

**CAUSES OF LOW ENROLMENT OF FEMALE STUDENTS IN
MECHANICAL TECHNOLOGY COURSES IN YOUTH POLYTECHNICS IN
KENYA: THE CASE OF NYAMIRA COUNTY**

BY

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DECLARATION

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DEDICATION

This thesis is dedicated to my family members , especially my father Mr. Anyona Nyang'au, my beloved wife Mrs. Juliah Kerubo and our children John Fahrenheit Morang'a, Askah. Nyatichi and J. Ezra for their positive comment , encouragement and moral support .

ABSTRACT

One of the urgent priorities of the Education for All goals is to ensure access and improved quality of education for girls and women, and to remove every obstacle that hinders their active participation. With the current influx change in technology which is driven by global economy, human resource in both gender trained in science and technological oriented fields is of great need. Kenya government has made efforts and international donors to increase women participation in mechanical technology. However, still there is gender disparity in mechanical technology. Because of this a pool of female professionals especially in mechanical technology in a developing country will provide positive role models and result in reducing the gender disparity in mechanical technology. This study sought to investigate the causes of low enrolment of female students in mechanical technology courses in Youth Polytechnics in Kenya; the case of Nyamira County. The main objectives of the study were to investigate culture, physical facilities for teaching, shortage of female role models and parental influence on low enrolment of female students in mechanical technology courses in the Youth Polytechnics (YPs). The study also sought to establish possible solutions, which should be put into place to promote enrolment of female students in mechanical technology courses. The study targeted population comprised of four public YPs in Nyamira County. Stratified sampling method was used to select instructors, managers and students. The study used observations, interviews and questioners for collecting data. Analysis of data was done using descriptive statistical techniques with the aid of statistical package for social sciences (SPSS). The study found out that indeed culture, physical facilities for teaching, shortage of female role models and parental influence, influenced low enrolment of female students in mechanical technology courses in YPs in Nyamira County. The study recommends that the community should accept to eliminate cultural beliefs and practices which hinder the participation of female students in mechanical technology field. Department youth affairs and sports through mechanical industries should encourage employment female graduates of mechanical technology. Managers in youth polytechnics should invite successful women role models to mentor female students to join mechanical technology courses.

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LIST OF ABBREVIATIONS

GOK: Government of Kenya.

IDAK: Italian Development Agency in Kenya.

KCPE: Kenya Certificate of Primary Examination.

KCSE: Kenya Certificate of Secondary Examination.

KIDDP: Kenya Italy Dept for Development Program

MDG: Millennium Development Goal

MVM: Motor Vehicle Mechanics

NGO: Non Governmental Organizations.

TVET: Technical and Vocational Education and Training

UNESCO: United Nations Educational Scientific and Cultural Organization

UN: United Nations

YPs: Youth Polytechnics.

VTI: Vocational Training Institute.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter comprises of background of the study, statement of the problem, purpose of the study, research objectives, research questions, justification of the study, significance of the study, scope of the study, limitations of the study, Assumptions of the study, theoretical framework of the study, conceptual framework of the study and summary.

1.2 Background to the study

Technical Vocational Education and Training (TVET) is one of the key tools towards effective development strategies that may be used to eliminate poverty, promote peace, conserve the environment, improve the quality of life and help to achieve sustainable development. It is a form of development that enhances the economic well being of all individuals in society contributes to social cohesion, good democratic values and environment protection, TVET being a crucial tool for attaining this. Vocational education existed in Kenya long before the coming of the western education (UNESCO, 2004). This form of African indigenous education was largely practical. According to Bogonko (1992), this education was to enable every adult to acquire knowledge, skills and attitudes for economical, social and political developments. This was to integrate one fully into the traditions, customs and relevant activities of their society.

According to Okaka (2001), traditional African societies applied mechanical skills in making their own tools, equipment and materials. Within this field, they used to exchange their products from one community to another by the barter trade system. Education was also viewed as a vocation within the African setting. Each community

had its peculiar vocation passed over from generation to generation. However, the colonial rule and with western education; African's education system was despised. The Second World War brought the biggest influx of people, more sophisticated equipment and machinery, and a greater need for training was put into practice (Hammond, 2007).

Vocational training centers in Kenya known as Youth Polytechnics started as forms of education to equip the youths with industrial and technical skills to curb the problem of unemployment. They were seen as having the potential in reforming the formal education system which not able to accommodate all graduates from primary education. Government and church organizations responded to the unemployment crisis by establishing non formal education and training institutions with a strong vocational bias (Sifuna, 1984). The National Council of Churches of Kenya initiated the YPs in 1966 as one of the solutions for the problems of youth unemployment. In 1971, the Government started supporting YPs through local communities and churches by giving funds and contribution. This was a strategy to ensure that school leavers had access to technical, entrepreneurial and business skills. This would enable them to engage in income generating activities. This was expected to improve the living standards of their communities and stem rural-urban migration. Local communities, religious and other Non-governmental organizations with support from Government and development partners have for many years contributed towards the establishment of YPs in different parts of the country.

According to the Kenya Italy Department for Development Program (KIDDP), between 1966 and 1972 there were more than 53 village polytechnics involved in training high school graduates in various vocational subjects such as, Carpentry,

Accounts, Mechanics, Catering, Plumbing, Welding and Fabrication leading to the award of a certificate. According to the UNESCO (2011) report of women and TVET, female students enrolled more in certain courses like, food production, textiles tailoring and secretarial. Courses like welding and fabrication, production, construction, and heavy mechanical technology enrolment of female students was extremely small. The trend has been reversed in some courses like, electrical engineering, architecture, electronics and computers. Under enrolment of girls in YPs, especially in engineering and technology a course is not unique to Kenya. According to the Millennium Development Goal report (2010 MDG), it is noted that indeed low enrolment of female students in mechanical is a worldwide problem. Even in countries that are far more developed in engineering and technology the problem persists since very fewer women than men study science and mechanical technology (Bouville, 2008).

Due to economic challenges between 2000 and 2002 in Kenya, employment opportunities became a mirage to its education graduates. Consequently, the problem of youth unemployment persisted pushing the government to find a quick solution. This led to the establishment of the Ministry of Youth Affairs and Sports through a presidential circular No. 1 of 2005, with the mandate to revitalize YPs countrywide among others (Government of Kenya, 2005). The YPs were mandated to ensure youth empowerment through the provision of accessible, appropriate and quality training in technical, vocational, industrial, entrepreneurship and life skills (Government of Kenya, 2005). This was to enable the youths to be self-reliant and have necessary skills to steer the country towards the realization of Vision 2030. One of the aims of Vision 2030 is to help the country to address gender imbalances, youth-related problems and obstacles facing other vulnerable groups by equipping them with

the skills that will enable them to live more productive and satisfying lives in an expanding and diverse economy. This will support women to participate actively in all spheres development which is in line with the current Kenyan Constitution. This Constitution mandates that in any employment opportunity, a third of either gender must be represented.

The prosperity of any nation depends on the skills-base of its citizenry, quality and transfer of the skills. It should also have sound policy and legal framework to sustain quality growth in skills development. The enrolment of female students in mechanical technology courses in YPs enables to produce a dynamic multi-skilled youth who could add value to his or her society. In line to this, female youth will be able to compete favourably in job opportunities in mechanical technology. The establishment of these YPs was to enable those who dropout either in primary or secondary to get another opportunity to complete their education.

According to Mbirianjau (2009), participation of female students in mechanical technology courses should be encouraged to take up training skills that give them more options and opportunities for employment. They should be assisted to undertake training in non-traditional female occupations. According to Kasente (1996), women desire to be trained, however, there are barriers that discourage them from going for training in science based courses which offer employment opportunities for the job market. Some of the barriers are based on cultural beliefs, lack of exposure to new trends in change with technology, parental level of education, peer influence and economical backgrounds.

The study was carried out in Nyamira County. Nyamira County is one of the densely populated in Kisii community and is estimated to have a population of 103,650 in

2008 (Kenya National Bureau of Statistics, 2009). The County is mostly hilly and is crossed by ridges and hills. The County's topographical zones lie between 1200 – 1950m above sea level. In Nyamira County, there are four public youth polytechnics Bigege, Misambi, Matongo and St.Stephen with a population of 750 student and 35 instructors.

1.3 Statement of the problem

TVET has contributed to economic competitiveness, provision of essential services like infrastructure and sustainable development globally. As a tool towards development which Nyamira County can use to achieve vision 2030, there are some underlying factors which hinder it achievement. One of the obstacles is gender disparity in mechanical technology courses among its YPs. Because of this, there is a need to address this imbalance pro-actively, not just because it's right to do so, but because if not, the government will not fulfil the requirement of the constitution on gender.

According to Italian Development Agency in Kenya (2010), on a survey which was carried out in 279 YPs in Kenya, out of a total enrolment of 16,415 students, only 30 percent was girls. On the same survey, gender distribution of the courses had more boys (between 55 % and 96 %) taking electrical, welding and fabrication as compared to girls. Further the same study found out that a few girls (between 30 % and 4 %) took courses in welding and fabrication, carpentry and joinery as well as masonry. The majority of the girls, over 50%, were enroled in tailoring, hair dressing and dressmaking. To address this disparity, the Kenyan government has introduced free tuition fees in YPs for female students in some courses especially related to mechanical technology.

Even with the initiative of waiving the tuition fees in YPs, enrolment of female students in production, welding and fabrication in Nyamira County YPs has not improved. With all this effort something must be to avoid watering down it is achievements. With the current technology influx change which is driven by global economy, human resource in both gender trained in science and technological oriented fields is of great need. Because of this a pool of female professionals especially in mechanical technology in a developing country will provide positive role models and result in reducing the gender disparity in science and technology. The study, therefore sought to establish the causes influencing the low enrolment of female students in mechanical technology courses in the YPs in Nyamira County.

1.4 Purpose of the study

The purpose of this study was to establish causes of low enrolment of female students in mechanical technology courses in Youth Polytechnics (YPs) in Kenya, specifically focusing on Nyamira County.

1.5 Research Objectives

- i. To establish the influence of culture on enrolment of female students in mechanical technology courses in Nyamira YPs.
- ii. To establish the influence of physical facilities for teaching on enrolment of female students in mechanical technology courses in Nyamira YPs.
- iii. To establish the effects of the few qualified female role model on enrolment of female students in mechanical technology courses in Nyamira YPs.
- iv. To establish the effects of parental influence on enrolment of female students in mechanical technology courses in Nyamira YPs.

1.6 Research Questions

- i. What is the influence of culture in enrolment of female students on mechanical technology courses in YPs in Nyamira?
- ii. How do physical facilities for teaching influence enrolment of female students in mechanical technology courses in Nyamira YPs?
- iii. How does few qualified female role models influence enrolment of female students in mechanical technology courses in Nyamira YPs?
- iv. How does parental influence on enrolment of female students in mechanical technology courses in Nyamira YPs?

1.7 Justification of the Study

The 21st century is an era of exponential and rapid technological advancement, which requires the need for gender balance in all spheres of work. Contrary to this, there is a big gap of gender imbalance in mechanical courses such as production, welding and fabrication. Women should be well informed and be prepared to take all courses regardless of occupation or geographical location. This will project them to meet the needs and demands of all job opportunities. At the same time, they will be agents of solve their own problem and compete equally with their counterparts.

According to Thode (1989), technical courses should be focused on all students in order to solve problems, which will prepare them for a successful future in the job market. This will enable women to compete with men both locally and globally. According to Riza (2001), argues that in selecting a career, there is a direction that motivates one towards achieving aims of life. For the case of female students, they have got a great potential in TVET which will enable them to further their education

and secure job opportunities. However, few women are working in TVET fields, especially in production, welding and fabrication.

According to the Millennium Development Goal (2010), World Declaration on Education for All the most urgent priority is to ensure access to and improvement on the quality of education for girls and women, and to remove every obstacle that hinders their active participation. Since the world is increasingly shaped by scientific and technological skills, their literacy is a universal requirement. Therefore, it is vital to improve mechanical skills among women and girls in Nyamira. According to the current constitution, in every opportunity either gender should be represented by a third geared to vision 2030. Mechanical field has prime opportunities in which most women have not shown interest to explore in the field of TVET. The study was taken in Nyamira because it is densely populated and over stretched in terms of land. One of the key solutions addressing these challenges is to equip all people with quality education.

1.8 Significance of the Study

This study has generated information on the causes influencing low enrolment of female students in mechanical technology courses in Nyamira YPs. This will be beneficial to our county Kenya and education policy-makers to improve female enrolment in all fields of science and technology. This can be achieved if girls accept to use the available local resources including tools, equipments, materials, staff to acquire skills and knowledge. This will assist them to be self independent and contribute effectively towards the improvement to the economy.

The study also helps educators understand how high enrolment of female students in mechanical technology courses in Nyamira YPs best function in imparting workable

vocational skills. This will eliminate some of the issues of gender imbalance in TVET. The findings of the Study add empirical data to enable YPs in Nyamira to be successful in contribution towards the attainment of the dream of Vision 2030.

1.9 Scope of the study

The study covered the effects of culture, physical facilities, shortage of qualified female role models and parental influence and how they affect the low enrolment of female students in mechanical technology courses in YPs. The study was carried out in Nyamira County Youth Polytechnics between June to August 2012.

1.10 Limitations of the study

- i. The population surveyed was within YPs in Nyamira County.
- ii. The YPs being researched are located in rural setup.

1.11 Assumptions of the Study

This study assumed that:

- i. Participants of the study would put forth an honest report when they would complete the survey instruments.
- ii. Participants were familiar with the importance of mechanical technology courses to themselves and the society.

1.12 Theoretical Framework of the Study

This study was based on Liberal feminist theory that seeks to ensure equal rights, opportunities, and treatment of women. According to Lorber and Zalewski, (2001), this theory seeks first to make sure the rules of the game are fair and second, to make certain that none of the runners in the race for society's goods and services are systematically disadvantaged.

However, for Nyamira County, the enrolment of female students in mechanical technology courses such production technology, welding and fabrication technology in the four YPs in 2012 was 0% (0) and 0.5% (4) respectively. By extension this requires training a similar proportion in all fields in TVET. This will enable Kenyan current constitution which guarantees that in all employment opportunities; at least one third should be of either gender implemented. Nevertheless, the situation is different in YPs in Nyamira County and hence this study sought to establish the causes of low enrolment of female students in mechanical technology courses.

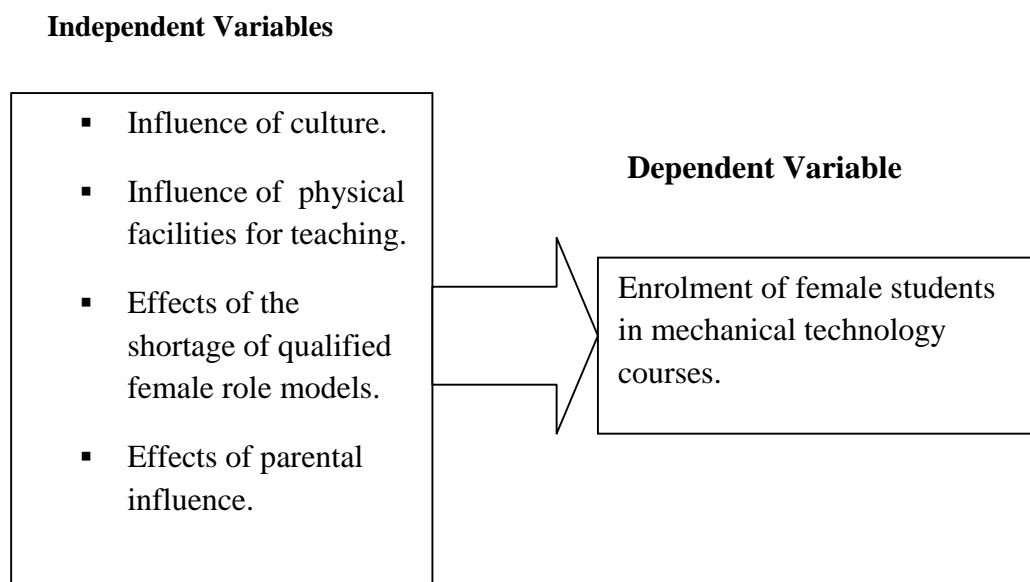


Figure 1.1 Conceptual Framework of the Study

1.13 Definition of operational terms

Culture: Is a set of shared and enduring meaning, values, and beliefs that characterize national, ethnic, or other groups and orient their behaviour for learning.

Enrolment: A statistical number of students taking a given career of study.

Gender: This refers to the socially/culturally determined power relations, roles, responsibilities and entitlements for men and women; girls and boys. The social constructs vary between cultures as well as over time.

Mechanical Technology: Field of science which expose learners to knowledge, skills, values and attitudes (SKVA) relevant to the manufacturing processes.

Physical facilities for Teaching: These are equipments, rooms and tools used to enhance learning. They include classrooms, chairs, tables, workshops boards, machines, computers, and mechanical tools.

Technical vocational education and Training: Are aspects of the educational process involving, in addition to general education, 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

Youth Polytechnic: The entry level in Technical and Vocational Education and Training which admit primary and secondary school leavers.

1.14 Summary Chapter One

This chapter covered the introduction to the study, background, statement of the problem, purpose of the study, research objectives and research questions. It also addressed significance of the study, justification of the study, scope, limitations of the study, assumption of the study, theoretical frame work, conceptual frame work and definitions of terms. In Nyamira County currently there are four public youth polytechnics Bigege, Misambi, Matongo and St.Stephen. They have got student enrolment of 750 and 35 instructors. All the four are found in a rural set up offering a variety of courses. The establishment of these YPs within the region was to enable those who dropped out either at the primary or secondary levels to get another opportunity to continue with their education. According to the Nyamira, strategic

plan 2005 – 2010, female youths have a big number of school dropouts than boys. One of its aims was to eliminate issues of gender disparity in all sectors of development through education. However, with all those efforts much has not been achieved in YPs for the case of enrolment of female students in mechanical technology courses.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, the literature reviewed here encompass women's access to technical skill training in TVET and job opportunities in developed world , developing countries (Africa) and Kenya in particular Nyamira county. The literature review covered the possible causes of low enrolment of female students in mechanical technology courses in YPs which included culture, shortage of physical facilities for teaching, shortage of qualified female role model and parental influence.

2.2 Women and Skills in Mechanical Technology in the World

According to United Nations (2005), the world population reached 6.5 billion in 2005 and the world's population could ultimately stabilize at about 9 billion people. In the field of mechanical technology due to it increase of demand enough skilled human resource is need to be trained. According to Stockyard (1980), on human skill training, women were noted to be lagging behind men in production in metalwork, welding and fabrication. Burge (1990) stated that gender inequality in metalwork skills exist in almost all societies. For instance, fashion design, health and household economics were traditionally for women while mechanics, carpentry and metalwork skills were for men.

Snyder (1994), reveal that until recently, women were expected to choose careers that are aimed at making them good housewives, for example, sewing, cookery, knitting, secretarial and among others. As a result, women workers in America tended to dominate in occupations that were designed for the lowest paid. Women could not easily enter into most male-dominated careers and professions. Access to such

lucrative careers is restricted to the privileged few, and this has made the supply of labour to those careers low, resulting in inflated wages and salaries. Home making careers rarely lead to gainful employment in modern industrial sectors. The result is low wages for women relative to men (Snyden, 1994).

Sheng et al. (1996) stated that vocational education could prepare women for various skills occupations. In developed countries such as the United States of America and Germany, skills training have become an important agenda in their national plan. They view skills training as a “panacea” for solving unemployment. According to UNESCO - UNEVOC (2011) report of women and TVET, for instance, Germany, vocational schools are given the first choice to all people. To enter university or get academic qualification has become the second choice. It has become the priority for German people in improving their skills before they study and work in any field of technology. In Sweden, the government introduced an act in 1992 which points out that today’s complex technological society demands that citizens have knowledge and understanding of technology, both as preparation for an active participation in society and as preparation for professional life. School technology teaching has a very important role in stimulating pupils’, especially girls’, interest in science and technology.

In Malaysia, this concept is supposed to be implemented formally and explained to the students who are undergoing skills training so that they will feel more confident with the vocational courses they are taking. School counsellors have to play a role in giving an explanation to the students continuously based on the most updated information about career (Okemwa, 2012). According to Mohamad (1994), early study about the loitering culture among youth in Kuala Lumpur found that 74.0% of

those youth aged below 21 years old, 45.8% of them are school students while the others consist of teenagers of age between 15 to 18 years old. These teenagers are supposed to be in school or training institutions in the country. According to Bidy (2011), on World Education report, it was noted that more than 60% of the 110 million children out of school are girls and one in three women and girls in the developing world live on less than \$2 a day.

Available literature on African countries, for instance, Ethiopia, Kenya and Botswana (UNESCO, 2003), reveal a similar trend. According to Bappa (1985), his studies noted that participation of women in skill training and university is very low and that female students were largely found in the faculty of arts. This reflects why gender imbalance in education persistence lies in a complex of economic and cultural factors that are derived from home, school, communities and nations at large (UNESCO, 2011).

According to the Government of Kenya (2003), girls' education problem started during the colonial times when the white man educated boys so as to serve as clerks while the girls were left at home to cook, fetch water and collect firewood. Female enrolment in science, mathematics and mechanical related courses in TVET institutions is extremely low. According to Kenya Gender policy in Education report (2007), the enrolment of female students stood at 1.4% in mechanical engineering, 4.4% in electrical and electronics engineering and 5.0% in building and civil engineering. While 63% of school-aged girls enrol in every year, only a third complete the 8-year primary school cycle. Half of boys do so.

According to Thode (1989), technical courses should be focused to all students in order to solve problems, which in turn prepare them for a successful future in job market. According to Riza (2001), in selecting a career, there is a direction that

motivates one towards achieving aims of life. In addition to having direction in life, the individual could choose and evaluate a suitable career. Female students tend to agree that technical training provides the opportunities to further their education to a higher level and provides them with promising job opportunities. However, few women are working in TVET fields especially production, welding and fabrication.

According to Nor (2000), the lack of women's involvement in the field of production, welding and fabrication is due to "stereotype" that could limit their career choice. Female students in vocational education are often directed to jobs such as secretarial or beauticians while male students are placed in various metalwork skills or semi-skilled industry. This has enabled male students to dominate in production, welding and fabrication which has created a gender imbalance syndrome in working places. Together with our current constitution gender disparity is social misfit towards any opportunities of development. This will be in line with vision 2030 which address on equity on all opportunities of employment.

2.3 Effects of Culture on Enrolment of Female Students in Mechanical technology courses

Hofstede (2007, pp. 21-23) defines culture as "the collective programming of the mind which distinguishes the members of one group from another". It is passed from generation to generation, it is changing all the time because each generation adds something of its own before passing it on. It is usual that one's culture is taken for granted and assumed to be correct because it is the only one, or at least the first, to be learned. Culture is unique, and no single definition of it has achieved consensus in the world of literature.

According to the Crafts Council (1995), the process of using fire to transform ore into metal, and metal into an object, was widely seen in Africa as an act of men. Secret rituals, symbols, rules, and taboos were set against women not to counteract the male dominant forces in metalwork activities. According to Terry and David (1993), in some societies in Africa women were not allowed in the vicinity of a smelt. Metalwork skills like smelting and forging were often described as being analogous to gestation and birth. According to Killick (1990), even where the strictures against women in metalworking were relatively loose, menstruating and pregnant women were always excluded. It is likely that menstruating women posed the threat of temporary sterility and loss of productivity during a smelt or in gold mining. The presence of pregnant women might increase the chance of a premature "birth" in a furnace. In African setting this culture has watered down the interest of most women in undertaking production, welding and fabrication.

Earlier studies by feminist thinkers such as Keller (1985), Harding (1986) and Haraway (1988) have argued that mechanical skills in production, welding and fabrication knowledge, just like any knowledge, is very often influenced by the cultural beliefs of people who created that knowledge. African traditions, in particular, men were the ones who worked with metal as blacksmith associated with traits, which are masculine. Their research contended that mechanical skills, especially the welding and fabrication, are perceived by girls as an unattractive career. This perception is believed to be one of the greatest barriers that deter adolescent girls who would like to be seen as normal feminine from showing an interest in pursuing studies in mechanical technology courses.

From the beginning of human civilization in Africa males and females were assigned roles to perform within the society to maintain balance and conformity. This stereotyping was also transferred to education matters. Not only are people more likely to associate production, welding and fabrication with men than with women, people often hold negative opinions of women in “masculine” positions. When a woman is clearly competent in a “masculine” job, she is considered to be less likable by either gender. The striking disparity between the numbers of men and women in mechanical technology has often been considered as evidence of biologically driven gender differences in abilities and interests (Hill, Corbett and Andresse, 2010).

According to Killick (1990), from the beginning of human civilization in Africa males and females were assigned roles to perform within the society to maintain balance and conformity. Most males were responsible for mechanical related skills in metalwork and production, including smelting, forging, casting and fabricating tools and passing on survival knowledge to young men. Most females were accountable for nursing the young, preparing harvested food, and fashioning clothing. These responsibilities and expectations determined for each gender are representative of societies from hundreds and even thousands of years ago (Okaka, 2001). In Africa, both men and women generally used to consider metalwork skills as part of the “male world” (Swanson and Miller, 1998).

According to Borkowsky (1999), summary of 21 national reports for vocational education of girls in Africa in which Kenya was included, she noted that cultural barriers had a contribution either unconscious or conscious on parental, family opinions and social norms towards the education where boys were regarded to be good in mechanical skills than girls. This negative perception has created lack of self-

confidence among girls and women in their ability and motivation to pursue mechanical technology courses in TVET.

According to Welty (2001), the culture typically gravitate girls towards their mothers; on the contrary, males attempt to display their masculinity by separating from their mothers. National Agency for Education (2001) supports that culture identity that boys are better than girls in mechanical technology is still active. Parents contributed this by buying boys toys which cultivated mechanical skills as opposed to girls. Brannon (1999), research suggests that social environments have a tremendous impact on children's play preferences, learning abilities and temperaments. Essentially, society instructs our girls how to act like girls and boys to act like boys. This synchronised people to have the culture that girl child was to be moulded to have the shape that reflects of becoming a good wife giving birth to kids for the society and perform cores which are not mechanical oriented.

2.4 Effects of Physical Facilities for Teaching on Enrolment of Female Student in Mechanical technology courses

Lyons (2012) classified teaching physical facilities according to their value, use and importance to achieve educational goals. Physical facilities for teaching are those facilities that have direct bearing on the process of teaching and learning such as classrooms, workshops and the equipment in them. He documented that learning mechanical skills is a complex activity that supremely affect students' towards motivation on physical condition of teaching resources and curriculum. These affect the enrolment of female students in mechanical careers and other fields of technology. He further concluded that there was an explicit relationship between the physical characteristics of school buildings and educational outcomes.

The government of Kenya has revisited the YPs centres to improve teaching physical facilities with the support of African Development Bank. According to Millennium Development Goals (2010) report, inadequate, obsolete training equipment and lack of instructional materials in mechanical technology courses is one of the factors that combine to reduce the effectiveness of training in meeting the required knowledge and skills in mechanical technology courses in TVET. Currently, all YPs have been assigned funds for construction of workshops and laboratories under the Economic Stimulus Programme II. Once completed, these workshops and laboratories will require equipment for them to be used. High quality skills training requires qualified instructors, appropriate workshop equipment, adequate supply of training materials, and practice by learners.

According to UNEVOC (2003), research on women and vocational education noted that there is a strong need to improve the quality and increase the quantity of mechanical training facilities, equipment and other materials in TVET institutions in Kenya. This effect will give women strong sign of motivation towards being trained for quality mechanical skills which is the key for their job qualifications and competition globally. It was also emphasized by Majumdar (2009), that the lack of solid connection between the industry and the TVET institutes; consequently, leads to the lack of exposure to modern facilities and techniques, which result to the under-performance of the institution and the graduates in mechanical skills and other field of technology. This should be done through the provision of a better TVET infrastructure, modern training facilities and equipment. This will be complemented with a suitable and updated curriculum and set of effective methodologies focused on the competency based training. Afenyendu et al (1999), observe that the institutions

are still not responsive enough and simply lack facilities in which training is driven by determination or realistic projections of future skill requirements.

A study for the World Bank by Ziderman (2002), on issues affecting TVET, found out that virtually all training systems in Sub-Saharan Africa have to deal with the reality of diminishing government funding for public sector training. Funding towards TVET programs is an arbitrary; leading to year after year variations and uncertainty which has given a weak base towards equipping quality and enough teaching physical training facilities in mechanical skill in line with other fields of technology. According to the report on Rapid Appraisal (GOK, 2003), on the Status of Technical and Vocational Education and Training (TVET) in Kenya observed that the quality of TVET graduates was fast declining at all levels. This was attributed due to out-dated equipment, poor instruction, lack of enough teaching physical facilities and meaningful supervision. In addition, the report observes that the TVET system in Kenya is not demand driven; attachments and linkages to industry are fragile, poorly planned and inadequately supervised. Poor quality of training resulting from lack of appropriate (qualitatively and quantitatively) tools and equipment and the poor inflexible curricular in TVET institutions, may be attributed again to the low level of investment by governments towards the TVET sector.

2.5 Effects of the shortage of qualified Female role models on Enrolment of Female Students in mechanical course

According to Lockwood (2006), a role model is an individual who provides an example of the kind of success that one may achieve, and often also provides a template of the behaviours that are needed to achieve such success. Mechanical female role models are important because they influence other female students'

motivation to choose and pursue mechanical careers and other related fields of technology.

Role models have been suggested to make a difference to girls' interest in metalwork as women role models may help to engage them in mechanical by de-stereotyping the objective and value-free image of production, welding and fabrication of metalwork (Pettitt, 1995). It has been argued that male teachers tend to predominate in the metalwork skills like smelting, forging and casting while girls are less attracted to those skills due to lack of female instructors acting as role models. Having more women acting as role models could encourage more girls to study production, welding and fabrication has been explored by Byrne (1993). She argued that a critical mass of women mechanical engineers was a significant factor for girls in metalwork skills and one way of achieving this is through affirmative action such as recruiting more female role models at all levels of TVET.

“Exposing girl child to successful women in production, welding and fabrication can provide inspiration and role models for young women” (Dorman, 1998). Many young women view production, welding and fabrication as courses for male. Unfortunately, this may contribute to the reluctance of female students to enrol in mechanical technology courses and pursue metalwork skills like smelting, forging and casting. If female students were able to view the success of women in welding, fabrication and production fields, this would enable them to pursue traditionally male-dominated professions in metalwork.

According to Suhaimi (1996), role models do not only impart knowledge but they also spread out information about careers that could be selected by the students. Lack of enough production, welding and fabrication female teachers (instructors), who should

act as role models to female students, is a need to make TVET attractive for both female and male students. Shortage of mechanical female instructors is one of the basic denominators affecting career choice of female students in developing countries.

According to Kerre (1995), generally efforts at providing effective TVET in Africa have not succeeded. Vocational training like production, welding and fabrication have received low turn up for the case female role models. Shortage of Mechanical female instructors in Kenyan YPs is one of the major underlying factors affecting gender disparity. For decades, women have been striving to succeed and increase their numbers in technology fields. Fields like electrical, civil and medicine have achieved nearly equal numbers of men and women for years now; however, the fields of production, welding and fabrication, are still struggling each year to attract and attract females professionals into TVET but much has not been achieved.

Mukhtar (1999) found that even though without the teachers' encouragement, the choice of welding and fabrication among female students is still associated with the teachers' role model involvement factor in assisting in decision making. This could be due to the teachers' role model communicating method, behaviour, achievements and teaching that have an indirect impact to female students' career choice. According to Austria (2010), lack of enough female role models and mentors in production, welding and fabrication fields has denied girls an exposure in mechanical skills. This has combated negative stereotypes about the nature of metalwork skills like smelting, forging and casting. It is valuable to have role models whom students can easily admire, perhaps because they represent paragons of achievement in their fields. It is also valuable to have role models and mentors with whom students can identify. Role models or mentors with whom students can identify will likely come

from a wide variety of backgrounds, racial and cultural groups, and be at various points in their career paths.

According to Crow (2010), also noted the education system in African countries is wanting since there are not enough female mechanical teachers for TVET institutions. This has made training in production, welding and fabrication to have enrolment challenges for female students and some have no single enrolment of female students, especially in YPs. The TVET gender analysis of this report found out that the disparity on mechanical instructors is rooted in values, norms, myths, taboos and traditions on metalwork like smelting, forging, casting and fabricating tools. According to the report women were not accepted to share same skills with their counterparts.

2.6 Effects of Parental Influence in Female Students Enrolment in Mechanical technology courses.

Those around young girls have great potential to influence their perceptions of themselves and others in relation to mechanical work. Parents have the greatest potential to influence their children, since they are the first people to induct and transform their career interest from early age. According to Jungen (2008), choosing a career is often considered a major turning point in a young adult's life. This decision alone has the potential to open the door for success or close the door of opportunity. While often perceived to be an individual choice, research suggests that a variety of influences such as family, school, community, and social and economic factors are likely to manipulate one's ultimate career decision (Ferry, 2006). Among these factors, students report that parents have the greatest influence on which career they choose (Kniveton, 2004). Parental influence and the educational system also have the

ability to shape the self-images and futures of girls as they approach maturity in making decision related to their future careers. As mechanical technology skills have evolved, males have remained to be considered leaders in these respective fields of metalwork. Because of that, it has imparted negative image to most parents towards educating a girl child, especially in production, welding and fabrication. This has made many female students to lack confidence in their mechanical abilities.

Parental figures have the ability either encourages their children to pursue their interests, possibly in a non-traditional field or conform to the roles that the society has created for both male and female. Regardless of whether media of real life situations arise, parents need to point out sexism and explain to their children the roles now available to women (Sadker & Sadker, 1994). Parents can be a tremendous positive influence for their children regarding the importance of women's career possibilities within society. Parents are also accountable for encouraging their children to pursue traditional career paths instead of subjects that genuinely and individually interest them (Vergue, 1996). According to Swanson (1998), parents typically purchase mechanical technology toys twice as frequently for their sons as their daughters. Because of this, boys are more motivated towards the field of mechanical technology double their counter-parts. This has given boys to have a strong legacy towards production, welding, fabrication and other metalwork skill.

According to Kithyo (1999), parental pressure and stereotypical guidance, regardless of socioeconomic status remains to reinforce gender norms. Gender stereotypes where female students taking production, welding and fabrication were seen to be a misfit by the parents. Courses that were thought to be feminine were considered acceptable for female students because of the focus on human interaction and

domestic occurrences. Similarly, male students were expected to enrol in courses that will display their mechanical aptitude and ability to use machinery.

Silverman and Pritchard (1996), study on vocational education noted that girls often did not choose to enrol in production, welding and fabrication. Young women frequently make choices similar to those of their peers and parents test. Female students also create extremely strong relationships with their parents and female peers during their earlier age in school (Welty & Puck, 2001). Thus, it is significant for vocational education to generate interest for both female students and their friends.

2.7 Summary of Literature Review

This chapter covered the literature review on women and skills in vocational education in the world, effects of culture, physical facilities for teaching, shortage of qualified female role models and parental influence on enrolment of female students in mechanical technology courses. Literature noted that from the beginning of human civilization in Africa males and females were assigned roles to perform within the society to maintain balance and conformity. Metalwork skills like smelting and forging were often described as being analogous to gestation and birth. In African setting this culture has watered down the interest of most women in undertaking production, welding and fabrication. High quality skills training requires qualified instructors, appropriate workshop equipment, adequate supply of training materials, and practice by learners. This requires upgrading of facilities in training institutions to reflect the use of current mechanical technologies being used in the workplace. Lack of enough production, welding and fabrication female teachers (instructors), who should act as role models to female students, is a need to make TVET attractive for both female and male students. Parental pressure and stereotypical guidance,

regardless of socioeconomic status remains to reinforce gender norms. Gender stereotypes where female students taking production, welding and fabrication were seen to be a misfit by the parents.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents a description of the study design and methods applied in carrying out the research study. It is organized under the following sections: research design, area of study, target population, sampling procedures and sample size, data collection instruments, validity and reliability of research instruments, data collection procedures, ethical issues and data analysis techniques.

3.2 Research Design

This is actually the plan for carrying out the research study. Kombo and Tromp (2006) observed that a research design is the ‘glue’ which holds all the elements in the research design as the scheme, out-line or plan that is used to generate answers for the research problems. It is a basic arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance for the research purpose with the economy in procedure. This study employed the descriptive survey research design. A descriptive survey is a deliberate attempt by the researcher to collect data from members of the population in order to determine the current status of that population with respect to one or more variables (Mugenda and Mugenda, 2003). Survey research design was used because the population studied was too large to observe directly. The survey research therefore, was useful because of the economy of taking a sample from the population to generalize results for the whole population.

3.3 Study Area

The study was carried out in Nyamira County. This is one of the populated County in Kisii community with an estimated population of 598,252 (Kenya National Bureau of Statistics, 2009). The County's topographical zones lie between 1200m - 1950m above sea level. All its permanent rivers and streams drain into Lake Victoria. The region is mainly hilly, and productive to agricultural products. Cash crops grown throughout the County include tea; coffee, pyrethrum and sugarcane. The main food crops are maize and bananas.

3.4 Target Population

A population is the entire group of individuals, events or objects having common observable characteristics. A target population is that population to which a researcher wants to generalize from the results of a study (Mugenda and Mugenda, 2003). The study targeted managers, instructors, students and B.O.G members of the YPs in the area of study. This population was involved in the study because they interact with the students and therefore, had valuable information for this study. Statistics from Department of Youths Affairs and Sports (Nyamira County) indicates that the County has four public youth polytechnics with a total of 750 students and 35 instructors. This is shown in Table 3.1.

Table 3.1 Target Population

Polytechnic	No of instructors	No. of students	No. of managers	Total
Bigege	7	50	1	58
Misambi	9	230	1	240
Matongo	9	147	1	157
St. Stephen	10	323	1	334
Total	35	750	4	789

Source: Department of Youth Affairs and Sports Nyamira County 2012

3.5 Sample Size and Sampling Procedure

Sampling is the process of selecting a sub-set of cases in order to draw conclusions about the entire set. A sample is a small part of large population, which is thought to be representative of the larger population. Any statements made from the sample should be true for the whole population. As noted by Cohen (2003), factors such as expenses, time and accessibility frequently prevent researchers from gaining information from the whole population. Therefore, there is need to obtain data from a smaller group or subset of the total population in such a way that the knowledge gained is representative of the total population under study. In this study, the researcher selected 30% of the students (225). This agrees with Kerlinger (2003) who noted that a sample size of between 10% and 30% is a good representation of the entire population. Proportionate random sampling was used to select students from each youth polytechnic, because the research could not use the entire population. As per the data from Department of Youths Affairs and Sports (Nyamira County) in the year 2012, there were 50 students in Bigege, 230 students in Misambi, 147 in Matongo and 323 in St. Stephen. Therefore, using proportionate sampling, 15 students were selected from Bigege, 69 from Misambi, 44 from Matongo and 97 from

St. Stephen, making a total of 225 students. A proportionate random sample is a useful blend of randomization and categorization, which enables both quantitative and qualitative process of research to be undertaken (Cohen, 2003). The advantage in stratified proportionate random sampling is that it ensures inclusion in the sample of a subgroup which otherwise would be omitted entirely by other sampling methods because of their small numbers in the population.

All the 4 managers, 35 instructors and BOG chairpersons of the Polytechnics participated in this study. Therefore, 225 students, 4 managers, 35 instructors and 4 BOG chairpersons participated in this study, making a total sample of 268. A summary of the respondents sampled for this study is as shown in Table 3.2.

Table 3.2: Sample Size

Polytechnic	No of instructors	No. of students	No. of BOG Chairperson	No. of managers
Bigege	7	15	1	1
Misambi	9	69	1	1
Matongo	9	44	1	1
St. Stephen	10	97	1	1
Total	35	225	4	4

3.6 Research Instruments

The research instruments that were used in collecting data were: questionnaire, interview schedule and observation schedules.

3.6.1 Questionnaire

The collection of data was done by use of structured and semi-structured questionnaires. A questionnaire is an instrument used to gather data, which allows measurement for or against a particular viewpoint (Mugenda and Mugenda 2003). This study used questionnaires because they can collect large amounts of information in a reasonably quick span of time. The researcher had to collect the required data in person and hence administering the questionnaires was an efficient means of data collection. The questionnaire was administered by the researcher to the students and instructors.

3.6.2 Interview Schedule

This is an oral administration of questions, which involves a face-to-face interaction. Kothari (2008) observes that interview schedules are particularly suitable for intensive investigation. Some of the advantages of using interview are that the researcher will obtain more information in greater depth, personal information as well as supplementary information about the respondent's characteristics and environment which is often of great value in interpreting results. Interviews enable the researcher to get more information and required data through the use of probing questions. They also guard against confusing questions because of clarifying them. Interviews are flexible, take care of sensitive remarks and have high rate of response. The interview schedule was administered to managers and BOG chairpersons. The interview schedule was intended to confirm the information collected through the use of questionnaires concerning the state of YPs in terms of factors influencing the enrolment of female students in mechanical technology courses. This tool was complementary to the questionnaire that was administered to the instructors and students in the selected YPs.

3.6.3 Observation Schedule

This instrument was used to record observations of the internal YPs environment, for example, sanitation and physical facilities. The observation method was used to ascertain the conditions of physical facilities within the YPs. The tool was guided by a checklist which comprised of items to be observed. The information complimented the information gathered through questionnaires and interview schedules.

3.7 Validity and Reliability of the Research Instruments

This sub-section presents details on how validity and reliability of research instruments, which were used for this study, were tested.

3.7.1 Validity of the research instruments

Validity is concerned with whether the instrument measures what it is supposed to measure. It is also the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. Mugenda and Mugenda (2003), noted that validity has to do with how accurate the data obtained in the study represents the variables of the study and is a true reflection of the variables, it is only then that inferences based upon such data would be accurate and meaningful. The validity of the questionnaire was ascertained by the researcher through consulting experienced personnel in the research methodology from the University of Eldoret who made criticism and comments on the instruments. Their comments were incorporated in the questionnaires before the final administration of the instruments on the participants during the study. The study also used triangulation method to confirm the information collected from the sources. Questionnaires, interview schedules and observation were all used to collect similar sets of information making it easy for the researcher to discover variant data.

3.7.2 Reliability of the research instruments

A measure is considered reliable if a researcher's findings on the same test given twice are similar. Reliability ensures that there is precision with which data is collected. If the same results almost obtained, no matter how many times you conduct a piece of research, this suggests that the data collected was reliable (Mugenda & Mugenda, 2003). To ensure the reliability of the questionnaire, a pilot study was carried out in a neighbouring Kisii County within the target population but outside the sample population. This area was used for piloting because the two Counties share similar conditions. For example, the topography and economic activities among the people in the two divisions are the same. The research instruments were administered to the same pilot group twice after an interval of two weeks and the results were compared using Cronbach's Alpha coefficient. The results obtained indicated a coefficient of 0.76. The Cronbach's alpha coefficient of above 0.7 implied that the research instruments were reliable and therefore, the researcher adopted the research instruments.

3.8 Data Collection Procedures

Before collecting data, the researcher sought for an introductory letter from University of Eldoret to National Council for Science and Technology (NACOSTI) for obtaining a research permit. The researcher then proceeded to inform the County Commissioner and the County Education Officers (Nyamira County) about the intended research. Their authorization letters were collected by the researcher. Further the researcher sought permission from the managers of the selected youth polytechnics for the study. This was done two weeks prior to the commencement of the study to allow time for any adjustments. On the actual dates for the study, the researcher visited individual YPs to conduct the research.

3.9. Ethical Considerations

The respondents were assured that the responses they gave were treated confidential for the purpose of the research study only. The researcher also took individual responsibility for the conduct and consequences of the research by adhering to the time schedule agreed upon with the offices and YPs administration. The researcher was open and honest when dealing with respondents. The respondents were also assured of getting the feedback from the research if they need it after the study.

3.10 Field Experiences

The research gave the researcher an opportunity of sharing research skills and knowledge from the experts in the field of research. In the field when collecting data, out of 225 students only 200 gave their responses. Finally from the field experience, the researcher learnt to have patience when collecting data.

3.11 Data Analysis and Presentation

This refers to the examination of the coded data critically and making inferences (Kombo and Tromp 2006). In this study, data was analyzed using descriptive statistical techniques, which include frequencies, means, modes and percentages. Data was presented by use of frequency tables, charts and graphs. This was done with the help of Statistical Package for Social Science (SPSS) computer programme.

CHAPTER FOUR

ANALYSIS, PRESENTATION AND INTERPRETATION OF DATA

4.1 Introduction

This chapter deals with data analysis, presentation, interpretation and discussion of the research findings. In the first section, descriptive statistics are used to provide background information of the respondents who participated in this study. The second section presents the analysis of the data to the specific objectives of the study as provided by the respondents to the questionnaires and interview schedule. The purpose of this study was to establish causes of low enrolment of female students in mechanical technology courses in Youth Polytechnics (YPs) in Kenya, a case study of Nyamira County. This study sought to achieve the following objectives:

- i. To establish the influence of culture on enrolment of female students in mechanical technology courses in Nyamira YPs.
- ii. To establish the influence of the shortage of teaching physical facilities on enrolment of female students in mechanical technology courses in Nyamira YPs.
- iii. To establish the effects of the shortage of qualified female role models on enrolment of female students in mechanical technology courses in Nyamira YPs.
- iv. To establish the effects of parental influence on enrolment of female students in mechanical technology courses in Nyamira YPs.

4.2 Background Information

4.2.1 Age

Respondents were asked to state their age and their responses were summarized in fig 4.1.

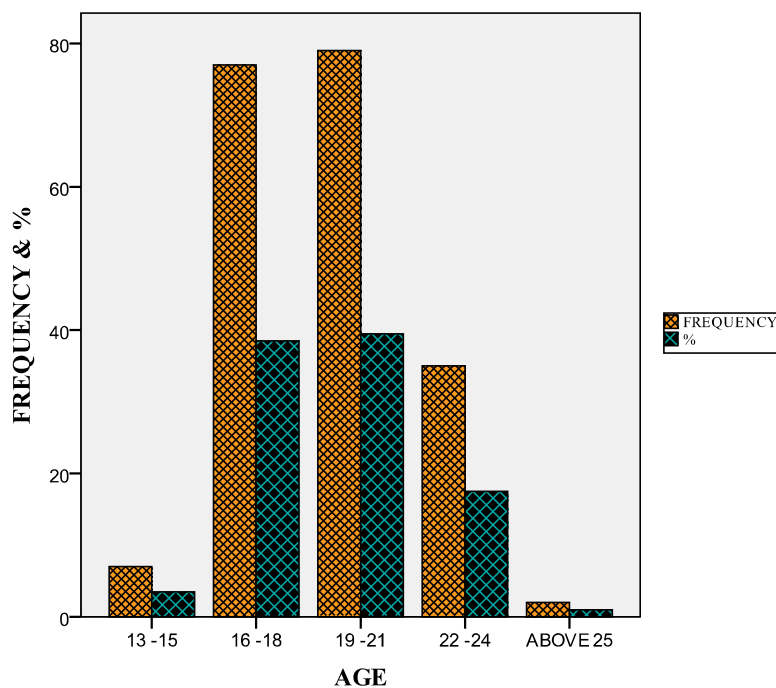


Figure 4.1 Age of the students

It can be established from fig 4.1 that 39.5% (79) of the students were aged between 19 – 21 years. 38.5% (77) were aged 16 – 18 years while 17.5% (35) were 22 – 24 years. Those who were aged 13 – 15 years and above 25 years represented 3.5% (7) and 1.0% (2) respectively. Most of the students were therefore, adults since they were above 18 years of age.

4.2.2 Gender

The study gathered the gender of the respondents and summarized it in fig. 4.2

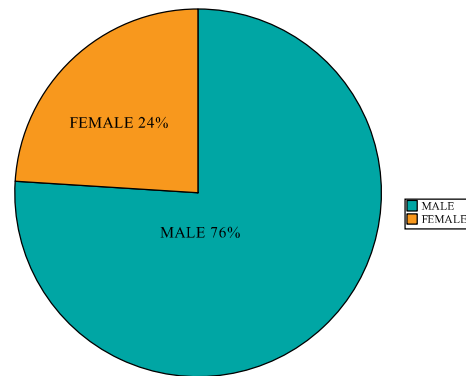


Figure 4.2 Gender

Fig 4.2 reveals that 76.0% (152) of the respondents were male while 24.0% (48) were female. This shows that the ratio of female students to male was 6 : 19 in the institution.

4.2.3 Area of Study

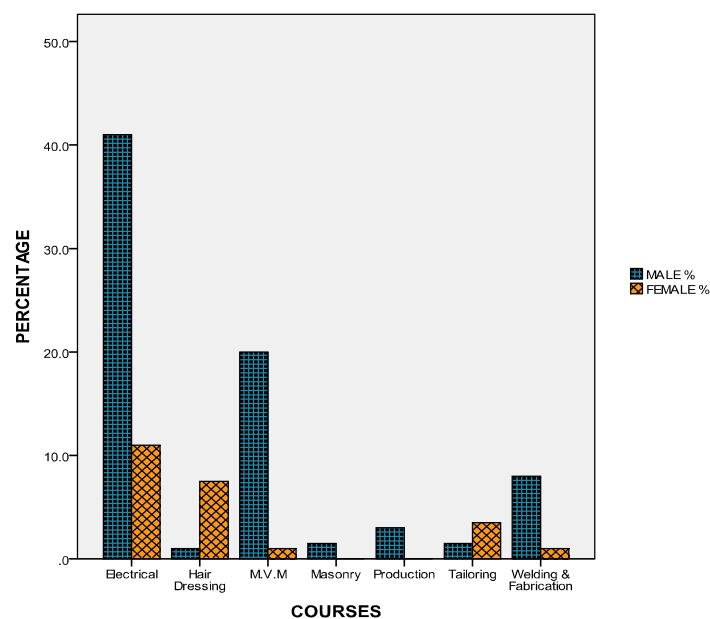


Figure 4.3 Area of Study

In figure 4.3, the enrolment of female students in the entire sample of students in mechanical technology courses only 1.0 %(2), studied welding and fabrication while there was none in mechanical production. In the other courses electrical were 11.0 %(22), motor vehicle mechanics 1.0 %(2), hair dressing 7.5% (15), masonry none and tailoring 3.5 %(7). From this result, clearly enrolment of female students in mechanical technology courses is very small in Nyamira YPs.

4.3 Culture and Enrolment by Female Students

The study sought to establish from the students their opinions on the cultural beliefs and enrolment by the female students. Their responses were summarized in Table 4.1.

Table 4.1 Culture and Enrolment by female students

Statement	SA		A		U		D		SD		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Traditional role playing in household chores and practices has great influence on the choice of career for female students	76	38.0	61	30.5	25	12.5	25	12.5	13	6.5	200	100.0
Some cultural practices affect female students to enrol in mechanical course	47	23.5	73	36.5	38	19.0	26	13.0	16	8.0	200	100.0
Female students taking mechanical technology courses are looked down upon by the community members	58	29.0	59	29.5	24	12.0	27	13.5	32	16.0	200	100.0
The curriculum for mechanical technology courses is not friendly to female students	24	12.0	30	15.0	24	12.0	66	33.0	56	28.0	200	100.0
Female students can work independently during the mechanical practical lessons just like their male classmates	59	29.5	67	33.5	20	10.0	34	17.0	20	10.0	200	100.0

It is clear in Table 4.1 that 38.0% (76) of the respondents strongly agreed and 30.5% (61) agreed that traditional role playing in household chores and practices like production of tools, house construction and cooking have great influence on the choice of careers for female students. Whereas an equal proportion of 12.5% (25) disagreed and were neutral respectively. Further 36.5% (73) of the respondents agreed that some cultural practices affect female students to enrol in mechanical technology courses, 23.5% (47) strongly agreed while 19.0% (38) were neutral.

While those who disagreed and strongly disagreed represented 13.0% (26) and 8.0% (16) respectively.

Moreover, on whether the female students taking mechanical technology courses are looked down upon by the community members; 29.5% (59) agreed. 29.0% (58) strongly agreed while 16.0% (32) strongly disagreed. Another 13.5% (27) disagreed. However, 12.0% (24) of them were neutral. From the findings we can depict that some traditional cultural practices have impacted negatively towards the enrolment of female students in mechanical technology courses. Borkowsky (1999) supports that cultural barriers had a contribution either unconscious or conscious on parental, family opinions and social norms towards the education where boys were regarded to be good in mechanical skills than girls. Welty (2001) also supports that culture typically gravitate girls towards their mothers; on the contrary, males attempt to display their masculinity by separating from their mothers. This culture identity used to promote the image that boys are strong and can perform better in production, welding and fabrication still its effects are rooted.

When asked if the curriculum for mechanical technology courses is not friendly to female students 33.0% (66) of the respondents disagreed, 28.0% (56) strongly disagreed. However, 15.0% (30) agreed and 12.0% (24) strongly agreed. Consequently, 33.5% (67) of the respondents agreed that female student can work independently during the mechanical practical lessons just like their male classmates. Finally 29.5% (59) strongly agreed while 17.0% (34) disagreed and an equal proportion of 10.0% (20) strongly disagreed and were neutral respectively. The instructors were also asked to state the effect of culture on enrolment and their responses are as shown in Table 4.2.

Table 4.2 Effect of Culture on Enrolment

Statement	SA		A		U		D		SD		Total	
	f	%	F	%	f	%	f	%	f	%	F	%
Traditional role playing in household chores and practices has great influence on the choice of career for female students	11	36.7	5	16.7	1	3.3	10	33.3	3	10	30	100
Some cultural practices affect female students to enrol in mechanical course	12	40	11	36.7	0	0	4	13.3	2	10	30	100
Female students taking mechanical technology courses are looked down upon by the community members	9	30	5	16.7	3	10	9	30	4	13.3	30	100
The curriculum for mechanical technology courses is not friendly to female students	6	20	5	16.7	0	0	10	33.3	9	30	30	100
Female students can work independently during the mechanical practical lessons just like their male classmates	8	26.7	4	13.3	0	0	12	40	6	20	30	100

As shown in Table 4.2, 36.7% (11) of the instructors strongly agreed and 16.7% (5) agreed that traditional role playing in household's chore and practices like production of tools, house construction and cooking have a great influence on the choice of careers for female students. On the same 3.3% (1) were undecided, 33.3% (10) disagreed and 10% (3) strongly disagreed. From the study 40% (12) of the instructors strongly agreed and 36.7% (11) agreed that there were cultural practices that affected female students to enrol in mechanical technology courses. However, those who disagreed and strongly disagreed were 13.3% (4) and 10% (2) respectively. It was also established that female students taking mechanical technology courses are looked down upon by the community members in which 30% (9) of the instructors strongly agreed, 16.7% (5) agreed, 10% (3) were undecided, 30% (8) disagreed and 13.3% (4)

strongly disagreed to this statement. The finding also reveals that 30% (9) of the instructors strongly disagreed to the statement that the curriculum for mechanical technology courses was not friendly to the female students. On the same 33.3% (10) disagreed whereas 20% (6) strongly agreed and 16.7% (5) agreed to that. Further, 26.7% (8) of instructors strongly agreed that female students can work independently during the mechanical practical lessons just like their male classmates. Also 13.3% (4) agreed, but 40% (12) disagreed and 20% (6) strongly disagreed.

From the interview conducted on the BOG and school managers on enrolment of female students in production, welding and fabrication, it was found that the traditional placement of the female in the kitchen hindered their enrolment in mechanical field. They also noted that African traditions in particular, men were the ones who worked in metal industries such as blacksmith which was associated with traits of masculine and rituals. Crafts Council (1995) supports that the process of using fire to transform ore into metal, and metal into an object, was widely seen in Africa as a dangerous act of women. Secret rituals, symbols, rules, and taboos were set against women not to counteract the male dominant forces in metalwork activities. Metalwork skills like Smelting and forging were often described as being analogous to gestation and birth.

4.4 Physical teaching facilities and enrolment of female students

The study sought to establish the influence of physical teaching facilities on enrolment of female students in mechanical technology courses. The students' responses are tabulated in Table 4.3.

Table 4.3 Physical teaching facilities on enrolment of female students

Statement	SA		A		U		D		SD		Total	
	F	%	F	%	F	%	F	%	f	%	F	%
There are adequate workshops and classes for mechanical technology course which have influenced enrolment of female students in this field.	34	17	24	12	28	14	63	31.5	51	25.5	200	100
There are adequate tools and equipment in mechanical technology workshops which have influenced enrolment of female students in this field.	41	20.5	52	26.0	28	14	37	18.5	42	21.0	200	100.
Availability of adequate mechanical equipments and tools for practical classes influence enrolment of female students in mechanical technology courses	36	18.0	63	31.5	20	10	51	25.5	30	15.0	200	100.
Good working conditions in mechanical technology workshops enable female students to complete tasks given in practical lessons	64	32	84	42	18	9	22	11	12	6	200	100

It is clear in Table 4.3 that 12% (24) of the respondents agreed that there are adequate workshops and classes for mechanical technology courses, 17% (34) strongly agreed while 31.5.0% (63) disagreed. Another 14.0% (28) and 25.5% (51) were undecided

and strongly disagreed respectively. However, 26.0% (52) of the respondents agreed that there are adequate tools and equipments in mechanical workshops, 21.0% (42) strongly disagreed however 20.5% (41) strongly agreed while 18.5% (37) disagreed. The remaining 14.0% (28) were neutral. On availability of adequate mechanical equipments and tools for practical classes, 31.5% (63) agreed; 25.5% (51) disagreed while 18.0% (36) strongly agreed. Those who strongly disagreed and were neutral represented 15.0% (30) and 10.0% (20) respectively. It was also revealed that 42.0% (84) of the respondents agreed that good working conditions in mechanical workshops enable female students to complete tasks given during practical lessons; 32.0% (64) strongly agreed whereas those who disagreed and undecided represented 11.0% (22) and 9.0% (18) respectively. Only 6.0% (12) strongly disagreed.

Instructors' responses on the influence of physical facilities on enrolment are indicated in Table 4.4

Table 4.4: Response of Instructors Regarding Physical Facilities for Teaching

Statement	SA		A		U		D		SD		Total	
	F	%	F	%	F	%	F	%	f	%	F	%
Workshops and classes for mechanical technology courses are adequate for enrolment of female students in that field.	5	16.7	3	10	0	0	13	43.3	9	30	30	100
Tools and equipments in mechanical technology workshops are adequate for enrolment of female students in that field	3	10	0	0	0	0	15	50	12	40	30	100
availability of adequate mechanical equipments and tools for practical classes influences enrolment of female students in mechanical technology courses	1	5	7	23.3	0	0	8	26.7	0	0	30	100
good working conditions in mechanical workshops enable female students to complete tasks	6	20	13	43.3	0	0	8	26.7	3	10	30	100

Information from table 4.4 reveals that 30% (9) of the instructors strongly disagreed that workshops and classes for mechanical technology courses were adequate. On the same 43.3% (13) disagreed but 16.7% (5) strongly agreed and 10% (3) agreed. That there were sufficient tools in production, welding and fabrication, 10% (3) of the instructors strongly agreed. However, 50% (15) disagreed and 40% (12) strongly disagreed. Millennium Development Goal (2010) supports that inadequate, obsolete training equipment and lack of instructional materials in mechanical technology courses is one of the factors that combine to reduce the effectiveness of training in meeting the required knowledge and skills in mechanical technology courses in

TVET. From the study 50% (15) of the instructors strongly agreed that availability of adequate mechanical equipments and tools for practical classes' influences enrolment of female students in mechanical technology courses. On the same 23.3% (7) agreed while 26.7% (8) disagreed. However 10% (3) of the instructors strongly disagreed with the statement that good working conditions in mechanical workshops enable female students to complete tasks given during practical lessons. 26.7% (8) disagreed, while those who agreed and strongly agreed represented 43.3% (13) and 20% (6) respectively.

On the interview, BOG and managers noted that there is need for enough classes and workshops with sufficient tools for hands-on activities for mechanical technology courses. Further they mentioned that friendly working condition is vital in production, welding and fabrication. They also mentioned that good orientation of the female students to the facilities in the workshops and proper working facilities that cannot be detrimental to the health among the students will promote their enrolment in mechanical technology courses. UNESCO (2003) supports that there is a strong need to improve the quality and increase the quantity of mechanical training facilities, equipment and other materials in TVET institutions in Kenya.

From the observation schedules, it was observed that classrooms and workshops in all the YPs were inadequate. In some cases mechanical workshops were not there. On the same, in some classes there were insufficient chairs and tables for students and instructors. Workshop tools were inadequate and one case had some broken benches which required replacement. In all the four YPs none had a library for personal studies. Mechanical books and reference materials were not enough, for those which were available were kept in boxes and others were being affected by the weather

conditions. Electricity was available in all the YPs but it was not well utilized due to insufficient of mechanical machines.

4.5 Influence of female role models on enrolment of female students in mechanical technology courses

Responses on the influence of female role models on enrolment of female students in mechanical technology courses were summarized in Table 4.5

Table 4.5: Influence of female role models on enrolment of female students in mechanical technology courses

Statement	SA		A		U		D		SD		Total	
	f	%	f	%	f	%	F	%	f	%	F	%
There are as many female mechanical/technical professional as there are the male	12	6.0	26	13.0	27	13.5	70	35.0	65	32.5	200	100.0
The community respect female mechanical professional	41	20.5	59	29.5	24	12.0	55	27.5	21	10.5	200	100.0
Female mechanical instructors positively influence the enrolment of female students	45	22.5	68	34.0	34	17.0	20	10.0	33	16.5	200	100.0
Instructors give less attention female students that male students	17	8.5	26	13.0	26	13.0	62	31.0	69	34.5	200	100.0

It is clear from Table 4.5 that 35.0% (70) of the respondents disagreed that there are many female mechanical professional, as well as there are the males. 32.5% (65) strongly disagreed while 13.5% (27) of the respondents were neutral. Further 13.0% (26) and 6.0% (12) agreed and strongly agreed respectively. On whether the community respects female mechanical professionals and regards them highly 29.5% (59) agreed; 27.5% (55) disagreed. However, 20.5% (41) strongly disagreed and 12% (24) were neutral. Consequently 34.0% (68) of the respondents agreed that female

mechanical instructors positively influence the enrolment of female students in mechanical technology courses, 22.5% (45) strongly agreed while 17.0% (34) were undecided. Another 16.5% (33) strongly disagreed whereas 10.0% (20) disagreed. On whether instructors give less attention to mechanical female students than male students, 34.5% (69) strongly disagreed and 31.0% (62) disagreed. While an equal proportion of 13.0% (26) agreed and were neutral respectively. Only 8.5% (17) of the respondents strongly agreed.

Instructors were also asked to state their opinion concerning the influence of female role models on enrolment students in mechanical technology courses. Their responses are shown in Table 4.6.

Table 4.6: Influence of female role models on enrolment students in mechanical technology courses

Statement	SA		A		U		D		SD		Total	
	f	%	f	%	f	%	f	%	f	%	F	%
There are as many female mechanical/technical professional as there are the males	5	16.7	0	0	1	3.3	13	43.3	11	36.7	30	100.0
the community respects female mechanical/technical professions and regards them highly	8	26.7	10	33.3	2	6.7	7	23.3	3	10	30	100.0
Female mechanical instructors positively influence the enrolment of female students in mechanical technology courses	6	20	8	26.7	4	13.3	5	16.7	7	23.3	30	100.0
Instructors give less attention to mechanical female students than male students	3	10	4	13.3	2	6.7	12	40	9	30	30	100.0

Information from table 4.6 reveals that 43.3% (13) of the instructors disagreed with the statement that there were as many female mechanical professional as there are the males, 36.7% (11) strongly disagreed while those who strongly agreed and undecided represented 16.7% (5) and 3.3% (1) respectively. Austria (2010) supports that lack of enough female role models and mentors in production, welding and fabrication fields has denied girls an exposed in mechanical skills. From this finding, it's true that there are no enough female mechanical role models. Whether the community respects female mechanical professions, 26.7% (8) of the instructors strongly agreed and 33.3% (10) agreed on that. However those who were undecided, disagreed and strongly disagreed represented 6.7% (2), 23.3% (7) and 10% (3) respectively. On

whether female mechanical instructors positively influence the enrolment of female students in mechanical technology courses, the study found out that 20% (6) of respondents strongly agreed, 26.7% (8) agreed and 13.3% (4) were undecided. While those who disagreed and strongly disagreed represented 16.7% (5) and 23.3% (7) respectively. Whether the instructors give less attention to mechanical female students than male students, 10% (3) of the respondents strongly agreed. Further on the same, 13.3% (4) of them strongly agreed, but those who were undecided, disagreed and strongly disagreed represented 6.7% (2), 40% (12) and 30% (9) respectively.

From BOG and managers, on the effect role models on enrolment of female students in mechanical technology courses, they supported that women who have successfully completed their field are most admired by the community. However, most of them were unable to give examples of any successful women in production, welding and fabrication. They noted that indeed there is a shortage of female role models in production, welding and fabrication. Kerre (1995) supports that vocational training like production, welding and fabrication have received low turn up of female role models. From the observation schedules, it was also noted that indeed mechanical female instructors were not enough to mentor female students to enroll in that field. On the same the managers hardly had information of any female role models in mechanical that they can invite to inspire female students to take mechanical technology courses.

4.6 Parental Influence on enrolment of female students in mechanical technology courses

The study sought to establish Parental Influence on enrolment of female students in mechanical technology courses. Their responses were summarized in Table 4.7.

Table 4.7: parental influence on enrolment of female students in mechanical technology courses

Statement	SA		A		U		D		SD		Total	
	F	%	f	%	f	%	f	%	f	%	F	%
Parents have an influence on the career choices of their children	54	27.0	67	33.5	37	18.5	28	14.0	14	7.0	200	100.0
Parents have an influence on the enrolment of girls in mechanical technology courses.	68	34.0	68	34.0	15	7.5	38	19.0	11	5.5	200	100.0
The level of education of parents has influence on enrolment of female students in mechanical technology courses in YPs	43	21.5	45	22.5	36	18.0	41	20.5	35	17.5	200	100.0
The opinion of parents on the curriculum of mechanical technology courses has an influence on enrolment of female students in mechanical technology courses	39	19.5	89	44.5	39	19.5	17	8.5	16	8.0	200	100.0

It is clear in Table 4.7 on whether parents have an influence on the career of their children, 33.5% (67) of the respondents agreed, and 27.0% (54) strongly agreed that

parents have an influence to that, while 18.5% (37) were neutral, 14.0% (28) disagreed and 7.0% (14) strongly disagreed. Whether parents have an influence on the enrolment of girls in mechanical technology courses, equal proportion of 34.0% (68) strongly agreed and agreed respectively; 19.0% (38) disagreed; 7.5% (15) were neutral and 5.5% (11) strongly disagreed. On parental level of education on enrolment of female students in mechanical technology courses; 22.5% (45) agreed; 21.5% (43) strongly agreed; 20.5% (41) disagreed; 18.0% (36) were neutral and 17.5% (35) strongly disagreed. From these result it is clear that parents influence the career choice of female students in mechanical technology courses. Vergue (1996) supports that Parents are also accountable for encouraging their children to pursue traditional career paths instead of subjects that genuinely and individually interest them. Further, the instructors were required to state their opinion on parents influence on of female students in mechanical technology courses shown in Table 4.8.

Table 4.8 instructors' responses on opinion on parents influence on enrolment of female students in mechanical technology courses

Statement	SA		A		U		D		SD		Total	
	f	%	F	%	F	%	f	%	F	%	F	%
Parents have an influence on the career choices of their children	12	40	9	30	0	0	3	10	6	20	30	100.0
Parents have an influence on the enrolment girls in mechanical technology courses.	15	50	10	33.3	0	0	5	16.7	0	0	30	100.0
Level of education of parents influence enrolment of female students in mechanical technology courses	9	30	11	36.7	0	0	6	20	4	13.3	30	100.0
Opinion of parents on employment prospects for mechanical students has an influence on enrolment of female students in mechanical technology courses	8	26.7	13	43.3	0	0	2	6.7	7	23.3	30	100.0

As shown in Table 4.8, 40% (12) of the instructors strongly agreed that parents have an influence over the career choices of their children. On the same 30% (9) were in agreement, but those who disagreed and strongly disagreed represented 10% (3) and 20% (6) respectively. Whether parents have an influence on the enrolment of girls in mechanical technology courses, 50% (15) of respondents strongly agreed. On the same 33.3% (10) of the respondents agreed but 16.7% (5) disagreed to that. The research found out that 30% (9) of the instructors strongly agreed that, the level of education of parents influence enrolment of female students in mechanical technology courses. On the same 36.7% (11) agreed, while those who disagreed and strongly disagreed represented 20% (6) and 13.3% (4) respectively. The study also found out that 26.7% (8) of the instructors strongly agreed that, the opinion of parents on

employment prospects for mechanical students has an influence on enrolment of female students in mechanical technology courses. On the same 43.3% (13) agreed to that, while those who disagreed and strongly disagreed represented 6.7% (2) and 23.3% (7) respectively. Kithyo (1999) supports that parental pressure and stereotypical guidance, regardless of socioeconomic status tends to reinforce gender norms. Gender stereotypes where female students taking production, welding and fabrication were seen to be a misfit by the parents.

Responses from interview conducted on BOG and managers noted that those parents who are not educated do not understand that female students can perform as much as the male counterparts in mechanical skills. The BOG and Managers also stated that enrolment of female students is low as compared to that of male students in mechanical technology courses. This is because of the influence of the parents who dictate the kind of courses to be studied by their female children.

4.7 Parents Opinion on employment prospects for mechanical students on enrolment of female students in mechanical technology courses.

The study sought from the respondents their opinion on employment prospect on enrolment of female students in mechanical technology courses. The results are shown in Figure 4.4.

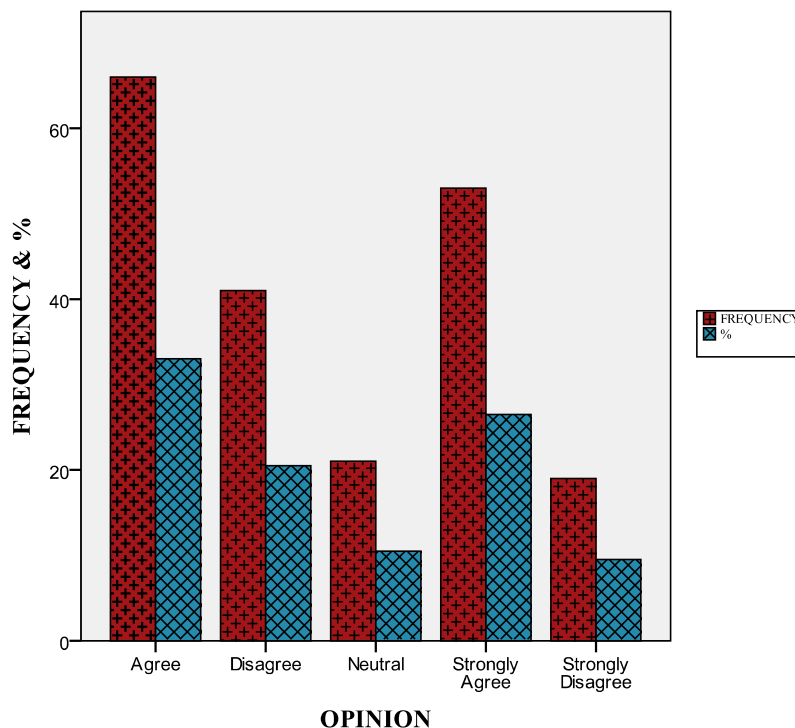


Figure 4.4: Opinion on employment prospects for mechanical students on enrolment of female students in mechanical technology courses

It is clear in Figure 4.4 that 33.0% (66) of the respondents agreed that the opinion on employment prospects for the mechanical students has an influence on enrolment of female students in mechanical technology courses, 26.5% (53) strongly agreed; 20.5% (41) disagreed; 10.5% (21) were neutral and 9.5% (19) strongly disagreed.

The BOG and managers also supported that there are a lot of employment opportunities for both gender in mechanical field from their interview finding.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings and conclusions. Recommendations from the study and suggestions for further research are also included in this chapter. The chapter is based on the findings of the preceding chapter, objectives of the study and the research questions that were to be answered by the study. The study combined two approaches to data analysis quantitative and qualitative. This chapter is divided into four sections. The first section presents a summary of the research findings, the second part presents conclusion, and the third contains recommendations and lastly suggestions for further research.

5.2 Summary of the Findings

5.2.1 General Information on the Respondents

From the study, it was revealed that over 50% of the respondents were above 18 years of age, 76.0% of them were male while 24.0% were female. This shows that the ratio of female students in Youth Polytechnics is lower than that of male students. Further the enrolment of female students in the entire sample of students in mechanical technology courses was only 1.0 %(2) studied welding and fabrication while there was none in production. In the other courses, electrical were 11.0% (22), motor vehicle mechanics 1.0 %(2), hair dressing 7.5 %(15) masonry none and tailoring 3.5 %(7). From this result it is clear out of 24.0% of the female students' sample, only 1.0% (2) were taking mechanical technology courses in the four YPs in Nyamira County.

5.2.2: Objective one: To establish the influence of culture on enrolment of female students in mechanical technology courses in Nyamira YPs

The study established out that traditional role playing in household chores and practices like production of tools, house construction and cooking have great influence on the choice of careers for female students. Further 60% of the students and 76.7% of instructors agreed that some cultural practices affect female students to enrol in mechanical technology courses. Moreover, 58.5% of students and 46.7% of instructors agreed that female students taking mechanical technology courses were looked down upon by the community members. The society should be encouraged to embrace the female students taking mechanical technology courses and to stop looking down upon them. When asked if the curriculum for mechanical technology courses is not friendly to female students, 63.3% of instructors and 61% of students disagreed to that.

According to Borkowsky (1999), summary of 21 national reports for vocational education of girls in Africa in which Kenya was included, supports that cultural barriers had a contribution either unconscious or conscious on parental, family opinions and social norms towards the education where boys were regarded to be good in mechanical skills than girls. This negative culture has created lack of self-confidence among girls and women in their ability and motivation to pursue mechanical technology courses in TVET. Welty (2001) also supports that culture typically gravitate girls to be weak in terms of mechanical technology skills; on the contrary, males attempt to display their masculinity by separating from their mothers. This culture identity used to promote the image that boys are strong and can perform better in production, welding and fabrication still its effects are rooted.

5.2.3: Objective two: To establish the influence of the shortage of teaching physical facilities on enrolment of female students in mechanical technology courses in Nyamira YPs.

The study found out that 57% of the students and 73.3% of the instructors disagreed that there are adequate workshops and classes for production, welding and fabrication. From the study, it was established that workshops and classes should have sufficient tools and equipments for practical skills. This will play a big role in influencing the enrolment of students in those courses. The response on whether availability of adequate metal work equipments and tools for practical classes influences enrolment of female students in mechanical technology courses, 49.5% of the students and 73.3% of the instructors were in agreement. It was also revealed that 74.0% of the students and 63.3% of the instructors agreed that good working conditions in mechanical workshops enable students to complete tasks given during practical lessons.

A report by UNESCO (2003) supports that there was need to improve the quality and increase the quantity of mechanical training facilities, equipment and other materials in TVET institutions in Kenya. On the same, the Millennium Development Goal (2010), report supports that inadequate, obsolete training equipment and lack of instructional materials in production, welding and fabrication is one of the factors that combines to reduce the effectiveness of training in meeting the required knowledge and skills in mechanical technology courses in TVET. On the same Government of Kenya (2005) supports that due to inadequate resources, most technical and vocational training institutions operate without the necessary teaching and learning resources. This has had a bearing on the quality of training with some of the graduates not having the practical experiences in their chosen careers.

5.2.4: Objective three: To establish the effects of the shortage of qualified female role model on enrolment of female students in mechanical technology courses in Nyamira YPs.

The findings revealed that 80% of the instructors and 67.5% of the students' disagreed that there were as many female mechanical professionals. On whether the community respects mechanical female professionals and regards them highly over 50% of the students' and 60% of the instructors were in agreement to that. Consequently, 56.5% of the students' and 46.7% of the instructors were in agreement that female mechanical instructors will positively influence the enrolment of female students in mechanical technology courses. Further the study noted that female tutors should be given first priority during employment to curb gender disparity in mechanical field.

This result supports Suhaimi (1996) who noted that role models not only imparted knowledge, but they also spread out information about careers that could be selected by the students. Lack of enough mechanical female teachers (instructors), who should act as role models to female students, should be given attention in TVET. This will make it attractive for both female and male students. Shortage of mechanical female instructors is one of the basic denominators affecting career choice of female students in developing countries in Africa.

On the same, Kerre (1995) noted that, generally efforts at providing effective TVET in Africa have not succeeded, and vocational training still receives low status. Shortage of Mechanical female instructors in Kenyan YPs is one of the major underlying factors affecting gender disparity. For decades, women have been striving to succeed and increase their numbers in technology fields. Fields like electrical, civil

and medicine have achieved nearly equal numbers of men and women for years now. However; production, welding and fabrication are still struggling each year to attract and retain female professionals in TVET but much have not been achieved.

5.2.5: Objective four: To establish the effects of parental influence on enrolment of female students in mechanical technology courses in Nyamira YPs.

It was established that 60.5% of the students and 70% of the instructors' were in agreement that parents have an influence upon the career choices of their children. Moreover, whether parents prefer boys to enrol in mechanical technology courses instead of girls, 68.0% of the students' and 83.3% of the instructors were in agreement. The study noted that parents should let their children pursue courses of their own choice and avoid dictating them. Further the study revealed that parents should encourage their female children to pursue similar courses as their counter parts by providing for them adequately. On the same 44% of the students' together with 66.7% of the instructors were in agreement that the level of education of the parents has an influence on enrolment of female students in mechanical technology courses in YPs. The study also revealed that 70% of the instructors and 64 % of the student agreed that opinion of parents on employment prospects for mechanical students has an influence on enrolments of female students in mechanical technology courses.

On the same Kithyo (1999) supports that, parental pressure and stereotypical guidance, regardless of socioeconomic status remains to reinforce gender norms. Gender stereotypes where female students taking production, welding and fabrication were seen to be a misfit by the parents. Courses that were thought to be feminine were considered acceptable for female students because of the focus on human interaction and domestic occurrences. Similarly, male students were expected to

enrol in courses that will display their mechanical aptitude and ability to use machinery.

5.3 Conclusions

The following conclusions were made based on the findings of this research:

1. The study established that culture has an influence towards the enrolment of female students in mechanical technology courses.
2. There is lack of teaching physical facilities which is embracing low enrolment of students in mechanical technology courses. Good orientations of the female students to the facilities in the workshops and proper working facilities that cannot be detrimental to the health among the students will increase their enrolment in mechanical classes.
3. The curriculum for mechanical technology courses is friendly to both the male and female students. This is because female students just work independently like their male counterparts in the training given same resources.
4. The community regards mechanical female students highly. This gives an impression for more female students to enrol in mechanical technology courses.
5. There are very few successful female mechanical role models. This is because most of the female students indicated lack of knowledge to identify any of them in the field of production, welding and fabrication.

5.4 Recommendations of the Study

Based on the findings of this study, the following recommendations were arrived at;

- i. Management and mechanical instructors should encourage both female and male students when joining YPs to enrol in mechanical technology courses. This will curb the problem of gender disparity in production, welding and fabrication technology.
- ii. The community should accept to eliminate cultural beliefs and practices which affect the enrolment of female students in mechanical technology courses.
- iii. Employment institutions should be encouraged to absorb both women and male who complete their mechanical technology courses immediately. This will motivate those who are still in training or those who may aspire to take up these courses in YPs.
- iv. Role models of women who have excelled in mechanical fields should be invited to motivate young girls and boys in primary, secondary school and those who have enrolled same field in TVET institutions.
- v. The Department of Youth Affairs and Sports should look for funds to purchase enough teaching physical facilities for mechanical technology courses in YPs.

5.5 Suggestions for Further Study

With the current trend in the world of work, it is suggested that the following researches should be done;

- i. A research to find out how female graduates of mechanical technology courses at certificate and diploma level are performing in the world of technology.
- ii. A research to find out the challenges faced by female graduates of mechanical technology courses in Kenyan universities.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR FEMALE STUDENTS

Part 1: Background Information

Introduction

This is part of an educational study being carried out to find out the enrolment patterns of female students in mechanical course in YPs in Nyamira county Kenya. The purpose of this questionnaire is to seek your opinion and views on the enrolment and training of female students in YPs institutions.

It is designed to allow you to express your views freely and also propose improvement areas. You are one of the respondents chosen to participate in the study. You are therefore requested to complete the questionnaire as accurately as possible and return it. Your responses will be treated confidentially both during and after the study.

Thank you.

Anyona M. Kennedy

Given below are statements about enrolment of female students YPs institutions. Circle one of the given choices to indicate the choices to indicate the opinions that best describe your opinion.

1. Indicate your age 13- 15 () 16 – 18 () 19 – 21 () 22 – 24 () above 25 years ()
2. Indicate your area of study (course).....

Part 2: Information of culture on enrolment of female students in mechanical technology courses.

The following statements relate to the Information on culture and enrolment of female students. Using the rate given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Neutral (N), and Disagree (D) and strongly disagree (SD)

Statement	SA	A	N	D	SD
Traditional role playing in household chores and practices like production of tools / equipments, house construction, cooking, etc has great influence on the choice of careers for female students					
Cultural practices affect female students to enrol in mechanical technology courses.					
Female students taking mechanical technology courses are looked down upon by the community members.					
The curriculum for mechanical technology courses is not friendly to female students.					
Female students can work independently during the mechanical practical lessons just like their male classmates.					

Part 3: Information of physical teaching facilities on enrolment of female students

The following statements relate to the information on the influence of physical teaching facilities on enrolment of female students in mechanical technology courses. Using the rating given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly disagree (SD)

Statement	SA	A	N	D	SD
There are adequate workshops and classes for mechanical technology courses.					
There are adequate tools and equipment in mechanical workshops.					
Availability of adequate equipments and tools influences female enrolment					
Good working conditions enable female students to complete class tasks					

Part 4: Information on the influence of female role models on enrolment of female students in mechanical technology courses.

The following statements relate to the information on effects of female role models on enrolment of female students in mechanical technology courses. Using the rating given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Neutral (N), and Disagree (D) and Strongly disagree (SD)

Statement	SA	A	N	D	SD
The number of female mechanical / Technical professionals is the same as that of males.					
The community respects female mechanical / Technical professionals and regards them highly.					
Female mechanical instructors have a positive influence on enrolment of female students in mechanical technology courses.					
Mechanical instructors give less attention to mechanical female students than male students in course work.					

Part 5: Information on parental influence on enrolment of female students in mechanical technology courses.

The following statements relate to the information on the effects of parental influence on enrolment of female students in mechanical technology courses. Using the rate given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly disagree (SD)

Statement	SA	A	N	D	SD
Parents have an influence on the career choices of their children.					
Parents prefer to enrol boys in mechanical technology courses instead of girls.					
The level of education of parents has influence on enrolment of female students in mechanical technology courses in YPs.					
The opinion of parents on the curriculum of mechanical technology courses has an influence on enrolment of female students in mechanical technology courses.					
The opinion of parents on employment prospects for mechanical students has an influence on enrolment of female students in mechanical technology courses					

Part 6: Personal on opinion the enrolment of female students in mechanical technology courses.

In your own opinion, why do you think the enrolment of female students is as it is now as compared to that of male students in mechanical technology courses in your YP? Also give your own suggestions which can be used to improve the enrolment of female students in mechanical technology courses.

- i. -----
- ii. -----
- iii. -----

Part 7. Give your own suggestions on how the enrolment of female students can be improved in mechanical technology courses.

**APPENDIX II: QUESTIONNAIRE FOR OTHER STUDENTS IN
YPs**

Part 1: Background Information

Introduction

This is part of an educational study being carried out to find out the enrolment patterns of female students in mechanical course in YPs in Nyamira county Kenya. The purpose of this questionnaire is to seek your opinion and views on the enrolment and training of female students in YPs institutions.

It is designed to allow you to express your views freely and also propose improvement areas. You are one of the respondents chosen to participate in the study. You are therefore requested to complete the questionnaire as accurately as possible and return it. Your responses will be treated confidentially both during and after the study.

Thank you.

Anyona M. Kennedy

Given bellow are statements about enrolment of female students YPs institutions.

Tick one of the given choices described to indicate your best opinion.

Part 1: General Information.

1. Indicate your age 13- 15 () 16 – 18 () 19 – 21 () 22 – 24 () above 25 years
2. What is your gender? Male Female
3. Indicate your area of study (course).....

Part 2: Information on culture and enrolment by female students

The following statements relate to the Information on cultural beliefs and enrolment by female students. Using the rate given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (U), and Disagree (D) and strongly disagree (SD)

Statement	SA	A	U	D	SD
Traditional role playing in household chores and practices like production of tools / equipments, house construction, cooking, etc has great influence on the choice of careers for female students					
Some cultural practices affect female students to enrol in mechanical technology courses.					
Female students taking mechanical technology courses are looked down upon by the community members.					
The curriculum for mechanical technology courses is not friendly to female students.					
Female students can work independently during the mechanical practical lessons just like their male classmates.					

Part 3: Information on physical teaching facilities on enrolment of female students

The following statements relate to the information on the influence of physical teaching facilities on enrolment of female students in mechanical technology courses. Using the rating given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly disagree (SD)

Statement	SA	A	U	D	SD
There are adequate workshops and classes for mechanical technology courses.					
There are adequate tools and equipment in mechanical workshops.					
Availability of adequate mechanical equipments and tools for practical classes influences enrolment of female students in mechanical technology courses.					
Good working conditions in mechanical workshops enable female students to complete tasks given during practical lessons.					

Part 4: Information on the influence of female role models on enrolment of female students in mechanical technology courses.

The following statements relate to the information on effects of female role models on enrolment of female students in mechanical technology courses. Using the rating given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (U), and Disagree (D) and Strongly disagree (SD)

Statement	SA	A	U	D	SD
There are as many female mechanical / Technical professionals as there are the males.					
The community respects female mechanical / Technical professionals and regards them highly.					
Female mechanical instructors positively influence the enrolment of female students in mechanical technology courses.					
Instructors give less attention to mechanical female students than male students.					

Part 5: Information on parental influence on enrolment of female students in mechanical technology courses.

The following statements relate to the information on the effects of parental influence on enrolment of female students in mechanical technology courses. Using the rate given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly disagree (SD).

Statement	SA	A	U	D	SD
Parents have an influence on the career choices of their children.					
Parents have an influence on enrolment of female students mechanical technology courses.					
The level of education of parents has influence on enrolment of female students in mechanical technology courses in YPs.					
The opinion of parents on the curriculum of mechanical technology courses has an influence on enrolment of female students in mechanical technology courses.					
The opinion of parents on employment prospects for mechanical students has an influence on enrolment of female students in mechanical technology courses					

Part 6: Personal opinion on the enrolment of female students in mechanical technology courses.

In your own opinion, why do you think the enrolment of female students is as it is now as compared to that of male students in mechanical technology courses in your YP? Also give your own suggestions which can be used to improve the enrolment of female students in mechanical technology courses.

- i.....

- ii.....

iii.....

.....

iv.....

.....

Part 7. Give your own suggestions on how the enrolment of female students can be improved in mechanical technology courses.

APPENDIX III: QUESTIONNAIRE FOR INSTRUCTORS

Section I: Background Information

1. Gender: male female:

2. Indicate the highest formal training you have had. (i) Certificate (ii) Diploma (iii) Degree (iv) other, specify_____

3. State the course you teach at the YP-----

4. Averagely how many workshops do you attend per year?

 2-4 5-7 8-10

5. What is your age bracket? (Tick where applicable)

 Below 30 years 30-39 years 40-49 above 50 years

6. What is your working experience?

 Less than 3 years

 4 - 6 years

 6 - 9 years

 Above 10 years

Part 2: Information on culture and enrolment by female students

The following statements relate to the Information on cultural beliefs and enrolment by female students. Using the rate given below, provide your response in relation to

the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (U), and Disagree (D) and strongly disagree (SD)

Statement	SA	A	U	D	SD
Traditional role playing in household chores and practices like production of tools / equipments, house construction, cooking, etc has great influence on the choice of careers for female students					
Some cultural practices affect female students to enrol in mechanical technology courses.					
Female students taking mechanical technology courses are looked down upon by the community members.					
The curriculum for mechanical technology courses is not friendly to female students.					
Female students can work independently during the mechanical practical lessons just like their male classmates.					

Part 3: Information of physical teaching facilities on enrolment of female students

The following statements relate to the information on the influence of physical teaching facilities on enrolment of female students in mechanical technology courses.

Using the rating given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly disagree (SD)

Statement	SA	A	U	D	SD
There are adequate workshops and classes for mechanical technology courses.					
There are adequate tools and equipment in mechanical workshops.					
Availability of adequate mechanical equipments and tools for practical classes influences enrolment of female students in mechanical technology courses.					
Good working conditions in mechanical workshops enable female students to complete tasks given during practical lessons.					

Part 4: Information on the influence of female role models on enrolment of female students in mechanical technology courses.

The following statements relate to the information on effects on female role models on enrolment of female students in mechanical technology courses. Using the rating given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly disagree (SD)

Statement	SA	A	U	D	SD
There are as many female mechanical / Technical professionals as there are the males.					
The community respects female mechanical / Technical professionals and regards them highly.					
Female mechanical instructors positively influence the enrolment of female students in mechanical technology courses.					
Instructors give less attention to mechanical female students than male students.					

Part 5: Information on parental influence on enrolment of female students in mechanical technology courses.

The following statements relate to the information on the effects of parental influence on enrolment of female students in mechanical technology courses. Using the rate given below, provide your response in relation to the extent to which you agree to the statements. Strongly agree (SA), Agree (A), Undecided (N), Disagree (D) and Strongly disagree (SD)

Statement	SA	A	U	D	SD
Parents have an influence on the career choices of their children.					
Parents prefer to enrol boys in mechanical technology courses instead of girls.					
The level of education of parents has influence on enrolment of female students in mechanical technology courses in YPs.					
The opinion of parents on the curriculum of mechanical technology courses has an influence on enrolment of female students in mechanical technology courses.					
The opinion of parents on employment prospects for mechanical students has an influence on enrolment of female students in mechanical technology courses					

Part 6: Personal opinion on the enrolment of female students in mechanical technology courses. In your own opinion, why do you think the enrolment of female students is as it is now as compared to that of male students in mechanical technology courses in your YP? Also give your own suggestions which can be used to improve the enrolment of female students in mechanical technology courses.

- i.....

- ii.....

iii.....
.....

iv.....
.....

Part 7. Give your own suggestions on how the enrolment of female students can be improved in mechanical technology courses.

APPENDIX IV: INTERVIEW SCHEDULE FOR BOG AND MANAGERS

1. State the cultural beliefs that influence enrolment of female students
.....
2. What is the effect of physical teaching facilities on enrolment of female students in mechanical technology courses?
.....
3. What is the effect of female role models on enrolment of female students in mechanical technology courses?
.....
4. In your own opinion, what are the effects of parental influence on enrolment of female students in mechanical technology courses?
.....
5. Why do you think the enrolment of female students is as it is now as compared to that of male students in mechanical technology courses in your YP? Also give your own suggestions which can be used to improve the enrolment of female students in mechanical technology courses.

i.....
.....

ii.....
.....




iii.....
.....

iv.....
.....

APPENDIX V: OBSERVATION SCHEDULES

Items	Quantity	Condition	Remarks
Workshops			
Classrooms			
Welding Machines			
Drilling Machines			
Source of Water			
Working Benches			
Electricity			
Library			
Books / Reference Materials			
Chairs and Tables			
sufficient plans for general improvement			
Adequate workshop attendants			
Adequacy of teaching staff			

APPENDIX VI: RESEARCH PERMIT

PAGE 2	PAGE 3						
<p>THIS IS TO CERTIFY THAT: Prof./Dr./Mr./Mrs./Miss/Institution Kennedy Morang'a Anyona of (Address) Chapkollei University College P.O.Box 1125-30100, Eldoret. has been permitted to conduct research in</p>	<p>Research Permit No. NCST/RCD/14/012/829 Date of issue 22nd June, 2012 Fee received KSH. 1,000</p>						
<table border="0"> <tr> <td style="text-align: center;">Location</td> <td></td> </tr> <tr> <td style="text-align: center;">District</td> <td></td> </tr> <tr> <td style="text-align: center;">County</td> <td></td> </tr> </table>	Location		District		County		
Location							
District							
County							
<p>Nyamira</p>							
<p>on the topic: Causes of low enrolment of female students in mechanical courses in youth polytechnics Kenya: A case of Nyandarua County.</p>							
<p>for a period ending: 20th September, 2012.</p>	<p style="text-align: center;">  Applicant's Signature </p> <p style="text-align: center;">  Secretary National Council for Science & Technology </p>						

