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GENDER ANALYSIS OF STUDENTS ENROLMENT INTO SCIENCE LABOURATORY TECHNOLOGY PROGRAMME IN NIGERIAN POLYTEHNIC

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ABSTRACT

The study examined the trend in enrolment of students into science laboratory technology programme in some selected polytechnic in Nigeria with a view to finding out if there is imbalance or not. Three research questions and two hypotheses guided the investigation. The study was carried out in Kaduna Polytechnic, Federal Polytechnic Bida, Kano and Benue States Polytechnics. The data were obtained from N.B.T.E and structured questionnaires administered on a sample of 450 from a population of 8547 lecturers and students. The data were analyzed using mean and t-test statistics. The findings revealed that there has been gender disparity in favour of males. The causes of the gender disparity include lack of adequate motivation, parental influence among others. The findings also revealed that there is no difference in the mean responses of the lecturers of students on the causes and strategies for bridging gender disparity. Based on the findings, some interventional strategies have been recommended.

INTRODUCTION

The polytechnic education is one form of tertiary education in Nigeria which was established to produce technicians and technologists for technological growth of the country. Thus, the programmes offered in the polytechnics are geared towards the production of the middle level man power for the business, industrial and agricultural sectors of Nigerian economy. One of the programmes offered in nearly all the polytechnics, few monotechnics and some universities is the science laboratory technology programme. It is a programme designed to produce technicians and technologists that would be capable of applying laboratory techniques to complement the work of scientist and engineers in industries and other related sectors of the Nigerian economic such as education, health, agricultural and telecommunication to mention but a few. It is programme designed for both male and female students.

Entrenched in the philosophy of Nigerian National Policy on Education (1981 & 1998), is the doctrine of equal educational opportunity. This means providing educational programme for every child irrespective of geographical, social background, age and sex. This policy is in line with world declaration on education for all in the 90's which states that most urgent priority is to ensure access to an improve the quality in education for females and to remove any obstacle that hampers their active participation. Unfortunately studies by UNESCO (1991) have shown that female gender is marginalized world wide in terms of enrolment into education and to specific subject areas and consequently to such opportunities as employment, policy making etc.

In Nigerian, the story is not different. It has been variously noted that women are under represented in science, (William, 1987 and Nsofor, 2000). For any nation to develop technologically, there must be massive education of the populace in science, technology and mathematics education irrespective of race, creed or sex. Researches conducted and opinion expressed by experts such as Maduabum (1998). And BDliya (1997) revealed that female enrolment in science and technology programme is low, indicating an imbalance in enrolment. However, no specific data is avialble on science laboratory technology programme and hence the need for an investigation into this area as it will provide vital information that will ensure access to an improve equality in education for both sexes.

Research Questions.

The study answered the following questions.

a. Has there been imbalance in the enrolment of student into science laboratory technology programme from 1990-2000.

b. What factors are responsible for gender disparity in enrolment of students into science laboratory technology in Nigerian Polytechnic.

c. What are the strategies to be employed to minimize the problem of imbalance in enrolment into science laboratory technology programme in Nigerian Polytechnics?

Hypothesis.

The following hypothesis were tested at 0.05 level of significance.

a. There is no significance difference in the mean responses of students and lecturers on the causes of gender disparity in enrolment of students into laboratory technology.

b. There is no significant difference in the mean responses of students and lecturers on the strategies for improving imbalance in enrolment.

Methodology

The research designs adopted were documentation and survey. The study covered all the thirty two 932 polytechnic across the country. The total population of the study was 8,542 which comprised of 7,761 students and 781 teaching staff of science laboratory technology programme in all the 32 polytechnics. The sample consisted of 370 students and 80 teaching staff drawn from four out of thirty two polytechnic selected by stratified proportionate random sampling technique. The strata used is location of school and status of respondent. The statistical digest of the NBTE was used to generated data for establishing tend in enrolment while a structural questionnaires was used to collect data on the views of respondents on causes of an strategies for bridging the gender disparity. Content validity of the questionnaire was carried out by three lecturers in the department of Education (Technical), Kaduna Polytechnic. The reliability coefficient of the questionnaire which was 0.78 was determined using cronbach alpha method. The questionnaires were personally administered by researcher. Data collected or answering research question I were analyzed using percentages while those of research questions 2 and 3 were analyzed using mean statistics. The two hypotheses were tested at 0.05 level of significance using t-test.

Result of data Analysis

Research Questions 1: has there been imbalance in the enrolment of student into science laboratory technology programme from 1990-2000?

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The data for answering this research question 1 is represented on Table 4.1

Table 4.1 Trend in Enrolment into Science Laboratory technology Programme in selected Polytechnics (1990-2000)

SELECTED POLYTEHNIC	SEX	SESSIONS										TOTAL By sex	% by sex
		89/90	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/200	
KANO STATE POLYTECHNIC KANO	M	29	28	25	39	24	25	26	84	484	154	82	992	92
	F	05	04	08	20	11	10	06	13	0	0	13	90	8
FED.PLOY BIDA NIGER STATE	M	48	45	56	53	44	59	110	161	146	227	205	1154	8
	F	29	33	41	47	46	64	100	201	188	155	153	1057	48
BENUE STATE POLYTECHNIC UGBOKOLO	M	130	112	131	125	123	173	224	213	18	126	144	1686	89
	F	12	14	13	11	24	58	40	0	0	19	21	212	11
KADUNA POLYTECHNIC KADUNA	M	158	164	188	140	112	115	109	135	192	107	89	1446	71
	F	28	25	55	43	35	40	47	69	70				

SOURCE: NBTE 2001 *M = MALE
*F = FEMALE

The data in table 4.1 showed that within the period under study (1989/90-99/2000 sessions) there has been gender imbalance in the enrolment of students into science laboratory technology programme in all the four selected polytechnic. Although it favoured males, the percentage of disparity differed from one polytechnic to the other. The disparity was highest in Kano State Polytehcnic and lowest at Federal Polytechnic Bida. Research Question 2: What factors are responsible for the gender imbalance in enrolment of students into science laboratory technology? The data for answering this research questions is given in table 4.2

Table 4.2 Mean responses of lecturers and students on the causes of gender disparity.

ITEM	Causes of gender Disparity in enrolment Into science laboratory Technology	Mean Of Lecturer X_1	Remarks R_1	Mean of Students X_2	Remarks R_2	Grand Mean Remarks R_3	Decision
1	Lack of adequate Motivation	3.09	Agree	3.11	Agree	3.10	Agree
2.	Financial problem	2.33	Disagree	2.43	Disagree	2.38	Disagree
3.	Pee group influence	2.30	Disagree	2.36	Disagree	2.33	Disagree

4.	Parental influence	2.97	Agree	2.95	Agree	2.96	Agree
5.	Cultural background	2.76	Agree	2.66	Agree	2.72	Agree
6.	Location of school	2.39	Disagree	2.31	Disagree	2.35	Disagree
7.	Masculine image of science lab. Tech.	2.52	Agree	2.58	Agree	2.55	Agree
8.	Belief that Sci. Lab. Tech is difficult	2.58	Agree	2.78	Agree	2.68	Agree
9.	Stressful nature of Sci. Lab. Tech.	2.44	Disagree	1.1.92	Disagree	2.18	Disagree
10.	Societal view of female Sci. Lab. Tech. Graduates .	2.34	Disagree	2.32	Disagree	2.33	Disagree

The data in table 4.2 showed that both the lecturers and students agreed with five of causes of gender disparity in enrolment and disparity in enrolment and disagreed with the five other causes However, the level of agreement vary as evident by the ranging values of mean for both staff and students. Research Questions 3: What are the strategies to be employed for bringing gender disparity in enrolment into Science Laboratory Technology? The data for answering this research question is given in Table 4.3

ITEM	Strategies for bridging of gender disparity in enrolment into science laboratory technology	Mean Of Lecturer X_1	Remarks R_1	Mean of Students X_2	Remarks R_2	Grand Mean Remarks R_3	Decision
1	Introduction of special scholarship for females in sciences	3.06	Agree	3.04	Agree	3.05	Agree
2.	Mounting campaign to promote girl child education	2.95	Agree	2.98	Agree	2.93	Agree
3.	Counseling on the right of girl-child from on set	3.08	Agree	2.86	Agree	2.97	Agree
4.	Discouraging of early marriage	2.46	Agree	2.42	Agree	2.44	Agree
5.	Fair treatment of both sexs	2.89	Agree	3.11	Agree	3.00	Agree
6.	Removal of all forms Of gender stereo typing in schools	3.14	Agree	2.76	Agree	2.95	Agree
7.	Use of motivational techniques of female students	2.89	Agree	2.89	Agree	2.89	Agree
8.	Provision of role models for females to emulate	2.40	Disagree	2.27	Disagree	2.34	Disagree
9.	Provision of scholarship by NGO's	2.66	Agree	2.72	Agree	2.69	Agree
10.	Establishment of College of Technology						

	for females	2.44	Disagree	2.82	Disagree	2.63	Disagree

The data in table 4.3 showed that both lecturers and students agreed with eight out of the ten strategies although their opinion differed slightly. The level pf agreement differed as evident by ranging values of their mean. The highest mean was 3.05 while the lowest mean was 2.34.

Hypothesis: 1 There is no significant different in the mean responses of students and lecturers on the causes of gender disparity in enrolment of students into science laboratory technology.

The date for testing this hypothesis is given in table 4.4

Table 4.4. T-Test of difference between mean responses of lecturers and students on causes of gender disparity in enrolment.

Respondent status	Mean X	Standard Deviation	n	df	Std	t-cal	t-table	Decision
Lecturers (staff)	2.64	0.28	10	18	0.32	0.60	2.10	H_0 is accepted
Students	2.54	0.32	10					

The data in table 4.4 shows that students calculated t-value (0.60) is less than the table value (2.10). therefore the null hypothesis is accepted. Thus signifying that there is no difference in mean responses.

Hypothesis II: There is no significant difference in the mean responses of students and lecturers on the strategies for improving imbalance in enrolment.

Respondent status	Mean X	Standard Deviation	n	df	Std	t-cal	t-table	Decision
Lecturers (staff)	2.64	0.28	10	18	0.32	0.60	2.10	H_0 is accepted
Students	2.54	0.32	10					

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The data in table 4.5 shows that students calculated t-value (0.56) is less than the table value (2.10). Therefore the null hypothesis is accepted. Thus signifying there is no difference in mean responses.

Findings of the Study

The followings are the findings of the study:

a. The study revealed that there has been gender disparity in enrolment into science laboratory technology in favour of males.

b. The causes of the gender disparity in enrolment are lack of adequate motivation, parental influence, cultural background, masculine image of science and the belief that sciences are difficult.

c. The interventional strategies for minimizing gender disparity are introduction of special scholarship for females ins school, fair treatment of both sexes, mounting of enlightenment campaign, counseling on right of girl-child, use of motivational techniques, provision of scholarship by NGO's and establishment of colleges of technology for females.

d. The mean opinion of both lecturers and students on the causes and strategies for bridging the imbalanced in enrolment was the same.

Discussion of Findings

The findings relating to research questions 1 which showed that there was gender disparity in enrolment of student into science laboratory technology in the selected polytechnics from 1990-2000 is in agreement with the findings of UNESCO (1981), NBTE (2001) and William (1987). In their various studies they revealed that there is gender disparity in favour of males into science based programmes as was in this study. With reference to research question 2, the findings revealed that gender disparity in enrolment is multi-factorial. The findings on the causes of gender disparity is in agreement with the possible causes identified by Maduabum, (1994). BDliya (1987) and Obasi (1997). However, the findings of this study which revealed early marriage as not being a cause, did not agree with that of Komolafe (1996) who opined that early marriage was a major cause of gender disparity in enrolment. The findings relating to research question 3 showed that gender disparity in enrolment in favour of males, could be minimized by a number of interventional strategies. These strategies include special scholarship, enlightenment campaign, removal of gender stereotyping etc. The findings in respect of interventional strategies conformed to those of Nsofor (2000) and Okafor (2000) The findings in respect of the two null hypothesis showed that both lecturers and students have same views on the issue of gender disparity in enrolment., this implies that irrespective of the status of the respondents, their views on gender disparity is same.

Conclusion and Recommendation.

There has been and there is still gender disparity in enrolment of students into science laboratory technology programme in polytechnics in favour of males. This is also true of

science laboratory technology in polytechnics. The causes of gender disparity and interventional strategies for minimizing it are varied multi-factorial. Based on the findings, the following recommendations are made.

a. Government and management of polytechnics should ensure the interventional strategies suggested in this study are implemented to reduce gender disparity in enrolment into science laboratory technology programme .

b. The Government as well as the management of polytechnics should ensure that all the causes of gender disparity are removed from our educational system to improve gender disparity especially in science laboratory technology programme.

c. Parents should desists from influencing career choice of their children.

d. Members of general public should be educated and sufficiently enlightened on the philosophy of education in National Policy on Education.

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