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Training Activities and Facilities as a Solution to Gender Gap in Technical Education in North Eastern States of Nigeria

Timothy Yakubu Woma [1*] Tani Dan Yavala[2] Timothy W. Woma [3]
1.Department of Pure and Applied Physics, Federal University Wukari, P.M.B. 1020 Wukari, Taraba State Nigeria
2.Department of Mechanical Engineering, Taraba State Polytechnic Jalingo Campus, P.M.B. 1030 Jalingo Taraba State , Nigeria
3.Department of General Studies, Taraba State Polytechnic Suntai, Bali Local Government, Taraba State Nigeria
* timothy.woma@gmail.com

Abstract
The study was carried out to analyse training activities and facilities as strategies for bridging the gender gap in technical education in north eastern states of Nigeria. A survey research design was used. The population for the study comprised 75 technical lecturers and 50 instructors in colleges of education in North eastern states. The instruments used for data collection was structured questionnaire . Two research questions and two hypotheses were formulated. Mean and standard deviation were used to analyze the data for answering research questions while t- test analysis was used to test the hypotheses of no significant difference at 0.05level of significance. It was found out that: eleven out of fourteen training activities influence gender imbalance in technical education and all twenty training facilities can enhance female students' enrolment/participation into technical education in North Eastern States of Nigeria. Based on these findings, it was recommended that scholarship should be given to female students studying technical education courses by the governments and philanthropist in the society .It was also recommended that modern training facilities should be donated to technical institutions by the government and employers of the products of technical education.
Keywords: Enrolment, Gender gap, North Eastern Nigeria, Technical education, Training facilities

1. Introduction

Technical education is the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to Occupations in various sectors of economic and social life. According to Okoro (1999) technical education is the branch of education, which is mostly concerned with preparing human resources for a meaningful life in society. It involves the study of relevant skills in the areas of mechanical technology, electrical/electronic technology, woodwork technology and building technology. Science, technical and vocational educations serve as the basic starting point of social, economic and technological development of any nation (Akubiulo, 2002).

There seems to be gender role distinction all over the world, which has created gap in opportunities between men and women. This identified gap has constituted what generally is regarded as gender inequality among gender advocates. The imbalance is noticeable in gender enrolment at all levels and types of education, as well as across disciplines and programmes especially at the tertiary level of technical education (Shimave, 2004) and (Ogbuanya, 2008). Researches carried out within Nigeria have revealed a great gender imbalance in technical education generally and in the North eastern states of Nigeria in particular (Yavala, 2010).

There is need to bridge the existing gender gap in technical education. Training activities as well as training facilities are some of the factors to be considered in bridging the gap (Bowel, 1986). Functional tools and equipment are very essential in transmitting skills to learners in an organised workshop and will attract females to try their hands in equipment operation and handling. This paper is a report of training activities and facilities as solutions to gender gap in technical education in North Eastern States of Nigeria.

To achieve the aim of this study, two questions were generated as follows:
1. What are the training activities that influence gender imbalance in technical education?
2. What are the training facilities that can enhance the female students' enrolment/participation into technical education?

The following research hypotheses were also formulated:
Hypothesis 1: there is no significant difference between the mean response of technical lecturers and instructors in colleges of education on training activities that can enhance gender imbalance of students' enrolment in technical education in north eastern states of Nigeria.

Hypothesis 2: there is no significant difference between the mean response of technical lecturers and instructors in colleges of education on training facilities that can enhance gender imbalance of students' enrolment in technical education in north eastern states of Nigeria.

2. Methodology

This study was a survey designed to collect data through questionnaire from technical teachers and instructors on training activities and facilities as strategies for bridging gender gap in technical education in North Eastern states of Nigeria.

2.1 Area and Population for the Study

The study was carried out in six colleges of education that offer technical education in the North Eastern states of Nigeria namely: Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe states.

The population for the study comprised all technical education lecturers and instructors in the only five colleges of education that offer technical education in North Eastern states of Nigeria. This is made up of 75 technical lectures and 50 instructors.

2.2 Instrumentation

The instrument for data collection was structured questionnaire made up of two parts; part 1 and part 2. Part 1 solicited information on personal data of the respondents while part 2 solicited information on technical facilities and activities as strategies for bridging gender gap in technical education in the North eastern states of Nigeria.

The response option of the questionnaire is structured on five point Likert scale as follows: strongly agreed, agreed, undecided, disagree and strongly disagree with value of 5, 4, 3, 2 and 1 assigned to them respectively.

2.3 Procedure for Data Collection

The authors administered the instrument to the respondents through personal contact. The copies of the questionnaires were collected some days later by the researchers with 100% return rate.

3. Results

In this research, the training activities and facilities as solutions to gender gap in technical education in the north eastern states of Nigeria were sought. Two research questions and two hypotheses were generated for the study. Mean was used to answer the research questions and t-test statistics was used to analyse the hypothesis as follows:

3.1 Research Question 1

What are the training activities that influence gender imbalance in technical education? The data for answering this research question is presented in table 1. Eleven out of fourteen training activities had their mean values ranged from 3.63 to 4.07, indicating that only 11 out of 14 training activities influence gender imbalance in technical education in North eastern states of Nigeria. Also the standard deviations (SD) of the items are within 0.76 to 1.09 indicating that the responses of the respondents were not divergent from one another.

3.2 Research Question 2

What are the training facilities that enhance the female student's enrolment/participation into technical education? The data for answering this research question is presented in table 2. All 20 training facilities had their mean above the cut-off point of 3.50 showing that all the 20 training facilities can enhance female student's enrolment/participation into technical education. The standard deviation of the items are within 0.71to 1.08showing that the responses of the respondents were not harmonious.

3.3 Hypothesis 1

There is no significant difference between the mean response of technical lecturers and instructors in colleges of education on training activities that can enhance gender imbalance of students' enrolment in technical education in north eastern states of Nigeria.

The calculated t-value for each of the 14 training activities range from 0.01 to 1.97 as shown in table 3; which is less than t-table value of 1.98(two tailed test) at 0.05 level of significance and at 120 degree of freedom (df). This indicates that there was no significant difference in the mean responses of the technical lecturers and instructors on the training activities that can enhance gender imbalance of students' enrolment in technical education in north eastern states of Nigeria and thus the hypothesis is upheld.

3.4 Hypothesis 2

There is no significant difference between the mean response of technical lecturers and instructors in colleges of

education on the training facilities that can enhance gender imbalance of students' enrolment in technical education in north eastern states of Nigeria.
The data in table 4 shows that the 20 training facilities has calculated t-values ranging from 0.03 to 1.62 which were less than the t-table value 1.98 (two tailed test) at 0.05 level of significance and at 120 degree of freedom. This indicated that there is no significant difference in the mean responses of the technical lecturers and instructors on the training facilities that can enhance gender imbalance of students' enrolment in technical education in north eastern states of Nigeria; thus the hypothesis is upheld.

4. Discussion and Summary of Findings

The findings of this research revealed that the respondents agreed that technical and vocational training activities can reduce gender imbalance in students' enrolment in technical education. The activities include: allowing female students to lead other students in practical activities, involvement of female students in all training activities and granting scholarship to female students as way of encouraging more females into technical education and knowledgeable females should be allowed to give motivational talks on careers development of females. These findings are in agreement with earlier research in other geopolitical zones of Nigeria such as Ngware (2002) and Nwachukwu (2001).

The study also found that the respondents agreed that all 20 training facilities were required for enhancing female students' enrolment in technical education. Among the training facilities identified include: provision of well equipped technical library that contains technical textbooks, audio visual and visual aids for learning technical courses and availability of adequate number of modern electronic measuring instrument and modern tools required by national board for technical education. These findings are also in agreement with the opinions of Onyeneho (2004), Olaitan et al (1999) and Ezeji (2004).

There was no significant difference between the mean responses of technical lecturers and instructors in colleges of education on training activities and facilities that can enhance gender imbalance of student's enrolment in technical education in north eastern states of Nigeria. Therefore the identified training activities and facilities can bridge the gender gap in enrolment in technical education.

5. Conclusion

Researches carried out on gender within Nigeria generally have shown great gender imbalance in technical education especially in north eastern states of Nigeria. Due to low female participation in technical education, there is need to evolve strategies for bridging the gender gap. Specifically this study determined training activities and facilities that can reduce gender imbalance and enhance female students' enrolment in technical education in north eastern states of Nigeria.

The study adopted a survey research design where 125 copies of a questionnaire consisting of 34 items were administered on 75 technical lecturers and 50 instructors in colleges of education. After careful analysis of the data collected it has been found that training activities influence gender imbalance and using appropriate training facilities will enhance female students' enrolment in technical education in north eastern states of Nigeria.

The study reveal to teachers' possible training activities and facilities that can reduce gender imbalance in technical education and it is recommended that government should employ more female technical teachers and give motivational talks on female career development. Government and philanthropists should give scholarship to female studying technical education while modern training facilities should be donated by government and employers of technical education products to technical institutions in the north eastern states of Nigeria.

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Table 1. Mean Responses of the Respondents on the Training Activities that Influence Gender Imbalance in Technical Education N = 122

S/N	Item Statements	X	SD	Remark (s)
1	Allowing female students to lead other students in practical activities	3.45	0.82	Disagree
2	Involvement of female students in all training activities.	3.77	0.93	Agree
3	Granting scholarship to female student as a wayof encouraging more females into technical education	4.07	0.94	Agree
4	Provisions of free training kits such as overalls and training box to female students	3.91	0.85	Agree
5	The use of female tutors/trainers/teachers in teaching practical is way of motivating other females into technical education	3.96	0.91	Agree
6	Knowledgeable females should be allowed to give Motivational talks on careers development of females	3.99	1.01	Agree
7	Compelling technical and vocational education students to wear practical training kits such	3.72	1.09	Agree
8	Allowing students to go away with their projects	2.97	0.94	Disagree
9	Discouraging male chauvinism can reduce gender imbalance in technical education	3.63	0.76	Agree
10	Encouraging collaborations and interactions between female and male students to create free learning environment	3.69	0.79	Agree
11	Introduction of new/modern teaching methods to teach technical education curriculum	3.9	0.89	Agree
12	Giving female students preferential treatment in practical class can reduce gender imbalance in technical education	3.65	0.86	Agree
13	Lowering the entry requirements of technical education for only the females	3.23	0.99	Disagree
14	Giving graduates of technical education enough capital to set up their own businesses	3.85	0.98	Agree

Table 2. Mean Responses of the Technical Lecturers and Instructors on the Training Facilities that can Enhance the Female Students Enrolment/Participation into Technical Education

N = 122

S/N	ITEM STATEMENT	X	SD	REMARKS
1.	Provision of well equipped technical library that contain technical textbooks, audio visual and visual aids for learning technical courses	3.81`	1.03	Agree
2.	Adequate provision of computers for teaching and learning of technical courses	3.90	0.91	Agree
3.	Availability of adequate number of modern electronic measuring instrument in the laboratory.	4.08	0.93	Agree
4.	Adequate number of modern hand tools as required by National board for Technical Education.	3.98	1.08	Agree
5.	Provision of enough power hand tools.	3.80	0.92	Agree
6.	Adequate number of machines in good condition as indicated by National Board for Technical Education.	3.72	0.87	Agree
7.	Provision of Adequately equipped digital studio.	3.77	1.04	Agree
8.	Availability of audio visual instrument/equipment for teaching technical courses.	4.13	0.94	Agree
9.	Provision of well equipped workshop/laboratory for practical in technical education.	3.88	0.91	Agree
10.	Provision of adequate number of electronics, electrical , mechanical, building and woodwork materials and components	3.79	0.98	Agree
11.	Provision of safety materials and equipment in the work shop in each section of technical education.	3.76	0.93	Agree
12.	Proper arrangement of tools and equipments in tool box to avoid wastage and accidents in the workshop.	3.94	0.91	Agree
13.	Adequate number of storage facilities in the workshops in each sections of technical education.	4.04	0.71	Agree
14.	Constant electricity supply to the workshops and class rooms of technical education.	4.01	0.79	Agree
15.	Delivery access for goods to all workshops of technical education for safe practice.	3.92	0.93	Agree
16.	Provision of adequate number of tools and equipment in good condition in technical workshops for female students to handle without fear.	3.79	0.89	Agree
17.	Provision of practical manuals to guide the female students during practical	3.74	0.96	Agree
18.	Adequate number of work benches in good condition in the technical workshops	3.93	0.90	Agree
19.	Provision of colour safety to designate or identify safety equipment or machines in the workshop	3.83	0.86	Agree
20.	Provision of adequate number of stationary machines in the technical workshops for practical class.	3.69	0.94	Agree

Table 3. The t-test Analysis of the mean Responses of the Respondents on the Training Activities that can enhance Gender Imbalance of Students Enrolment in Technical Education in North Eastern States of Nigeria

S/N	ITEM STATEMENT	X_1	S^2_1	X_2	S^2_2	t-cal	t-tab	REMARKS
1.	Allowing female students to lead other students in practical activities	3.47	1.12	3.52	1.12	0.25	1.98	NS
2.	Involvement of female students in all training activities.	3.76	1.01	3.78	0.81	0.09	1.98	NS
3.	Granting scholarship to female student as a way of encouraging more females into technical education	4.12	0.91	4.00	0.98	0.71	1.98	NS
4.	Provisions of free training kits such as overalls and training box to female students	3.91	1.11	3.92	1.15	0.01	1.98	NS
5.	The use of female tutors/trainers/teachers in teaching practical is way of motivating other females into technical education	4.06	0.93	3.82	1.15	1.31	1.98	NS
6.	Knowledgeable females should be allowed to give Motivational talks on careers development of females	3.95	1.10	4.04	0.87	0.43	1.98	NS
7.	compelling technical and vocational education students to wear practical training kits such	3.63	1.11	3.86	1.06	1.09	1.98	NS
8.	Allowing students to go away with their projects	3.02	1.13	2.90	1.05	0.62	1.98	NS
9.	Discouraging male chauvinism can reduce gender imbalance in technical education	3.75	1.10	3.54	1.00	1.70	1.98	NS
10.	Encouraging collaborations and interactions between female and male students to create free learning environment	3.52	1.20	3.60	1.39	1.97	1.98	NS
11.	Introduction of new/modern teaching methods to teach technical education curriculum	3.84	1.18	3.98	1.11	0.62	1.98	NS
12.	Giving female students preferential treatment in practical class can reduce gender imbalance in technical education	3.56	1.27	3.78	0.90	0.94	1.98	NS
13.	Lowering the entry requirements of technical education for only the females	3.72	1.37	3.08	0.85	1.06	1.98	NS
14.	Giving graduates of technical education enough capital to set up their own businesses	3.83	1.04	3.88	0.85	0.23	1.98	NS

$\mathbf{S^2_1}$ = Variance of technical lecturers
$\mathbf{S^2_2}$ = Variance of instructors
$\mathbf{X_1}$ = Mean of technical lecturers
$\mathbf{X_2}$ = Mean of instructors
NS = Not significant
SG = Significant

Table 4. The t-test Analysis of the Mean Responses of the Respondents on the Training Facilities that can enhance Gender Imbalance of Students Enrollment in Technical Education in North Eastern States of Nigeria

S/N	ITEM STATEMENT	X_1	S^2_1	X_2	S^2_2	t-cal	t-tab	REMARKS
1.	Provision of well equipped technical library that contain technical textbooks, audio visual and visual aids for learning technical courses	3.75	1.08	3.90	0.97	0.78	1.98	NS
2.	Adequate provision of computers for teaching and learning of technical courses	4.01	0.81	3.76	1.04	1.51	1.98	NS
3.	Availability of adequate number of modern electronic measuring instrument in the laboratory.	4.11	0.95	4.04	0.90	0.41	1.98	NS
4.	Adequate number of modern hand tools as required by National board for Technical Education.	4.00	1.04	3.96	1.14	0.20	1.98	NS
5.	Provision of enough power hand tools.	3.77	0.93	3.84	0.91	0.36	1.98	NS
6.	Adequate number of machines in good condition as indicated by National Board for Technical Education.	3.75	0.97	3.68	1.11	0.34	1.98	NS
7.	Provision of Adequately equipped digital studio.	3.81	1.07	3.72	1.01	0.50	1.98	NS
8.	Availability of audio visual instrument/equipment for teaching technical courses.	4.25	0.88	3.98	1.02	1.55	1.98	NS
9.	Provision of well equipped workshop/laboratory for practical in technical education.	4.05	0.78	3.64	1.04	1.50	1.98	NS
10.	Provision of adequate number of electronics, electrical , mechanical, building and woodwork materials and components	3.98	0.81	3.52	1.14	1.62	1.98	NS
11.	Provision of safety materials and equipment in the work shop in each section of technical education.	3.76	0.94	3.76	0.93	0.22	1.98	NS
12.	Proper arrangement of tools and equipments in tool box to avoid wastage and accidents in the workshop.	3.84	0.92	4.08	0.87	1.39	1.98	NS
13.	Adequate number of storage facilities in the workshops in each sections of technical education	4.05	1.08	4.02	1.05	0.18	1.98	NS
14.	Constant electricity supply to the workshops and class rooms of technical education.	4.01	0.95	4.02	1.15	0.03	1.98	NS
15.	Delivery access for goods to all workshops of technical education for safe practice.	3.95	0.92	3.88	0.96	0.45	1.98	NS
16.	Provision of adequate number of tools and equipment in good condition in technical workshops for female students to handle without fear.	3.80	0.88	3.78	0.91	0.15	1.98	NS
17.	Provision of practical manuals to guide the female students during practical	3.69	1.02	3.82	0.87	0.70	1.98	NS
18.	Adequate number of work benches in good condition in the technical workshops	3.98	0.86	3.86	0.96	0.75	1.98	NS
19.	Provision of colour safety to designate or identify safety equipment or machines in the workshop	3.91	0.81	3.72	0.92	1.23	1.98	NS
20.	Provision of adequate number of stationary machines in the technical workshops for practical class.	3.88	0.88	3.42	0.97	0.77	1.98	NS

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