data and relevant publications

3.1 The State of Gender Enrolment in Surveying and Geoinformatics Education in Kaduna Polytechnic

The data used for the analysis of this paper showed the state of affairs regarding gender enrolment in Kaduna Polytechnic with more emphasis on surveying courses. The data used were:

- a) Secondary data of student enrolment (1990/1991 – 2014/2015) academic session to various discipline in each Unit of Kaduna Polytechnic
- b) Secondary data of student enrolment (1990/1991 – 2014/2015) academic session to various technical related discipline in CES Unit of Kaduna Polytechnic
- c) Secondary data from student enrolment (1985/1986 – 2014/2015) academic session to various surveying courses in Kaduna Polytechnic

Table 3.1 Student Enrolment, Surveying and Geoinformatics Department, Kaduna Polytechnic 1984 /1985 – 2014/2015 Academic

Session

S/N	Academic Year	PDS II		PDS I		HND II		HND I		NDII		NDI		TOTAL	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	1985/1986	-	-	-	-	20	-	9	-	27	1	46	-	102	-
2	1986/1987	-	-	-	-	9	-	24	-	46	-	37	-	116	-
3	1987/1988	-	-	14	-	23	-	36	-	37	-	35	2	145	2
4	1988/1989	12	-	23	-	35	-	37	-	31	2	24	1	162	3
5	1989/1990	13	-	14	-	39	-	39	2	24	1	16	1	145	4
6	1990/1991	14	-	12	-	42	3	39	3	16	1	12	-	135	7
7	1991/1992	12	-	18	-	32	3	59	4	11	-	20	1	152	8
8	1992/1993	18	-	15	-	57	3	45	-	18	1	20	1	173	5
9	1993/1994	16	-	12	-	44	-	44	-	18	1	26	3	160	4
10	1994/1995	16	-	20	-	44	-	21	3	23	3	14	1	138	7
11	1995/1996	18	-	18	1	16	1	20	2	14	2	13	-	99	6
12	1996/1997	16	1	15	1	16	2	15	3	10	-	25	4	97	11
13	1997/1998	14	1	7	-	14	3	13	-	21	4	16	4	85	12
14	1998/1999	9	-	8	-	13	1	13	2	16	4	11	3	70	10
15	1999/2000	8	-	11	-	13	2	25	1	11	3	22	3	90	9
16	2000/2001	9	-	11	1	23	1	22	2	22	3	17	5	104	12
17	2001/2002	9	1	13	-	21	2	28	3	17	5	16	3	104	14
18	2002/2003	13	-	15	-	27	3	27	1	16	3	33	4	131	11
19	2003/2004	13	-	9	-	27	4	18	8	25	5	42	7	134	24
20	2004/2005	9	-	10	-	22	7	22	5	40	6	22	2	125	20
21	2005/2006	9	-	8	-	22	5	16	3	22	3	7	-	84	11
22	2006/2007	5	-	15	-	15	3	30	6	7	-	19	5	91	14
23	2007/2008	14	-	12	2	27	6	26	7	19	5	23	2	121	22
24	2008/2009	12	2	31	-	21	7	21	2	20	2	30	3	135	16
25	2009/2010	31	-	19	1	20	2	13	3	25	4	37	6	145	16
26	2010/2011			NO		ACADEMIC		SESSION							
27	2011/2012	19	1	24	1	12	3	30	4	32	5	35	13	152	27
28	2012/2013	23	1	19	3	27	6	26	6	36	13	45	10	176	39
29	2013/2014			NO		ACADEMIC		SESSION							
30	2014/2015	22	1	26	2	20	3	24	4	43	12	59	7	194	29
	TOTAL	354	8	399	12	706	70	742	74	647	89	724	91	3662	344

4.0 Results and Discussion

4.1 Student Enrolment in Kaduna Polytechnic 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions

The data available for student enrolment in the five Colleges in Kaduna Polytechnic ten (10) years before the implementation of the MDG (1990/1991-1999/2000 academic sessions) and fifteen (15) years after the implementation of the MDG (2000/2001-2014/2015 academic sessions) were shown in Table 4.1

Table 4.1: Comparative Student Enrolment in Kaduna Polytechnic 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions

S / N	COLLEGES IN KADUNA POLYTECHNIC, KADUNA	1990/1991 to 1999/2000 ACADEMIC SESSIONS			%	2000/2001 to 2014/2015 ACADEMIC SESSIONS			%	FEMALE DIFF	% DIFF
		M	F	TOTAL		M	F	TOTAL			
1	Arts and Social Sciences (CASS)	17385	11677	29062	19.925	23297	15700	38997	19.501	4023	18.367
2	Business and Management Studies (CBMS)	38831	26828	65659	47.778	47099	33298	80397	41.360	6470	29.539
3	Engineering (COE)	18337	1524	19861	2.600	37718	4714	42432	5.855	3190	14.564
4	Environmental Studies (CES)	14061	2654	16719	4.529	23363	6204	29567	7.686	3534	16.135
5	Sciences and Technology (CST)	20875	15922	36797	27.168	29419	20608	50027	25.597	4686	21.394
	TOTAL	109489	58605	168094	100.000	160898	80524	241420	100.000	21903	99.999

The results of the comparative analysis include:

a) 1990/1991-1999/2000 Academic Sessions

Total No of Students Enrolment	= 168094
Total No of Male Students Enrolment	= 109489(65.135%)
Total No of Female Students Enrolment	= 58605 (34.864%)
Total No of CES Unit Female Students Enrolment	= 2654 (4.529%)

b) 2000/2001-2014/2015 Academic Sessions

Total No of Students Enrolment	= 241420
Total No of Male Students Enrolment	= 160898 (66.646%)
Total No of Female Students Enrolment	= 80524 (33.354%)
Total No of CES Unit Female Students Enrolment	= 6188(7.686%)

c) Comparative Female Student Enrolment in Kaduna Polytechnic 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions

% Difference between 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions in Kaduna Polytechnic	= -1.510%
% Difference between 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions CES Unit, Kaduna Polytechnic	=3.157%

College of Environmental Studies (CES) where surveying courses are resident had an upward trend in gender gap bridging. The comparative analysis shows a gender gap bridging of an increment of 3.157% in CES female student enrolment in Kaduna Polytechnic between 1990/1991-1999/2000 and 2000/2001-2014/2015 academic sessions. However, female student enrolment generally was less by 1.510% in Kaduna Polytechnic student enrolment.

4.2 CES Unit Student Enrolment in Kaduna Polytechnic 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions

Table 4.2 showed the data available for student enrolment in each department resident in CES Unit, Kaduna Polytechnic for the first ten (10) academic sessions before the implementation of the MDG(1990/1991-1999/2000 academic sessions) and fifteen (15) years after the implementation of the MDG (2000/2001-2014/2015 academic sessions).

Table 4.2: Comparative Student Enrolment in CES Unit Kaduna Polytechnic 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions

S/N	COLLEGES IN KADUNA POLYTECHNIC, KADUNA	1990/1991 to 1999/2000 ACADEMIC SESSIONS				2000/2001 to 2014/2015 ACADEMIC SESSIONS				% INCREMENT IN FEMALE ENROLMENT	% REMARK
		M	%	F	%	M	%	F	%		
1	Architecture	2321	16.507	362	13.589	4393	18.803	697	11.235	1.328	+ve
2	Building/Quantity Surveying	3501	24.899	397	14.902	5235	22.407	1001	16.135	5.270	+ve
3	Environmental Science	1122	7.980	352	13.213	2253	9.643	870	14.023	4.390	+ve
4	Estate Management	2643	18.797	733	27.515	3716	15.905	2054	33.108	13.048	+ve
5	Photogrammetry/Cartography	1887	13.420	391	14.677	1199	5.132	413	6.657	-4.044	-ve
6	Surveying & Geoinformatics	1199	8.527	89	3.341	3647	15.610	255	4.110	1.948	+ve
7	Urban and Regional Planning	1388	9.871	340	12.763	2920	12.498	914	14.732	5.427	+ve
	TOTAL	14061	100.000	2664	100.000	23363	99.998	6204	100.000		

The results of the comparative analysis include:

a) 1990/1991-1999/2000 Academic Sessions

Total No of CES Unit Students Enrolment	= 16725
Total No of CES Unit Male Students Enrolment	=14061(84.072%)
Total No of CES Unit Female Students Enrolment	= 2664 (15.928%)
Total No of Female Students Enrolment in Surveying Courses	= 89 (3.341%)

b) 2000/2001-2014/2015 Academic Sessions

Total No of CES Unit Students Enrolment	= 29567
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Total No of CES Unit Male Students Enrolment = 23363 (79.017%)
 Total No of CES Unit Female Students Enrolment = 6204(20.983%)
 Total No of Female Students Enrolment in Surveying Courses = 255 (4.110%)

**c) Comparative Female Student Enrolment in Surveying Courses
 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions**

% Difference between 1990/1991-1999/2000 and 2000/2001-2014/2015
 Academic Sessions Within CES Unit, Kaduna Polytechnic =5.055%

% Difference between 1990/1991-1999/2000 and 2000/2001-2014/2015
 Academic Sessions Within CES Unit and Surveying Courses = 0.770 %

The MDG Declaration has a positive impact on both the college and surveying courses. The comparative analysis shows a gender gap bridging of an increment of 5.055% on the college female student enrolment and 0.770% in female student enrolment in surveying courses between 1990/1991-1999/2000 and 2000/2001-2014/2015 academic sessions.

**4.3 Student Enrolment in Surveying Courses, Kaduna Polytechnic Between
 1985/1986-1999/2000 and 2000/2001-2014/2015 Academic Sessions**

Male and female student enrolments in different courses were expressed in numbers and each course was plotted against each academic session in Figure 4.1 and Figure 4.2 in a line graph. The graphs showed the data available for female student enrolment in the Surveying courses in Kaduna Polytechnic for the first fifteen (15) academic sessions before the implementation of the MDG and fifteen (15) academic sessions after the implementation of the MDG.

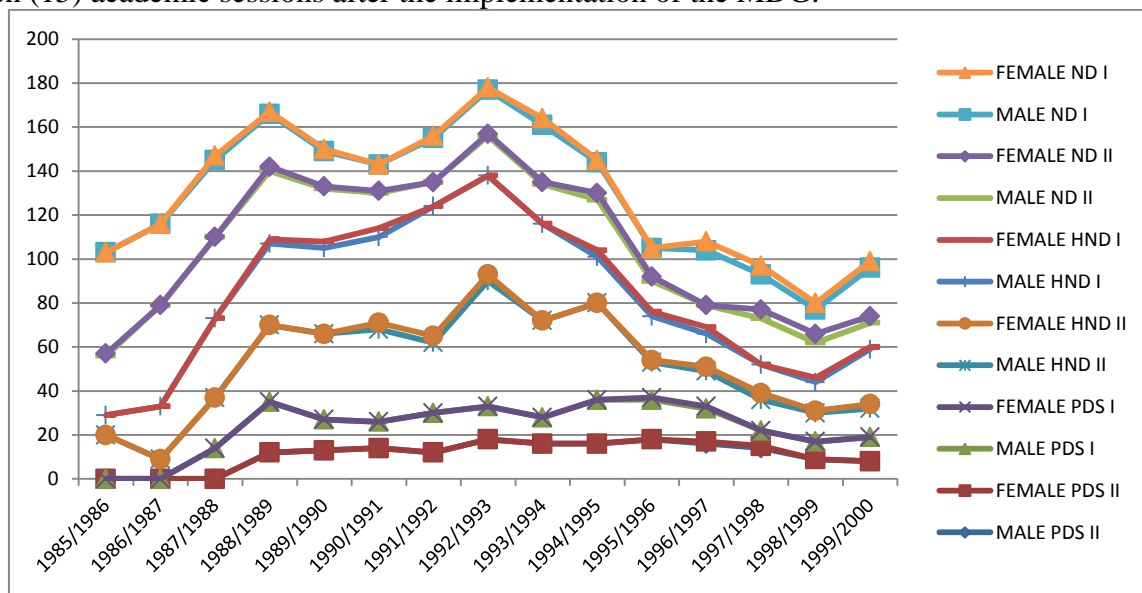


Figure 4.1: Students Enrolments in Surveying Courses 1985/1986-1999/2000 Academic Sessions

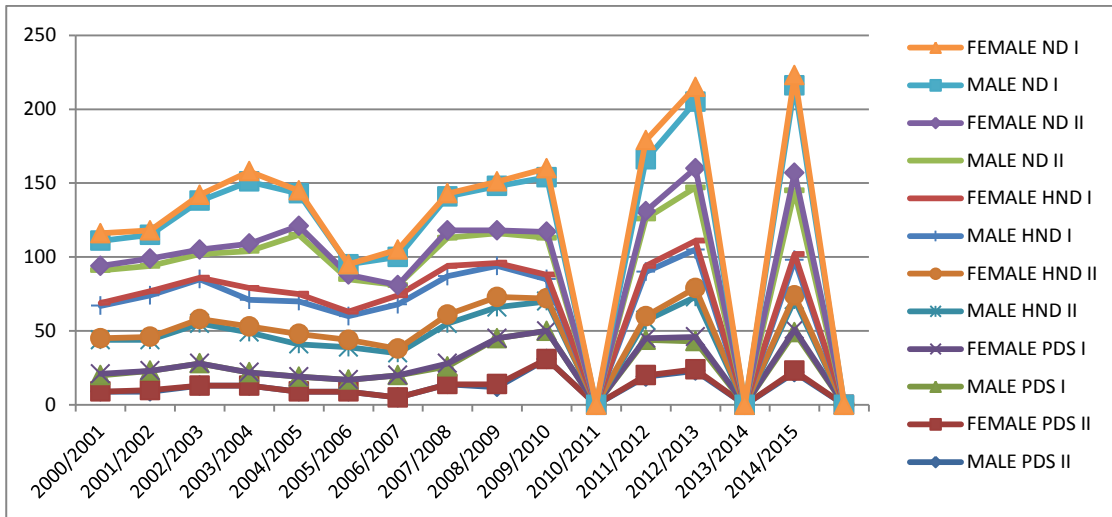


Figure 4.2 Students Enrolments in Surveying Courses 2000/2001-2014/2015 Academic Sessions

4.4 Gender Disparity Analysis Between 1985/1986-1999/2000 and 2000/2001-2014/2015 Academic Sessions.

Table 4.3 showed the gender disparity analysis of students' enrolments in surveying courses 1985/1986-1999/2000 and 2000/2001-2014/2015 academic sessions. The gender disparity analyses were as follows:

- i. 1985/1986-1999/2000 and 2000/2001-2014/2015 academic sessions have females student enrolment at all levels in surveying courses.

Table 4.3: Gender Disparity Analysis of Students Enrolments in Surveying Courses 1985/1986-1999/2000 and 2000/2001-2014/2015 Academic Sessions

S/ N	SURVEYING COURSES IN KADUNA POLYTECHNIC, KADUNA	1985/1986 to 1999/2000 ACADEMIC SESSIONS (15 YEARS)					2000/2001 to 2014/2015 ACADEMIC SESSIONS (15 YEARS)					INCREMENT % FEMALE ENROLMENT	
		M	%	F	%	TOTAL	M	%	F	%	TOTAL		
1	Post Graduate Diploma in												
2	Surveying (PDS) II	166	98.810	2	1.190	168	188	96.907	6	3.093	194	1.903	
3	Post Graduate Diploma in												
4	Surveying (PDS) I	187	98.942	2	1.058	189	212	95.495	10	4.505	222	3.447	
5	Higher National Diploma (HND) II	417	95.862	18	4.138	435	289	84.751	52	15.249	341	10.892	
6	Higher National Diploma (HND) I	439	95.643	20	4.357	459	303	84.874	54	15.126	357	10.769	
	National Diploma (ND) II	323	93.353	23	6.647	346	334	85.641	56	14.359	390	7.712	
	National Diploma (ND) I	337	93.352	24	6.648	361	387	85.242	67	14.758	454	8.110	

- ii. 2000/2001-2014/2015 academic sessions has more females' student enrolment than 1985/1986-1999/2000 academic sessions. Total number of female student enrolment in 1985/1986-1999/2000 academic sessions was 89. Total number of female student enrolment in 2000/2001-2014/2015 academic sessions was 255. There was an increment of 166 (186.517%) female students during the enforcement of MDG declaration.
- iii.

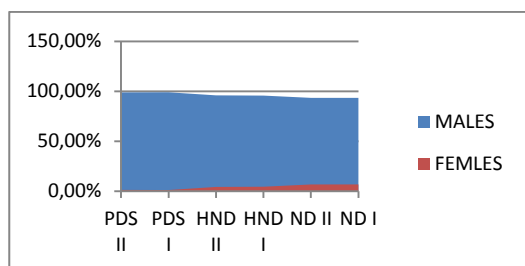


Figure 4.3 Gender Disparity Analyses of Students Enrolments in Surveying Courses 1985/1986-1999/2000 Academic Sessions

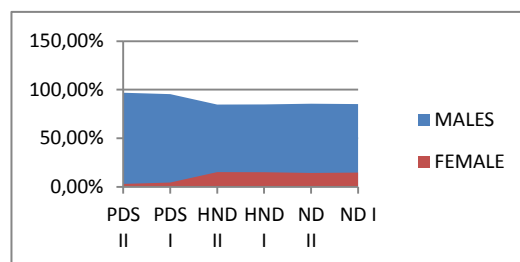


Figure 4.4 Gender Disparity Analyses of Students Enrolments in Surveying Courses 2000/2001-2014/2015 Academic Sessions

- iv. There were more females' student enrolment at the NDs' and HNDs' courses than the PDS courses. The disparity in the females' student enrolment at the NDs' and HNDs' courses in the two period were not so significant. The disparity in the females' student enrolment at the NDs' and HNDs' courses compared to PDS courses was wide gap.
- v. The general observation was that the decreasing trend in the females' student enrolment was from ND I → ND II → HND I → HND II → PDS I → PDS II. This trend can be visibly observed in Figure 4.3 and Figure 4.4
- vi. MDG Declaration has a positive impact on female student enrolment in surveying training but minimal.

4.5 Gender Parity Index (GPI) 1985/1986-2014/2015 Academic Sessions

Table 4.4 depicts the enrolment Gender Parity Index (GPI) of data available for female against male student enrolment for thirty (30) academic sessions (1985/1986-2014/2015) in surveying courses in Kaduna Polytechnic. In other word, the fifteen (15) academic sessions before the implementation of the MDG and the fifteen (15) academic sessions after the implementation of the MDG in Surveying courses in Kaduna Polytechnic.

Table 4.4: Comparative Gender Parity Index (GPI) 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions

S/N	Academic Year	PDS II	PDS I	HND II	HND I	NDII	NDI
1	1985/1986			0.000000	0.000000	0.037037	0.000000
2	1986/1987			0.000000	0.000000	0.000000	0.000000
3	1987/1988		0.000000	0.000000	0.000000	0.000000	0.057143
4	1988/1989	0.000000	0.000000	0.000000	0.000000	0.006644	0.041667
5	1989/1990	0.000000	0.000000	0.000000	0.051282	0.041667	0.062500
6	1990/1991	0.000000	0.000000	0.071428	0.076923	0.062500	0.000000
7	1991/1992	0.000000	0.000000	0.093750	0.067797	0.000000	0.050000
8	1992/1993	0.000000	0.000000	0.052652	0.000000	0.055556	0.050000
9	1993/1994	0.000000	0.000000	0.000000	0.000000	0.055556	0.115385
10	1994/1995	0.000000	0.000000	0.000000	0.142857	0.130435	0.071429
11	1995/1996	0.000000	0.055556	0.062500	0.111111	0.142857	0.000000
12	1996/1997	0.062500	0.066667	0.125000	0.200000	0.000000	0.160000
13	1997/1998	0.071428	0.000000	0.214286	0.000000	0.190476	0.250000
14	1998/1999	0.000000	0.000000	0.076923	0.153846	0.250000	0.272727
15	1999/2000	0.000000	0.000000	0.153846	0.040000	0.272727	0.136364
16	2000/2001	0.000000	0.090909	0.043478	0.090909	0.136364	0.294118
17	2001/2002	0.111111	0.000000	0.095238	0.107143	0.294118	0.187500
18	2002/2003	0.000000	0.000000	0.111111	0.037037	0.187500	0.121212
19	2003/2004	0.000000	0.000000	0.148148	0.444444	0.200000	0.166666
20	2004/2005	0.000000	0.000000	0.318182	0.227273	0.150000	0.090909
21	2005/2006	0.000000	0.000000	0.227273	0.187500	0.136364	0.000000
22	2006/2007	0.000000	0.000000	0.200000	0.200000	0.000000	0.263158
23	2007/2008	0.000000	0.166667	0.222222	0.269231	0.263158	0.086956
24	2008/2009	0.166667	0.000000	0.333333	0.095238	0.100000	0.100000
25	2009/2010	0.000000	0.052632	0.100000	0.230769	0.160000	0.162162
26	2010/2011		NO	ACADEMIC	SESSION		

Comparative Analysis of Gender Disparity Enrolment in Surveying Training in Tertiary Institution (8157)
 Oladunni Oyetola Opatoyinbo and Oluwayemisi Abiodun Babatunde (Nigeria)

27	2011/2012	0.052632	0.041667	0.250000	0.133333	0.156250	0.371428
28	2012/2013	0.043478	0.157895	0.222222	0.272727	0.361111	0.222222
29	2013/2014		NO	ACADEMIC	SESSION		
30	2014/2015	0.045455	0.07692	0.150000	0.166667	0.279070	0.118644

1) PDS II

The PDS programmes commenced in 1987/1988 academic session. Therefore record of enrolment into PDS II class commenced in 1988/1989 academic session. GPI between twelve (12) years before the implementation of the MDG 3 (1988/1989 – 1999/2000) shows two (2) academic sessions with GPI and ten (10) academic sessions without GPI. The first ten academic sessions of without GPI (1988/1989 – 1995/1996 and 1998/1999 -1999/2000) have nil female enrolment for the academic sessions. GPI between fifteen years after the implementation of the MDG 3 (2000/2001 – 2014/2015) shows a slight improvement in index with five academic sessions having GPI

2) PDS I

GPI between thirteen (13) years before the implementation of the MDG 3 (1987/1988 – 1999/2000) shows two (2) academic sessions with GPI and eleven (11) academic sessions without GPI. The first eight (8) academic sessions of without GPI (1987/1988 – 1994/1995 and 1997/1998 - 1999/2000) have nil female enrolment for the academic sessions. GPI between fifteen years after the implementation of the MDG 3 (2000/2001 – 2014/2015) shows a slight improvement in index with five academic sessions having GPI

3) HND II

GPI between fifteen years before the implementation of the MDG 3 (1985/1986 – 1999/2000) shows eight (8) academic sessions with GPI and seven (7) academic sessions without GPI. The first five academic sessions of without (1985/1986 – 1989/1990 and 1993/1994 -1994/1995) have nil female enrolment for the academic sessions. GPI between fifteen years after the implementation of the MDG 3 (2000/2001 – 2014/2015) have all the academic sessions with GPI. In comparing with 1985/1986 – 1999/2000 academic sessions, there was an improvement in index.

4) HND I

GPI between fifteen years before the implementation of the MDG 3 (1985/1986 – 1999/2000) shows eight (8) academic sessions with GPI and seven (7) academic sessions without GPI. The first four academic sessions of without GPI (1985/1986 – 1988/1989 and 1992/1993 -1994/1995) have nil female enrolment for the academic sessions. GPI between fifteen years after the implementation of the MDG 3 (2000/2001 – 2014/2015) have all the academic sessions with GPI. In comparing with 1985/1986 – 1999/2000 academic sessions, there was an improvement in index.

5) ND II

GPI between fifteen years before the implementation of the MDG 3 (1985/1986 – 1999/2000) shows eleven (11) academic sessions with GPI and four (4) academic sessions without GPI. The first five academic sessions of without GPI (1986/1987, 1987/1988, 1991/1992 and 1996/1997) have nil female enrolment for the academic sessions. GPI between fifteen years after the implementation of the MDG 3 (2000/2001 – 2014/2015) have all the academic sessions with GPI. In comparing with 1985/1986 – 1999/2000 academic sessions, there was an improvement in index shows a slight improvement in index with five academic sessions having GPI.

6) ND I

GPI between fifteen years before the implementation of the MDG 3 (1985/1986 – 1999/2000) shows eleven (11) academic sessions with GPI and four (4) academic sessions without GPI. The

first five academic sessions of without GPI (1985/1986, 1986/1987, 1991/1991 and 1995/1996) have nil female enrolment for the academic sessions. GPI between fifteen years after the implementation of the MDG 3 (2000/2001 – 2014/2015) shows an improvement in index in all the academic sessions with GPI. In comparing with 1985/1986 – 1999/2000 academic sessions, there was an improvement in index with five academic sessions having GPI

4.3 Comparative Gender Parity Index (GPI) 1985/1986-1999/2000 and 2000/2001-2014/2015 Academic Sessions

Table 4.5: Comparative Gender Parity Index (GPI) 1990/1991-1999/2000 and 2000/2001-2014/2015 Academic Sessions

S/N	SURVEYING COURSES IN KADUNA POLYTECHNIC, KADUNA	1985/1986 to 1999/2000 ACADEMIC SESSIONS (15 Yrs)	2000/2001 to 2014/2015 ACADEMIC SESSIONS (15 Yrs)	DIFFERENCE
1	Post Graduate Diploma in Surveying (PDS) II	0.012048	0.031915	0.019867
2	Post Graduate Diploma in Surveying (PDS) I	0.010695	0.047170	0.036475
3	Higher National Diploma (HND) II	0.043165	0.179931	0.136766
4	Higher National Diploma (HND) I	0.045558	0.178218	0.132660
5	National Diploma (ND) II	0.071207	0.167665	0.096458
6	National Diploma (ND) I	0.071217	0.173127	0.101910

Table 4.5 showed comparative Gender Parity Index (GPI) between 1985/1986-1999/2000 and 2000/2001-2014/2015 academic sessions. The comparative index analysis was used to assess the impact of MDG goal. Result showed that the MDG policy on gender bridging between 2000/2001-2014/2015 academic sessions has no appreciable effect on female enrolment in these courses. From the table, it can also be seen that these indices showing the enrolment of female student to males in surveying courses in Kaduna Polytechnic is completely low in all the area of studies, particularly in the PDS programmes.

5.1 Findings

- i. Records of students for fifteen years (2000 – 2015) and the analysis of results revealed that, there still exist reasonable gaps between female and male enrolment.
- ii. Records of students for fifteen years (2000 – 2015) in surveying courses revealed a decline and showed that, there still exist reasonable gaps between female and male enrolment in this area of study.
- iii. Female enrolment index since the implementation of the MDG from 1985 to 2000 as against 2000 to 2015 has minimal improvement.
- iv. Enrolment of females to males is completely low in disparity index in all area of studies, particularly in PDS courses
- v. Gender parity which is between 0.97 and 1.03 has not been reached in any of the courses.
- vi. Decline in female enrolment these courses, indicated that work effort has to be put in place to reach the gender parity of between 0.97 and 1.03 as desired.
- vii. MDG target cannot be achieved due to lower enrolment of female students as against males in surveying courses.
- viii. Despite the critical progress in bridging gender gaps, persistent inequalities remain in many regions and at different levels of education

5.2 Conclusion

The task of achieving the target of gender equality in Nigeria by the year 2015 requires not just passive policies that are separate and distinct, but an active process embodying proper analysis, goal

definition, action programs and monitoring results. Mainstreaming gender is necessary as a mechanism to promote gender sensitivity in all policies and programmes.

Surveying education is very crucial to the development of any nation and educating a woman reflects educating a nation. There are always new opportunities for female surveyors. For this opportunity not to be lost there is need for prompt response in terms of acquisition of training to assume such roles Her education in surveying will therefore places her in a better position to facilitate the development of her nation. Therefore there is need to take a proactive approach in the education system with the aim of achieving the MDG goal.

5.3 Recommendation

To compliment the bridging gap strategies put forward by other studies on this subject the following are therefore proffered:

1. Re-vitiation of admission policy on locality and merit. Embargo should be lifted on this policy, instead, replaced with eligible female candidate irrespective of locality and merits.
2. Re-vitiation of Pre-National Diploma in the technical institution at this time is indispensable to beef-up surveying training programmes for females in Nigeria.
3. Considering female multiple responsibilities in our day-to-day life, especially in the family circle, there is need for surveying training for females.
4. Increased enlightenment programmes for females to overcome cultural factors as well as societal conditions. This will make the female surveyors contribute maximally to her community and national development.
5. Every Surveying and Geoinformatics institution should engage in free Elementary Surveying training for female students immediately after secondary education (before the release of WAEC, NECO, NABTEB, etc). This will make them to be more focus and serious rather than engaging in what will be hazardous and disastrous to their health and career in life
6. Labour laws should be fine-tuned to allow female students who showed interest in surveying education to be given free scholarship throughout their career in life by the government. This will motivate both parents and female students to study surveying.
7. Amendments to admission policies to accommodate more females under the "educationally disadvantaged" should be encouraged most especially in surveying. This will increase the number of female that may be admitted into tertiary institutions in these subjects. The points required for admission into tertiary institutions for surveying courses should be made lower for females' student than their male counterparts.
8. Government and other stake holders in education should embark on awareness programmes through workshops and seminars to educate girls, women, parents and general society on the benefits of surveying education for women.
9. Female Lecturers employment should be increased most especially in courses with female declined enrolment like surveying. Male Lecturers should accommodate female Lecturers in their midst to serve as role model and encouragement to the female students.

Implantation of the strategies suggested in this study, if carefully implemented especially at the post-2015 global development agenda of the Sustainable Development Goals (SDGs) (UNDP, 2015), the gender disparity will be eliminated. This will also recover the profession of surveying from disaster.

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