

GENDER INEQUALITY IN TVET INSTITUTIONS – BRIDGING THE GAP: THE CASE OF ACCRA POLYTECHNIC

*Martin Owusu Amoamah[1], Edwin Mends Brew[2] , Rita Esi Ampiaw[3], Joseph Dadzie[4],

Department of Mathematics & Statistics, Accra Polytechnic, P. O. Box GP561, Accra

*Corresponding Author's E-mail: martin_amoamah@yahoo.com

Abstract

In many countries, gender differentiation within education has become a key principle which shapes the selection, distribution and evaluation of educational knowledge for young men and women. Issues of gender have been topical and dominate most education related discussions in recent times. Access to Technical and Vocational education in Ghana has increased in the past decade. Within these TVET institutions, the challenge has been gender disparities, with focus on female involvement both as trainers and trainees. For Technical Education, males dominate and in Vocational Education, females outnumber their male counterparts. The Polytechnics are no exception as some of its programmes are aligned in this way. Improving access to higher quality tertiary education and skills training is central to enhancing Ghana's productivity, spurring social inclusion and reducing inequality. Even though females today have an increased opportunity to enroll in Technology education programs, the vast majority still choose not to. They perceive Technology education as a male domain to which they do not belong. There is the need to address this lack of participation by understanding the differences between males and females choice of study. This paper is concerned with the under-representation of women in Engineering education as well as men in Vocational education and the underlying reasons. A stratified random sample of staff and students selected from the Science and Engineering faculties of Accra Polytechnic was used in this study. Data on enrollment and graduation were also used for further analysis. This study recommends that competency based training must be adopted in the Technical and Vocational fields of study in our TVET institutions.

Keywords: Gender, TVET, Polytechnic, Stratified.

1.0 Introduction

1.1 Education and Gender

Education is universally acknowledged to benefit individuals and promote national development. Educating males and females produce similar increase in their subsequent earnings and expand future opportunities and choices for both males and females. However, educating girls produces many additional socio-economic gains that benefit entire societies. These benefits include increased economic productivity, higher family incomes, delayed marriages, reduced fertility rates and improved health and survival rates for infants and children.

Over the years, education has focused on access and parity while insufficient attention has been paid to retention and achievement or the quality and relevance of education. Providing a quality, relevant education leads to improved enrolment and retention, but also helps to ensure that males and females are able to fully realize the benefits of education. The primary focus on female access to education may overlook males' educational needs. (USAID EQUATE Project Report, 2008).

Educating females achieves even greater results. When females go to school, they tend to delay marriage, have fewer but healthier children and contribute more to family income and national productivity. According to Summers (1992), educating females quite possibly yields a higher rate of return than any other investment available in the developing world. The development costs of not achieving gender parity in education will be reflected in reduced economic growth and increases in fertility, child mortality, malnutrition and poverty.

Gender equality in teaching and learning and gender equality in leadership and management are complementary. If females never successfully pass through the academic system they will never become leaders within it. It behooves on the management of TVET institutions to ensure that such complementary gender equality in teaching and learning, as well as in leadership and management is achieved.

1.2 Gender Equality in Leadership

Males and females differ as leaders. Leadership styles differ among them for specific tasks and situations. They may not differ in their ability to perform operational tasks, but rather bring a different perspective to strategic decision-making through their increased sensitivity to others (Nielson & Huse, 2010). Females take initiative, practice self-development and are honest with a high level of integrity.

According to a research paper, females show a bit more democratic and participative leadership styles and a bit less directive and autocratic styles than their male counterparts (Eagly & Johnson, 1990). Females are more likely to show transformational leadership and to give rewards, while their male counterparts are more likely to exhibit the punishment element of transactional leadership as well as the laissez-faire style.

Moreover, females are less hierarchical, more cooperative and collaborative, and more willing to enhance the self-esteem of others. Females are therefore more likely to fare better with more ease in authentic leadership styles. One main barrier that keeps females from advancement is their lower sense of confidence. In competing with their male counterparts there is sometimes a lack of confidence to rub shoulders.

Female leaders are likely to be viewed negatively when adopting masculine leadership characteristics (Heilman & Parks-Stamm, 2007). When females do remain feminine but perform a male role, they are perceived as too emotional and lack assertiveness. This means that female leaders face a compromise between liked and perceived competence.

1.3 Gender Inequality in TVET Institutions

The TVET subsector is usually characterized by gender inequalities and stereotyping; males and females are channeled or channel themselves into different paths. The different paths usually result in different outcomes and in particular different earnings. Females usually dominate the 'traditional female occupations' training programmes like Fashion Design & Textiles, Secretarial Studies, and Catering; while males also dominate 'traditional male occupation' like Furniture Design and Engineering. In general, professions and occupations

dealing with 'things', such as Engineering, tend to be more regarded in society than professions and occupations dealing with 'people', such as Catering, where females tend to cluster (Lifanda et al, 2004).

2.0 Methodology

The study looked at bringing to the fore, the gender inequalities that exist in the Engineering and Science programs in Accra Polytechnic, as a TVET institution and ways of bridging the gender gap. The analysis involved a study of the 2010 PHC report with regards to gender differentials in TVET institutions nationwide. The MDG report of the Ghana Statistical Service published in July, 2013 was also utilized in this study. Internally, secondary data on number of students by level of study in the Polytechnic with focus on the School of Applied Sciences and Arts and also from the School of Engineering from the 1995/96 academic year to the current 2015/16 academic year was obtained. The data on teaching personnel by department was also obtained. These data were categorized by gender and were picked for the computations of the educational measures.

Education is an important variable in accounting for demographic behavior. In this study three broad categories of educational measures are considered. These are measures of educational input, progression and output. The measures of educational input are concerned with actual enrolment in school or in any grade or level of school, with types of school and fields of study and with enrolment expectations. Specifically, the study looks at enrolment at the first year in Accra Polytechnic in the fields of Engineering and Applied Sciences and Arts. Measures of educational progression have to do with retention in school from one grade or age to another with graduation and with grade standing relative to age. For this study, retention in the program from one level to another with graduation at the third year, or maximum five years is used. Finally, measures of educational output relate to eventual educational status, such as literacy, educational attainment and educational qualifications.

3.0 Findings

3.1 Ratio of males to females in Departments within the School of Applied Sciences and Arts

A comparison of Gender Parity Ratios in the five departments in the school of Applied Sciences and Arts, show varying results. Apart from SLT and Computer Science that have ratios close to each other, the three other departments show wide disparities. HCIM third year has the highest ratio of 1:9.3. This will mean that there are nine times as many females in the class as are males. It is the worst form of disparity in the school. For a male dominated program like Statistics, the third year has a ratio of 5.2:1, also the highest in the school. Table 3.1 shows the ratios males to females for all three levels of study by department.

3.2 Ratio of males to females in Departments within the School of Engineering

The ratios for Electrical Engineering differ significantly from one level to another, with the worst being year one, which is 92:1. Second year Civil engineering seems the best in that school with a ratio of 13:1. All ratios in this school are biased for males. No ratios have been calculated for the Furniture Department, since there was no female. Table 3.2 shows the ratios for all the departments in the school of Engineering.

3.3 Ratio of males to females for Teaching Personnel in Departments within the School of Applied Sciences and Arts

For the trainers, it is only in the Fashion department that has a close ratio of 1:1.8. There are twice as many female lecturers in the department as are male lecturers. It is no better for the remaining departments. Male lecturers dominate the school with the worst situation in the Statistics and Computer departments, both of which have a female lecturer each. Table 3.3 shows the ratios for all departments.

3.4 Ratio of males to females for Teaching Personnel in Departments within the School of Engineering

With about sixty lecturers in the school, only four are females with the Electrical and Furniture departments having none. The Civil engineering department has the best ratio of 5.5:1, with the highest being in the Building department of 15:1. This school is male dominated both in terms of the trainees and trainers. The ratios for all the departments in the school are shown in Table 3.4.

3.5 Gender parity in education (2008 – 2011)

The Gender Parity Index (GPI), according to the 2010 PHC data, stands at 0.71 for the tertiary level. This means for every 100 males in a tertiary institution, there are 71 females. Trend analysis shows that the GPI has reduced by one percentage point when compared with the 2000 PHC data, indicating slow progress towards achieving the MDG target of 1.00 GPI. However, substantial progress has been made at the tertiary level where the GPI has increased from 0.58 in 2000 to 0.71 in 2010. This increase may indicate the beginning of a positive trend in increased enrolment of female students compared with male students at the tertiary level, and thus a positive development for the country's quest for equitable and universal education for all.

The GPI obtained from Accra Polytechnic depicts a wide gender disparity in enrolment. The limited progress in GPI in recent years suggests that if parity is to be achieved, a concerted and targeted strategy is required to bridge this gap.

3.6 Measures of Educational Input

The data on enrolment from the 1995/96 academic year to the current 2015/16 academic year was obtained and averaged over the twenty one year duration. Table 3.5 shows the summary of the average enrolment for the two schools. According to Shryock et al (1980), the educational measures of Input, Progression and Attainment include the following. The authors have adapted these measures for the computations that follow.

(i) Crude Enrolment Rate, which is the ratio of the total enrolment into the school of Applied Sciences and Arts to the total enrolment of all first year students in the institution. This gives a value of 17.5%. That of the school of Engineering is also 12.6%.
(ii) General Enrolment Rate, which is the ratio of the total enrolment into the school of Applied Sciences and Arts to the total enrolment of all first year HND students. This was computed as 20.5%. That of the school of Engineering is 14.8%.
(iii) Program-Specific Enrolment Rate, which is the ratio of the enrolment into a program to the enrolment into the school of Applied Sciences and Arts. This was found for the five programs of study within the school. The PSER values for Science Laboratory Technology, Fashion, Institutional Management, Statistics and Computer Science are respectively 40.4%, 21.1%, 16.2%, 4.7% and 17.6%. For the school of Engineering,

the PSER values for Civil, Building, Electrical, Mechanical and Furniture are respectively 21.5%, 21.3%, 32.6%, 24.1% and 0.5%

(iv) Gender-Specific Enrolment Rate, which is the ratio of enrolment by gender into the five programs to enrolment into the school of Applied Sciences and Arts. For males, the value is 42.6% and for females it is 57.4%. That of the school of Engineering is also 97.3% for males and 2.7% for females.

(v) Gender-Program-Specific Enrolment Rate, which is the ratio of enrolment into a program by gender to the enrolment into the school of Applied Sciences and Arts. This is shown in Tables 3.6 and 3.7. For example, we have 3.8% for males in the HND Statistics program and 0.9% for females.

3.7 Measures of Educational Progression

Data on educational progression provide a basis for seeing to what extent population groups persist in school and to what extent continuation in school is related to normal grade progression. Of major concerns are the concepts of school retention and dropout and also scholastic retardation and acceleration. School retention refers to the continuation of person's enrolled in school from one school grade or level to another. The data on enrolment from the 1995/96 academic year to the current 2015/16 academic year was segmented into some age groups and levels, by gender. The average enrolment by age and level for females in the Schools of Applied Sciences and Arts, and the School of Engineering was obtained. Based on this data, the following educational measures of progression have been computed.

(i) Program Retention Rate for students in the School of Applied Sciences and Arts is 93%, which compares favorably with the institution's target of 96% by the year 2018, as contained in Accra Polytechnic's Strategic Plan (2013 – 2018). That of the School of Engineering is 89%.

(ii) Assuming ages 20 and 21 are normal for HND I, the Scholastic Acceleration Rate for students in the first year of the School of Applied Sciences and Arts is computed as 19.6%. That of the School of Engineering is 18.4%.

(iii) Assuming ages 21 and 22 are normal for HND II, the Scholastic Acceleration Rate for students in the second year of the School of Applied Sciences and Arts is computed as 44.8%. That of the School of Engineering is 42.1%.

(iv) Assuming age 22+ is normal for HND III, the Scholastic Acceleration Rate for students in the third year of the School of Applied Sciences and Arts is computed as 83%. That of the School of Engineering is 78%.

(v) In like manner, following the assumptions above, the Scholastic Retardation Rate for students in the first and second years in the school of Applied Sciences and Arts respectively 28.4% and 10.9%. That of school of Engineering is 27.6% and 9.3% respectively.

3.8 Measures of Educational Output

Educational attainment is the highest grade completed within the most advanced level attended in the educational system of the country where the education was received. Of all the students in the HND III, in the school of Applied Sciences and Arts, 8.5% could not complete within the three years of study. That of school of Engineering is 13.2%. The measures of educational output include:

(i) Specific Grade Attainment Rate for HND III students aged up to 22 years is computed as 0.83.
(ii) Cumulative Grade Attainment Rate for females in their final year is 0.94.
(iii) Educational Attainment Ratio relating HND females to those not attaining the certificate at all is also 0.96.

4.0 Discussions and Conclusions

In general, TVET has in the past been under-developed and allocated a lower status as a sub-sector of education in Ghana. Many times this sub-sector has been seen as a preserve for out-of-school young people, school dropouts and poor academic performers who could not gain admission into Universities. It is clear from the above that there are great gender disparities. Female students as well as female teaching staff are significantly under-represented in the School of Engineering. On the other hand, male students as well as male teaching staff are also under-represented in the Departments of HCIM and Fashion.

4.1 Identified Causes of Gender Disparities

The above differences and stereotypes are attributed to the following:

(i) Attitudes held in society about the lack of ability of females when it comes to scientific and technical courses. Also the stereotyped images of scientific and technical careers are seen to be incompatible with a female's role.
(ii) Some employers are reluctant to employ females as mechanics or technicians perhaps because these fields are considered to be 'manly'. In the same vein, it is noted that males are reluctant to enroll in programs such as HCIM and Fashion.
(iii) There is the lack of female lecturers who should also act as role models to female students in Engineering. Similarly, male lecturers to mentor male students in the HCIM and Fashion Departments are a few.
(iv) The inadequate counseling and career guidance services further obstruct the informed choices that males and females would make about their career.
(v) The limited number of TVET institutions and programs nationwide makes their accessibility difficult, particularly those in the rural areas and especially rural females.

4.2 Strategies to Bridge the Gap

(i) Involving the community by engaging them in Science and engineering related matters. Adoption of a community with a Technical or Vocational school and supporting them with equipment and human resource, thereby motivating them on the need to choose an Engineering or Vocational program at the Tertiary level which will cross cut gender.
(ii) Establish some financial incentive programs for attracting female lecturers for the Engineering programs and male lecturers for HCIM and Fashion Design. This can be achieved through scholarship programs and possibly additional allowance for such personnel.
(iii) Establishment of Community Based Education and accelerated classes to promote access to these programs.
(iv) Establish a gender unit and appoint a gender coordinator to be solely responsible for this gender mainstreaming.

(v) There should be a concerted effort to expand opportunities for female students who venture into engineering programs and their male counterparts who enter into HCIM and Fashion, in a broader spectrum of courses adapted to employment needs.

(vi) Retention in a program must be ensured and factors such as poor quality teaching and learning which take place in the lecture rooms and lack of relevance of the education offered to the situation in which the students live must be considered.

(vii) A competency based training approach should compulsorily be adopted since the programs under consideration are practical oriented. This will reduce the anxiety of an examination environment which sometimes scare the students.

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APPENDIX

Table 3.1: Average number of students by level of study, department and gender for the School of Applied Sciences and Arts (1995/96 – 2015/16)

Department	Year of study								
	1st year			2nd year			3rd year		
	Male	Female	Ratio	Male	Female	Ratio	Male	Female	Ratio
SLT	179	147	1.2 : 1	176	131	1.3 : 1	117	82	1.4 : 1
FASHION	29	141	1 : 4.9	23	97	1 : 4.2	22	83	1 :3.8
HCIM	16	115	1 : 7.2	15	110	1 : 7.3	8	74	1 : 9.3
STATISTICS	31	7	4.4 : 1	36	8	4.5 : 1	47	9	5.2 : 1
COMPUTER	89	53	1.7 : 1	56	31	1.8 : 1	38	22	1.7 : 1

Table 3.2: Average number of students by level of study, department and gender for the School of Engineering (1995/96 – 2015/16)

Department	Year of study								
	1st year			2nd year			3rd year		
	Male	Female	Ratio	Male	Female	Ratio	Male	Female	Ratio
CIVIL	120	5	24 : 1	80	6	13 : 1	60	4	15 : 1
BUILDING	119	5	23.8:1	90	4	22.5:1	93	4	23.3:1
ELECTRICAL	188	2	94 : 1	112	3	37 : 1	108	2	54 : 1
MECHANICAL	136	4	34 : 1	140	5	28 : 1	126	4	31.5:1
FURNITURE	3	0	-	5	0	-	3	0	-

Table 3.3: Teaching personnel by department and gender within the School of Applied Sciences and Arts (2015/16)

Department	Male	Female	Ratio
SLT	18	3	6 : 1
FASHION	4	7	1 : 1.8
HCIM	2	9	1 : 4.5
STATISTICS	7	1	7 : 1
COMPUTER	7	1	7 : 1

Table 3.4: Teaching personnel by department and gender within the School of Engineering (2015/16)

Department	Male	Female	Ratio
CIVIL	11	2	5.5 : 1
BUILDING	15	1	15 : 1
ELECTRICAL	11	0	-
MECHANICAL	12	1	12 : 1
FURNITURE	6	0	-

Table 3.5: Average enrolment (1995/96 – 2015/16)

	Male	Female	Total
All first year students	2,515	2,086	4,601
HND first year students	2,152	1,793	3,945
Applied Sciences/Arts first year students	344	463	807
Engineering students	566	16	582
SLT students	179	147	326
Fashion students	29	141	170
HCIM students	16	115	131
Statistics students	31	7	38
Computer Science students	89	53	142
Civil Engineering students	120	5	125
Building Engineering students	119	5	124
Electrical Engineering students	188	2	190
Mechanical Engineering students	136	4	140
Furniture Design students	3	0	3

Table 3.6: Gender Program Specific Enrolment Rates (SASA)

Department	Male	Female
SLT	22.2%	18.2%
FASHION	3.6%	17.5%
HCIM	2.0%	14.3%
STATISTICS	3.8%	0.9%
COMPUTER	11.0%	6.6%

Table 3.7: Gender Program Specific Enrolment Rates (SoE)

Department	Male	Female
CIVIL	20.6%	0.9%
BUILDING	20.4%	0.9%
ELECTRICAL	32.3%	0.3%
MECHANICAL	23.4%	0.7%
FURNITURE	0.5%	0.0%