FACTORS INFLUENCING ENROLLMENT OF FEMALE STUDENTS IN SCIENCE ORIENTED COURSES IN TECHNICAL TRAINING INSTITUTIONS IN BUNGOMA COUNTY: KENYA

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2013
DECLARATION

This project is my original work and has not been presented for any award in any other university.
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Joseck Simiyu Wataka
L50/74501/12

This project has been submitted for examination with my approval as the University supervisor.
Signature……………… Date………..
Prof Christopher Gakuu
Department of Extra Mural Studies
University of Nairobi
DEDICATION

I dedicate this project to my wife Gorret Simiyu for moral and financial support during my study period, my children Linda, Allan, Joy and Precious for their understanding and cooperation in the course of my study.
ACKNOWLEDGEMENT

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<tr>
<td>A.PA</td>
<td>American Publishers Association</td>
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<tr>
<td>AAUW</td>
<td>American Association of University Women</td>
</tr>
<tr>
<td>FAWE</td>
<td>Federation of African Women</td>
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<tr>
<td>S.Q</td>
<td>Student’s Questionnaire</td>
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<tr>
<td>SET</td>
<td>Science, Engineering and Technology</td>
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<tr>
<td>SMASSE</td>
<td>Strengthening Mathematics and science in Secondary Education</td>
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<td>TTIs</td>
<td>Technical Training Institutes</td>
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<td>R.Q</td>
<td>Registrars Questionnaire</td>
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<tr>
<td>U.S.A</td>
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ABSTRACT

The composition of female studies has been growing all over the world. The trend seems to indicate that female students prefer some courses over others. Female students who enroll in postgraduate courses do so for a number of reasons which range from the desire for high income or better employment, empowerment for decision reasons and other social cultural factors. This trend is also typical in Technical training institutions. The purpose of the study was to investigate the factors that influence female students enrollment in science oriented courses in technical institutions in Bungoma County. The study was guided by the following objectives; the influence of outcomes expectations on female student course enrollment in science oriented courses, the extent to which female student attitudes influence their enrollment in science oriented courses, to ascertain how socio-economic factors influence enrollment of female students in science oriented courses and lastly the extent to which instructional materials available influence enrollment of female students in science oriented courses in technical training institutions in Bungoma County. The researcher employed descriptive survey design while undertaking the study. The target population for the study was 160 students in first year taking science oriented courses in three technical training institutions in Bungoma County, three registrars and the technical education officer making a total of 164 respondents. The sample size was 113 first year’s female students taking sciences oriented courses in the three technical training institutes selected using krejcie and morgan (1970) table of determining sample size for research activities and three registrars and the technical education officer making a total of 117 respondents. The research used Students’ Questionnaire (SQ), Deans Questionnaire (DQ) and technical education officers Questionnaire as data collection instruments. Validity and reliability of the research instruments was tested prior to actual collection of data. Data was analyzed using descriptive statistics and presented using APA tables formats. The findings show that majority of respondents revealed that they were influenced by future salaries expectations. The bulk of students were strongly influenced by identity expectations in future while choosing to enroll in science-oriented course in TTI and lastly the respondents also cited that employment chances in future influenced their enrollment in science-oriented courses. The findings also shows that majority of the respondents were not influenced by career counselors at KCSE level to enroll in science oriented courses. It can be summarized that majority of respondents cited that they were not influenced by gender stereotype while enrolling into science oriented courses. Majority of respondents indicated that global technological advancements had no influence to their enrollment in science-oriented courses. It can be deduced that the bulk of respondents were influenced by other family members to enroll in science based courses. The findings also shows that majority of respondents indicated that they were not influenced by SET government bursary to enroll into science oriented courses and lastly it can be deduced that the bulk of respondents revealed that they enrolled into science-oriented courses due to available science, engineering and technology workshops. It can also be deduced that the bulk of respondents indicated that they were greatly influenced by past performance of the science departments to enroll into science-oriented courses. The findings also shows that majority of the respondents were not influenced by the registrars of students into
enrolling in science oriented courses in TTI in Bungoma County. The study recommends that female students should be encouraged to enroll into science oriented courses as their male counter parts. The study also recommends that female students should be assisted to develop positive attitudes towards science oriented courses from early stages of learning. The study also recommends that college administration and other education stakeholders should provide SET bursary information to female students to enable in enroll in science oriented courses.
CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The composition of female studies has been growing all over the world. The trend seems to indicate that female students prefer some courses over others. Female students who enroll in postgraduate courses do so for a number of reasons which range from the desire for high income or better employment, empowerment for decision reasons and other social cultural factors. This trend is also typical in Technical training institutions (Wattles, 2009). It was a common practice in the old days in the United States of America and Europe and Africa to find feudalism converting it into a family affair where the son of a blacksmith was destined to become a blacksmith and a feudal was born a leader. Industrialization and post industrialization has made it possible for a common person to be richer as long as she or he has due skills and knowledge (Wattles, 2009). Today, one has not only to make due career planning but also exhaustive career research before making a career choice so as to adjust with the evolving socio-economic conditions (Wattles, 2009).

According to studies done in USA attitudes largely determine what students learn and their willingness to learn. Lingren (1980) supported this view by stressng the importance of students holding favourable attitudes if learning experiences are to be successful. Several definitions have been offered as to what attitudes are. Fishbein and Ajzen (1975) in their earlier studies in USA and Europe stated that an attitude is one's general feeling of favour or otherwise toward some stimulus objects. A similar definition was offered by Thorndike and Hagen (1975) and Richardson (1977). They added that
this judgment or feeling is towards an individual, a group, an object, an institutions or a proposition.

However, caution must be taken as to what attitudes students have as fears passed on to students stay with them for the rest of their education (Philips, 1980). Extending this further, Tobias, (1978) stated that "negative attitudes can powerfully inhibit intellect and curiosity and can keep us from learning what is well within our power to understand".

In African secondary school, Fakuede (1973) found that it is common knowledge that the majority of the students in Nigerian Secondary schools dislike mathematics when comparing the two sexes. Other studies done in East Africa and especially in Uganda, and Kenya shows that females have been noted to have more negative attitudes (Iben, 1991; Dike, 1984; Omuoha, 1982; Oyewole, 1982; Tobias, and Weissbroad, 1980; Preece, 1979; Fennema and Sherman, 1977; Bassa, 1976). The differences between the attitudes of males and females increase as students’ progress in school (Lewy, 1982)

According to Mukherjee and Umar (1989) of Kano state polytechnic, Nigeria, attitudes can be changed as theories of attitude change have shown. Research on attitudes change of individuals and their subsequent behaviour has been mainly in fields other than education especially in Kenya. Attitudes like values are products of the social interactions a child is likely to experience with his parents, teachers and neighbourhood community. Successful interactions depend on positive reinforcements, which in their turn lead to ego-involvement of the persons concerned. Most of students who are in secondary schools do not have accurate information about occupational opportunities to help them make appropriate career choice. According to Kerka (2000), course enrolment is influenced by multiple factors including personality, interests, self-concept, cultural
identity, globalization, socialization, role model, social support and available resources such as information and financial.

Bandura et al (2001) state that each individual undertaking the process is influenced by several factors including the context in which they live in, their personal aptitudes, social contacts and educational attainment. According to Hewitt (2010), factors influencing career choice can either be intrinsic or extrinsic or both. Hewitt further states that most people are influenced by careers that their parents favour, others follow the careers that their educational choices have opened for them, some choose to follow their passion regardless of how much or little it will make them while others choose the careers that give high income. Students perception of being suitable for particular jobs also has been found to be influenced by a number of factors including ethnic background, year in school, level of achievement, choice of science subjects, attitudes and differences in job characteristics (McQuaid and Bond, 2003).

In a study by Perrone, (2001) on role model influence on the career decisiveness of college students, it was found that role model supportiveness, and quality of relationship contributed to the career choice of students. The same study indicated that majority of the students selected same gender role models. Research on the role of spirituality and religion in career development although limited in scope has suggested that such factors relate positively to desirable career development outcomes such as career decisions. For many people with spiritual or religious commitment faith plays a critical role in the career decision making process. (Duffy and Dick 2009).

A number of studies carried out in African countries have provided data that illustrates the gross under representation of females in Science subjects and careers (FAWE, 1997).
At a conference organized by the Federation of African Women Educationists (FAWE), it was acknowledged that in many African states, girls are still restricted to studying what is perceived to be “soft option” Subjects, which has limited their access to scientific and technical disciplines in institutions of higher learning (Ramani, 2004).

In Kenya, it was reported at a workshop organized by Kenyatta University and the World Bank, on gender mainstreaming in public universities, that although gender disparities in students’ enrolment exist at all levels of higher education, they are particularly wide at higher degree levels especially in sciences, with special reference to mathematics and technical disciplines. It was also reported that women academicians are concentrated in what is perceived as traditional female social science and education disciplines (Ramani, 2004).

A Study on subject enrolment in Ethiopia by Stebleton (2007) indicated that the students had an external locus of control and believes that there are numerous external factors which influence their career choices. These external factors include; political and economic considerations, previous work experience and the influence of key individuals in a person’s life. Pummel, Harwood and Lavallee (2008) reports that external influences that helps to shape an individual career aspirations. According to the journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS) Scholar link Research Institute Journals, (2011) jeteraps.scholarlinkresearch.org Journal of Emerging Trends in Educational Research and Policy Studies: students subject enrolment are also influenced by significant social support from peers.

In a study by Natalie (2006), young adults were influenced through interaction with the context of family, school and community as they learn about and explore careers which
ultimately lead to their career choice. One consistent finding in research suggests that adolescents’ own aspirations are influenced by their parent’s aspirations or expectations. Parental support and encouragement are important factors that have been found to influence career choice. Children may choose what their parents desire simply to please them (Taylor et al, 2004)

According to Oyamo and Amoth (2008), studies in Kenya show that rural students tend to seek help from parents more than urban students and that parents more than teachers play a major role in the career choice of students. Generally, the choice of a career is influenced by parents, friends, and counselors however variations occur from one population to the other. In Kenya, every year form four secondary school students make their career choices before sitting for their final Kenya Certificate of Secondary Examination. The result of this final examination determines who joins university since admissions into various careers are determined by grades obtained from the Kenya Certificate of Secondary Education. Before making their subject choices, students are often provided with a list of careers from which they are supposed to make choices. Most of the students lack adequate information regarding various careers hence the choices that they make are embedded in their perception of the ideal job and the subjects they study in secondary school. The only support students get within the school is from career masters or counselors as they are mostly refereed to and the teachers who are expected to support students in their career choice. The purpose of this study will be to examine the factors influencing student course enrolment in humanities in diploma teacher training colleges in Bungoma south district. The area of study will be chosen given that the statistics in the
diploma teacher training colleges shows that majority of first year students have enrolled in humanities compared with those enrolled in sciences MOEST (2011).

1.2 Statement of the Problem

Female student enrolment in science oriented courses in Technical training institutes (TTI) has consistently been comparatively low and there is the need to investigate how female students make their science subject enrolment decision. Among all the main departments in TTI, the Science Department makes one of the least, if not the least female student admissions every year. This consequently affects the number of female students opting for either science oriented courses or the business courses with the latter having a relatively awful patronage. A review of a number of research endeavours on students' subject choice, and students' attitudes towards sciences, by Angell, Guttersrud, Henriksen, & Isnes (2004) confirmed this under-representation of students in science oriented courses.

In Bungoma county only 204 female students were admitted in the three technical colleges in the county compared with 978 male students in 2011 despite government (SET) bursary for female students taking science, engineering and technology courses in technical training institutions (County Education Office 2012). The county has registered a low enrolment of female students in TTIs compared with other counties such as Uasi-Gishu County with, 460, Kakamega with 432, Tranzioa with 358, Vihiga with 325 and Busia with 268 female students respectively (County technical education office 2013). Thus, unless something is done to attract and train female students joining science oriented courses (without compromising standards or quality anyway) other professional areas which require people with science background could be significantly affected. The
shortfall in the number of female student’s taking sciences could have serious consequences for the county because the development of every nation is driven by the advancement in science and technology education, and science courses is a central pillar around which such advancement strives. In previous studies by Angell, Guttersrud, Henriksen, & Isnes (2004) and Millar & Toscano (2006), the respondents involved in these studies were young students whose course and subject choices could be heavily influenced by their parents because they were still under the care and control of their parents. However, most of the respondents (students) in the present study are relatively mature and in most cases independent individuals who may not be necessarily influenced in their choices of subject by their parents and family. The overall research problem that will be addressed in this study is that despite the launching of the Science, Engineering and Technology (SET) government bursary program to sponsor female students taking science, engineering and technology courses in technical institution in Kenya, the statistics still shows a low enrolment of females in science oriented courses. Therefore, there is the need to establish the factors affecting the interest of female students in science oriented courses in the current context, hence the need for this study. It is against this background that the researcher sought to establish the factors that influence enrolment of female students in science oriented courses in technical training institutions in Bungoma County.

1.3 Purpose of the Study

The purpose of the study was to establish the factors that influence enrolment of female students in science oriented courses in technical training institutions in Bungoma County.
1.4 Objectives of the Study

The study aimed at achieving the following objectives:

1). To establish the outcomes expectation influence on enrolment of female students in science oriented courses in technical training institutions in Bungoma County.

2). To establish the extent to which female students attitudes influence their enrolment in science oriented courses in technical training institutions in Bungoma County.

3). To ascertain how social economic factors influence enrolment of female students in science oriented courses in technical training institutions in Bungoma County.

4). To establish the extent to which instructional materials available in colleges influence enrolment of female students in science oriented courses technical training institutions in Bungoma County.

1.5 Research Questions

The study was guided by the following research question

1). To what extent do outcomes expectations influence enrolment of female students in science oriented courses in technical training institutions in Bungoma County?

2). To what extent do female students’ attitudes influence enrolment of female students in science oriented courses in technical training institutions in Bungoma County?

3). To what extent do social economic factors influence enrolment of female students in science oriented courses in technical training institutions in Bungoma County?

4). To what extent do instructional materials available influence enrolment of female students in science oriented courses in technical training institutions in Bungoma County?
1.6 Significance of the Study

The findings of the study are hoped to be of great importance to researchers as it will help develop additional literature in the area of factors that influence enrolment of female students in science oriented courses in technical training institutions in Kenya. The study findings will benefit the government of Kenya in developing and implementing policies that promote proper and informed subject enrolment among students. It is also hoped that the findings will help colleges to be sensitive on students’ choice of subjects.

1.7 Delimitation of the Study

This study was carried out in Bungoma County, in Kenya tied on the period 2013.

1.8 Limitation of the Study

The study on this topic factors influencing enrolment of female students in science oriented courses in technical training institutions in Bungoma County, had the following limitations .The respondents were shy about giving information thinking was for commercial purposes but they were assured of confidentiality. Lastly it was not easy to get some respondents to respond to the questions but the researcher was patient and made several trips to collect them. The findings from this study may not be generalized beyond the colleges participating in the study.

1.9 Basic Assumptions of the Study

This study was guided by the assumptions that the selected sample represents the population in all the variables of interest and those respondents willing to give the information freely without fear. It was also assumed that all the questionnaires would be returned on time and that those to be interviewed were available and willing to participate
and provide honest, accurate, complete answers, and that the researcher would have adequate time to complete the study.

1.10 Definition of Significant Terms as Used in the Study

**Attitudes:** Female students general feeling of favour or otherwise toward science Courses.

**County:** an area in a legislative territorial region

**Course enrollment:** choice of subjects by female students in TTIs.

**Gender:** Female Students in technical training colleges.

**Instructional materials:** Teaching, learning material, i.e. Teaching facilities like libraries, Laboratories etc

**Outcome expectation:** Future rewards/ status from the course content

**Technical training institute;** colleges offering technical education

1.11 Organization of the Study

This study was divided into five chapters as follows: Chapter one gave the background of the study and introduces the problem statement describing the specific problem addressed in the study, as well as the purpose, objectives and research questions that the study sought to answer. Chapter two presented a review of literature and relevant research associated with the problem addressed in the study, giving theoretical foundations of the study and conceptual framework. Chapter three presented the methodology and procedures used for data collection and analysis. Chapter four contains an analysis of the data, presentation and interpretation of the findings. Chapter five presents a summary of the findings, conclusions, recommendations and suggestions for further research.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the literature related to the study on the topic of establishing the factors that influence enrolment of female students in science oriented courses in technical training institution. This was in line with the following study objectives: the influence of outcomes expectations, attitudes, social economic and instructional materials. A conceptual framework was used to operationalise the variables and lastly the gaps in literature were summarized.

2.2 Outcomes expectation and female students enrolment in science oriented courses

The development of a country depends on the developmental level of its people. At present, Kenya has a high unemployment rate, currently standing at 33.8%. On top of that, according to the Ministry of Labour’s survey in 2001, most of the unemployed people in Kenya are young (Ministry of Labour, 2002). Many of these young people fail to find a job after completing their schooling despite having passed with good marks. Unfortunately, they find themselves sitting at home doing nothing. They fail to both find work or to make plans to further their studies. The Ministry of Labour confirmed that the unemployment rate in the age group 15 – 24 years stands at between 46 – 65 %. This age group consists of adolescents and young adults. This is a very alarming rate for any country.

According to Gonzo & Plattner (2003), unemployment does contribute to poverty, which in turn contributes to many other psychological effects on individuals who are
unemployed. The question is what contributes to the high unemployment rate in Kenya, especially amongst the youth? Also, what can Kenyan people do in order to help alleviate the high unemployment among our youth? There may be many reasons, which contribute to unemployment. One reason could be that the country’s economy is unable to offer enough employment to all young people who may need it. Another reason could be that there are not enough funds available for those who wish to study further. Unemployment could also be attributed to the fact that the youth of Kenya may not be motivated to find a job. There are many examples of young people who even after passing with good marks and having much potential for the future, seem to wait for jobs to find them. Some may be idle for years. Long periods of waiting and idleness can take a psychological toll on people.

According to Gonzo & Plattner (2003), remaining jobless for long periods makes people’s hope fade away, which in turn, increases depression. To improve the employment situation of our youth, and the country at large, changes need to be effected. Today’s students are tomorrow’s employees and employers (Jacobs, van Jaarsveld, & van Mollendorf, 1991). Therefore, proper development of current future students is of great importance. Literature shows that high youth unemployment could also be attributed to a lack of effective career guidance in schools. Career guidance is supposed to guide the youth into better decision-making regarding their future careers and other life expectations (Stead & Watson, 1999; Osipow, 1983; Sharf, 2002; Hayes & Hopson, 1977).

In Namibia, during the apartheid era, career guidance was not seen as an important subject, especially in previously disadvantaged schools. This was also the case in South
Africa, which went through the same rule of apartheid (HSRC, 1981). In both Namibia and South Africa career guidance was neglected. According to Stead and Watson (1999), the negligence of the previous dispensation to provide career guidance in former disadvantaged schools in South Africa was observed in a study done with first year students at universities in the Cape. Students from disadvantaged schools in Cape Town were found unable to choose study directions at university level. This attitude regarding the status of career guidance in schools has not changed to date. The result is that most South Africans and Namibians were never made aware of the importance of choosing a career through career guidance at schools and, therefore, were never afforded the opportunity to make informed choices about careers. The situation is still the same today, especially in rural schools. Young people do not have all the information they need to make informed decisions about their future careers. Brown, Brooks, & Associates (1996) argued that career choice is an act, which reflects people’s motivation. This action will motivate them to work towards their goals in order to achieve them. The implementation of career guidance at schools, could promote self-awareness as well as on awareness of work opportunities (Sharf, 2002; Hayes & Hopson, 1977; Brown et al., 1996). Brown et al. (1996) assumed that people, who are informed about possible career choices and about their abilities, have a better chance of choosing careers and about their abilities have a better of choosing careers, are more prepared to achieve their goals and enter careers that fit their personalities. Therefore, it is important to offer career guidance and career counseling in schools as early as Primary School (Gladding, 1996; Hayes & Hopson, 1977).
2.3 Female students attitudes and enrolment in science oriented courses

Attitudes largely determine what students learn and their willingness to learn. Lingren (1980) supported this view by stressing the importance of students holding favourable attitudes if learning experiences are to be successful. Several definitions have been offered as to what attitudes are. Fishbein and Ajzen (1975) stated that an attitude is one's general feeling of favour or otherwise toward some stimulus objects. A similar definition was offered by Thorndike and Hagen (1975) and Richardson (1977). They added that this judgement or feeling is towards an individual, a group, an object, an institutions or a proposition. However, caution must be taken as to what attitudes students have as fears passed on to students stay with them for the rest of their education (Philips, 1980). Extending this further, Tobias, (1978:54) stated that "negative attitudes can powerfully inhibit intellect and curiosity and can keep us from learning what is well within our power to understand". Curriculum requirements of any education system do not remain constant but are ever changing with time. This may for instance be as a result of changing education policy to respond to contemporary societal needs. For example in Kenya there has been a shift of emphasis for education for "white collar job" to education for "self- reliance". Under such circumstances, in-service training becomes necessary if the new curriculum is to be effectively and efficiently implemented.

In the secondary school, Fakuede (1973) found that it is common knowledge that the majority of the students in Nigerian Secondary schools dislike mathematics when comparing the two sexes. Internationally females have been noted to have more negative attitudes (Iben, 1991; Dike, 1984; Omuoha, 1982; Oyewole, 1982; Tobias, and Weissbroad, 1980; Preece, 1979; Fennema and Sherman, 1977; Bassa, 1976). The
differences between the attitudes of males and females increase as students’ progress in school (Lewy, 1982). According to Mukherjee and Umar (1989) of Kano state polytechnic, Nigeria, attitudes can be changed as theories of attitude change have shown. Research on attitudes change of individuals and their subsequent behavior has been mainly in fields other than education. Attitudes like values are products of the social interactions a child is likely to experience with his parents, teachers and neighborhood community. Successful interactions depend on positive reinforcements, which in their turn lead to ego- involvement of the persons concerned.

2.4 Social economic factors and female students enrolment in science oriented courses

Perhaps one of the most comprehensive of recent investigations into subject choice has been the Australian Center for Educational Research (ACER) longitudinal reports on subject choice (Fullarton & Ainley 2000). Analysis of the Australian data collected in 1993 and 2001 provided comprehensive statistical profiles of subject choice by senior high school students. The studies report that enrolments in science course are strongly associated with a number of background factors, including gender, peer influence, socio economic status, parents’ education levels and ethnic identity. These factors constitute external influence on students’ enrollment decision at all levels (Abouchedid & Nasser 2000). They were also considered background factors that were strongly implicated in students’ physical science enrollment decision (Hodkinson & Sparkes 1997). For that matter they formed part of the influential variables on students’ physical science being studied.
According to the ACER studies and research in the USA (Leshie, McClure & Oaxaca 1998) and UK (Woolnough 1994), the choice of physical science is more closely associated with high socioeconomic status (based on parental occupation) than any other subject area. This is not the case, however, among biology and other science students in Australia, as enrolments tend to be fairly consistent across socioeconomic levels. In Ghana and most African countries, socioeconomic levels are generally low, most settlements are rural with very high level of illiteracy reportedly about 60% in Ghana. Aside the general socioeconomic factors across the country, disparity also exists in terms of provision of both material (educational infrastructure) and human educational resources and opportunities between rural and urban centres. This affects quality teaching and learning (Fredua-Kwarteng & Ahia 2005), which could eventually affect students’ interest in education especially science (as a practical subject) among students from rural schools in particular.

Fortunately, Ghana has a culture of communal living or extended family system, so a child of a poor and/or illiterate parent might still receive help from an educated and/or wealthy relative. Thus, a casual scrutiny of the circumstantial differences for Ghana compared to the countries where these studies were carried out, suggests the correlation between parents’ socioeconomic and educational level and physical science enrolment might not be feasible or at least not easily determined.

Inherent in the meaning of society is the fact that it is constituted by people who live in a geographical area defined as a nation, made of social institution such as religious bodies, political parties among others and whose members share some mutual concern or interest, a common objective or common characteristics (Jenkins 2002). This is the perspective in
which society is viewed in the scope of this study. According to Lipps (1999), interest in science could be influenced by the recognition and value placed on knowledge of science and its application, scientist, and science related professions by society. When science professions are highly rewarded, people would consider it a worthwhile profession to engage in. With enrolment in physics, studies have shown that the influence of society is more pronounced in girls’ decision than boys due to socio-cultural traditions. Society perceives physics and physics-related professions as masculine and difficult (Jones, Howe & Rua 2000; Anamuah-Mensah 1995).

2.5 Instructional Materials available and female students enrolment in science oriented courses

Instructional materials are materials which assist teachers to make lesson explicit to the learners. They also transmit information, ideas and notes to learners Ijaduola (1997), Aina (1982) asserts that instructional materials are those materials or resources used in any teaching exercise to promote greater understanding of the learning experience. They are used to provide the richest possible learning environment which helps the teacher and learners to achieve specific objectives. They also assist the teachers to communicate more effectively and the learners learn more meaningfully and permanently. The same is amplified by Ogunsanya (1984) who describes teaching materials as anything that helps the teacher to promote teaching and learning activities.

Sharing the above view, Kay (1981) defines them as things which are intended to help the teacher to teach more effectively or better still which enables the pupils to learn more easily. In the opinion of Ajelabi (2000) and Akinlaye (1997) many
educational technologist see instructional materials as devices and resources used in learning situation to supplement to written or spoken words in the transmission of knowledge, attitude, ideas or concept and values. Akinlaye (1997) further states that they have been defined as things or objects brought into play to emphasize, clarify, strengthen, vitalize the teachers instruction. Ajelabi (2000) subtly puts instructional materials as teaching-learning materials that constitute an integral component of classroom instructional process which are utilized in delivering educational information to the learner. He further states that it makes lesson real, concrete and effective. Learners are motivated to learn at their own pace, rate and convenience.

It should be noted that subject vary in nature, context and depth. A tool that is suitable for one subject may not be suitable for another. For example, in 1971 Jerome Brunner carried out a research in Canada with the aim to standardize the application of instructional materials. The instructional materials used for mathematics are virtually not suitable in the class of economic or government. Brunner also noted the difference when social science subject like economics was taught through vocalization only and later visualizations only and then the combination of both. The results are as follows: Rate of assimilation was 52% for vocalization only, Rate of assimilation was 22% for visual aids only and Rate of assimilation was 76% when both vocalization and visual aids were used. Later in 1983, Arnold Smith of the educational resources and technology institute Canada carried out his own research on the same field and suggests that Prof. Jerome’s work was un workable in real life situation. Arnold Smith (1983) concluded that the best instructional materials in the world become useless when they are improperly used.
Instructional materials according to Ajelabi (2000) are teaching learning material that constitutes an integral component of classroom instructions which are utilized in dealing educational information to the learner. He further strikes that it makes the lesson real, concrete and effective as learners are motivated to learn at their own pace, rate and convenience.

According to research findings, our perception and understanding of our environment vary as follows: 75% of all information perceived is absorbed by the eye, 15% is absorbed by the ear and 10% is equally distributed among the remaining senses- touch, smell and taste. According to a Chinese dictum, what I hear I forget, what I see I remember and what I do I understand?

Essentially, the way to facilitate learning is by doing. This is the more reason why teachers should employ the use of instructional material and also use variety of methods such as simulation and games, field trips and role playing.

The role and impact of instructional material on subject enrollment needs not be over emphasized. It is through instructional materials that the teacher drives home his or her point during lesson. In the process of using instructional material, students can see, feel and touch the material and this aids retention. Christopherson (1969) views the instructional materials as having vital role to play towards the subject enrollment in secondary schools. Instructional materials are employed to widen the scope of understanding in teaching-learning encounter, Onyejemezi (1984). Ruickshark (1974) et al sees instructional material as beneficial to the learner. Onyejemezi (1984) lists seven benefit of Instructional material, which is in agreement with Maduekwe (2000). They are: It supplies concreted basis for conceptual thinking and reduce meaningless respond of
student, it makes lesson more permanent, and it has a high degree of interest since they are shown physically to aid self understanding and explanation, it offers reality to experience, it contributes to the depth and variety of learning, it gives ready made answers to questions in the teaching learning process and it adds meaning and explicitness in the teaching learning process.

Looking at the importance and advantage of instructional materials in the teaching learning process, we conclude that the students stand to gain more if they make career choices based on the available instructional materials. We can therefore say that there is positive relationship between instructional material and students’ subject enrollment (Maduekwe, 2000 and Onyejemezi, 1984).

2.6 Theoretical Framework

The theoretical framework for this study was based on Super’s Career Development Theory: Super’s Career Development Theory- The practice of matching people with certain kind of work was derived from Frank Parson (1909) who tried to match individuals’ abilities and interests with vocational opportunity, Parson’s important contribution to the development of career theories was the idea that interests and abilities do influence careers. Someone will, thus, choose a career that matches his or her interests, abilities and personality. Ginzberg (1951, in Crites, 1969) emphasized that occupational choice is not an event, but is a process that takes place and develops over a period of time. According to Crites (1969), Ginzberg assumed two main propositions on which he based his career development theory. One of the propositions was that the process of decision-making in career choice would be irreversible.
According to Ginzberg (1969), once a person has made a career decision, then he or she will be restricted to it. The person may find it difficult to change his/her career goals and the decision taken might restrict that person from making other decisions concerning his or her career development because the person might have already made efforts regarding the chosen career and committed him or her to it. The other proposition assumed by Ginzberg suggests that career choices will depend on compromises between what the person needs and what is available (Crites, 1969). These propositions made by Ginzberg contributed to Donald E. development theory. Super’s theory did not arise at one time and stop there, but it developed itself over a long period of time.

Different constructs were added and adjustments were made since 1953 until the 1990’s. Career development and self-concept were core concepts in Super’s theory in 1953 (Stead & Watson, 1999; Brown, Brooks & Associates, 1996).

Career Development Theory was an elaboration of Ginzberg’s assumptions as indicated above, but also included many other theorists’ ideas, such as those of Thorndike, Hull, Bandura, Freud, Jung, Adler, Murray, Maslow, Allport and Roger (Crites, 1969). From all these theorists’ work, Super, developed a comprehensive theory that covered many aspects of life. Super’s theory sees career choice as a life-long process that happens throughout someone’s life, from childhood to adulthood (Langley, 1999). According to Super, career choice is based on matching the individuals’ abilities and interests with the work, and is influenced by economic, social, environmental and physical factors. Changes in these factors may have an impact on individuals’ career development and choice. Super’s theory is comprised of different developmental stages during which career choices are made. During these developmental stages, the individual develops
skills and acquires a level of maturity to adopt in his or her career choice. In 1953, Super’s theory (Sharf, 2002), consists of three original constructs. These are career development, self-concept and career maturity (Sharf, 2002). Other constructs of Super’s theory were expanded from the original ones, through further studies by Super himself and other researchers, over the years. These are the constructs of values, life roles and cultural context (Sharf, 2002; Osipow, 1983; Brown, et al, 1996; Super, Sverko & Super, 1995). The current study therefore was based on concept career development theory which is a life-span-life-space approach which entails social situations the individuals have to go through, and focuses on individuals’ intra-personal aspects, such as values, self-concept, life roles and culture.

2.7 Conceptual Framework

This study was guided by the following conceptual framework, which was used to explain the interrelationship between the variables. A conceptual framework is a scheme of variables a researcher operationalizes in order to achieve the set objectives (Oso & Onen 2002).
Mugenda and Mugenda (1999) argued that independent variable attempts to indicate the total influence in the study. It is hypothesized that the independent variable with its components outcomes expectations, salaries, identity, attitudinal factors, personal aptitudes, personality and gender stereotype, feminine and cheapness attributed to...
humanities directly influence the dependent variable female students enrolment in science oriented courses, however intervening variables with its components parental influence, role models, ethnic background and government policies may accelerate or delay the course enrolment in science oriented courses.

2.8 Summary of Chapter

The purpose of the review of the above literature was to avoid unnecessary and unintentional duplication of framework from which the research findings were interpreted and also demonstrate the researcher’s familiarity with existing knowledge. The researcher has reviewed literature related to the study on the topic on the factors that influence enrolment of female students in science oriented courses technical training institutions in Bungoma County, by focusing on the general studies of what other researchers have said in relation to the study objectives. While girls in Kenya are exposed to the same curriculum as boys and taught by qualified teachers as their male counterparts, the statistics given in the background and in the reviewed literature shows that there is disparity in perception of career aspirations among male and female students.

The reason for this disparity has not been adequately researched on. This research therefore postulates that the disparity in career aspirations might be attributed to the way students perceived certain careers. The overall research problem that was addressed in this study is that despite the launching of the government bursary program to sponsor female students taking science, engineering and technology courses in technical institution in Kenya, the statistics still show a low enrolment of females in science oriented courses in Bungoma County.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter describes the research design as well as the methods that were used to sample the population and the target population bringing out the sample size. The chapter further looked at methods of data collection, research instruments, their validity and reliability, operational definition of variables and methods of data analysis.

3.2 Research Design

This study employed a descriptive survey design, which is a type of research undertaken with the aim of describing characteristics of variables in a situation. According to Best and Khan (2009), descriptive survey design is concerned with conditions or relationships that exists, opinions that are held, processes that are going on, effects that are evident, or trends that are developing (Kerlinger, 1969). The descriptive survey design enabled collection of data without manipulating the research variables. The descriptive survey design optimizes on the strengths of both quantitative and qualitative research methodology (Kerlinger, 1969). The survey method allowed collection of data from a large sample population and generate findings that were used to represent the whole population at a lower cost (Saunders, et al 2007).

3.3 Target Population

According to the business dictionary a target population is a particular group of people that is identified as the intended recipient of an advertisement, product, or campaign.
The target population for the study was 160 female students in first year taking science oriented courses in technical training institution in Bungoma county, three registrars and one education officer in charge of technical education in the county making a total of 164, (County education office 2012). The choice of first year’s students was based on the assumption that since the courses are on module basis, the first year students were available during the period of data collection, unlike the second years who were on industrial attachment.

3.4 Sample Size and Sampling Procedure

Sampling is the procedure a researcher uses to gather people, places or things to study. It is a process of selecting a number of individual or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group (Orodho and Kombo, 2002). A sample is finite part of a statistical population where properties are studied to gain information about the whole (Webster, 1985).

The technical training institutions were purposively sampled since the research targets all the three colleges. The purpose of these was to ensure that each college is represented in the study. It was also assumed that since the courses are on module basis, the first year students were available during the period of data collection, unlike the second years that were on industrial attachment. Sample of 113 female students was appropriately distributed among the three technical training institutions. The researcher also gathered information from Dean of students of the institutions that participated in the study and one education officer in charge of technical education in the county. A total of 113 first year’s female students taking sciences oriented courses in the three technical training
institutes were selected using Krejcie and Morgan (1970) table of determining sample size for research activities. The three registrars of students will be selected purposively for the study. Their information is hoped will strengthen the validity of the results.

3.5 Data collection Instruments

Bourke (2005) simply states that questionnaires are used to obtain two different types of information: First the background information on students, teachers, or others, such as age, gender, amount of schooling, and secondly attitudinal information about some specific events, way of behaving, quality of life, other persons, etc. In the first case, even though the same information could also be gathered in other ways, e.g. from institutional records, a questionnaire is simply a convenient way of obtaining the information. In the second case, a number of items are asked about each attitude or opinion in an attempt to tap various aspects underlying beliefs or feelings which gives rise to the attitudes. Similarly, Oppenheim (1996) affirms that the questionnaires are one way of obtaining a measure of attitude. The attitudes have two components: beliefs (cognitive) and feelings (emotional or affective). Responses to questionnaire items are what respondents say their belief or say they would do, which are taken as indicators of their beliefs, attitudes and likely behavior.

The research instruments that were employed in this study as tools for data collection were questionnaires namely.

i)  Student’s Questionnaire (SQ)

ii) Dean’s Questionnaire (DQ)

iii) Technical education officers Questionnaire (TEOQ)
The use of questionnaires in this research was based on one basic underlying assumption: that the respondents were both willing and able to give truthful answers. The three kinds of items which were generally used in the construction of questionnaires were, closed items, open-ended items, and scale items. The close items allowed the respondents to choose from two or more fixed alternatives, for example, the dichotomous items which provide two alternative only: yes or no. The open-ended items simply supplied a frame of reference for respondents’ answer, couple with a minimum of restraint or command on their expression. Thus, in open-ended items, respondents provide the answers in their own words. The scale is a set of items to which the respondents respond by indicating degrees of agreement or disagreement.

The key instrument applied in this study was the questionnaire which was characterized by the three types of item construction mentioned above, as well as a selected response format of A Likert scale. The questionnaire was adapted from Gamage (1996a) for an empirical study in the New South Wales (NSW) state schools system. On the basis of an extensive review of literature, it was found that the research questionnaire which was modified to suit the context of this study was the appropriate one. The three instruments were used to supplement each other and to give a deeper and wider exploration into research perspective which gave the research more quality.
3.5.1 Pilot Testing

Piloting is trying out of research instruments on the respondents who will not be used in the main study. Groll (1986) notes that a pilot study is necessary because" a researcher embarking on classroom research for the first time will find it valuable to spend some time in the classroom using one or more established systems and looking at the kind of issues which will arise in turning his/ her own research questions into a set of criteria and definition for use in the classroom." It is important for a pilot study to be carried out before any research is done as stated by Peter (1994). He states” even the most carefully constructed instrument cannot guarantee to obtain a hundred percent reliable data". Therefore it was necessary to pretest the instruments of the research on a small sample of respondents in a preparatory exercise to find out if there is any weakness so that it could be corrected. In this study, a pilot study was done in the month of May in two colleges from Kakamega County which did not take part in the main study. A total of forty female students taking science oriented courses were selected a alongside their registrars, Students and registrars Questionnaires were used to collect data. The Value of a Pilot Study according to Blaxter, (1996) states that “You may think that you know well enough what you are doing, but the value of pilot research cannot be overestimated. Things never work quite the way you envisage, even if you have done them many times before, and they have a nasty habit of turning out very differently than you expected”. It is thus very clear to the researcher, that the pilot study in the current research was essential to prevent the waste of time, energy and money. The value is also emphasized by the points listed below.
According to Welman and Kruger (1999) many novice researchers are disillusioned when they find out that the guidelines for research are only valid in an ideal environment, and not in the practical research environment where they conduct their research study. This might be the main reason why a pilot study was needed.

Welman and Kruger (1999) also listed the following three values of a pilot study: It was needed to detect possible flaws in measurement procedures (including instructions, and time limits,) and in the operationalisation of independent variables. This value of the pilot study was very applicable in the current research study. The researcher used two different measurement procedures with the research groups to gain information and to do a pre- and post test. The practical application of these in a group environment had to be piloted as well as the time to be allowed for each of these. Also the feedback structure to the respondents had to be piloted to clear out practical difficulties, like duplication of information, the need for the feedback and the time consumed by the specific format of feedback. A pilot study was also valuable to identify unclear or ambiguous items in a questionnaire. Although the current study made use of self-designed questionnaires for the pre- and post-test, it was necessary to pilot this action to clear out unclear items and also to determine time limits and the clarity of instructions.

It gave advance warning about where the main research project could fail; it also indicated where research protocols might not be followed. The pilot study also identified practical problems of the research procedure as it indicated whether proposed methods or instruments were inappropriate or too complicated. Some of the advantage points listed above were relevant to the pilot study of the current research project. The pilot study in
the current research process was specifically used to identify practical problems in the process, sessions and methods used.

3.5.2 Validity of the Instruments

Validity is the extent to which the instrument measures what it appears to measure according to the researcher’s subjective assessment (Nachmias: 1958). Validity deals with the adequacy of the instruments for example, the researcher needs to have adequate questions in the written task in order to collect the required data for analysis that can be used to draw conclusion.

Frenekel (1993) suggest that the individual who is supposed to render an intelligent judgment about the adequacy of the instruments should be given the instruments before the actual research is carried out. The instruments were amended according to the expert's comments and recommendations before being administered. In this study, the researcher sought help from the supervisors and lecturers in the school of education to judge the validity of the questionnaire and the questions in the written task.

3.5.3 Reliability of the research instruments.

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda and Mugenda: 2003).

According to Seliger and Shohamy (1989) reliability is the extent to which data collection procedures and research tools are consistent and accurate. In a research study, a reliability coefficient can be computed to indicate how reliable data are. A coefficient of 0.80 or more implies that there is a higher degree of reliability of the data (Mugenda and Mugenda, 2003). Reliability of the data is in fact a very important aspect of a
research study and should be addressed early in the research process and also reported in the final document.

In this study, Cronbachs alpha coefficient of internal consistency was used to determine the correlation coefficient. The theoretical value of alpha varies from 0-1. In the current study the alpha coefficient of the test items yielded a correlation coefficient of 0.75

3.6 Data Collection Procedures

Before the data collection process, the researcher sought a letter from University Nairobi which was used to seek a permit from the National Council of Science and Technology so as to be allowed to carry on with the research in Bungoma County.

3.7 Data Analysis Techniques

The data collected was edited, coded and analyzed using descriptive statistics. The data collected from open ended questions and interviews was analyzed using descriptive statistics. The quantitative data from the closed-ended questions was analyzed using descriptive statistics to meaningfully describe the distribution of measurements of the phenomena under study. This involved use of measurers of distributions (frequencies and percentages) and presentation of information in APA tables.
3.8 Operational Definition of Variables

Indicators are shown by the main variables under the study to ensure that they are measurable.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Type of variable</th>
<th>Indicators</th>
<th>Source</th>
<th>Scale of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>To establish the influence of outcomes expectations on female students enrolment in science oriented courses</td>
<td><strong>Independent:</strong> outcomes expectations</td>
<td>Salaries identity</td>
<td>college students</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td><strong>Dependent:</strong> Enrolment in science oriented courses</td>
<td></td>
<td></td>
<td>Ordinal</td>
</tr>
<tr>
<td>To establish the extent to which attitudinal factors influence female student enrolment in science oriented courses</td>
<td><strong>Independent:</strong> attitudinal factors</td>
<td>Personal aptitude, personality</td>
<td>college students</td>
<td>Ordinal</td>
</tr>
<tr>
<td></td>
<td><strong>Dependent:</strong> Enrolment in science oriented courses</td>
<td></td>
<td></td>
<td>Nominal</td>
</tr>
<tr>
<td>To ascertain how the social economic factors influence female students enrolment in science oriented courses</td>
<td><strong>Independent:</strong> gender stereotype</td>
<td>Set bursary Peer influence</td>
<td>College students</td>
<td>Ordinal</td>
</tr>
<tr>
<td></td>
<td><strong>Dependent:</strong> Enrolment in science oriented courses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To ascertain how instructional materials influence female students enrolment in science oriented courses</td>
<td><strong>Independent:</strong> Instructional materials.</td>
<td>Libraries Laboratories</td>
<td>College students</td>
<td>Ordinal</td>
</tr>
<tr>
<td></td>
<td><strong>Dependent:</strong> Enrolment in science oriented courses</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the results and discussions of quantitative data analysis of the study. It is divided into three major sections. The first section describes the demographic characteristics of the empirical survey, covering the gender of the respondents, teaching qualification and teaching experience of the respondents. The second section of the chapter provides results and discussions which were based on the four major research questions of the study. For the purposes of this preliminary analysis, descriptive statistics were frequently used to describe the general characteristics of the data collection.

4.2 Response Return Rate

Out of 117 questionnaires dispatched, 117 were dully filled and returned. According to Nachimias and Nachimais (1958) 80% to 90% return rate is enough for a descriptive survey study. In this case 100% return rate was realized because Dean of students assisted the researcher to ensure all the questionnaires were returned and therefore the return rate of 100% boosted the analysis, presentation and interpretation of the study findings. The summary is in table 4.1.

Table 4.1 Response Return Rate

<table>
<thead>
<tr>
<th></th>
<th>Dispatched</th>
<th>Returned</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOS</td>
<td>3</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>EO (TTI)</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Students</td>
<td>113</td>
<td>113</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>117</strong></td>
<td><strong>117</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
The 100% return rate as indicated in table 4.1 boosted the analysis, presentation and interpretation of the study findings.

4.3 Demographic Characteristics of respondents.

The study sought to determine the demographic characteristics of respondents based on the age of respondents.

The age of the respondents was sought since its findings would assist the study categorize respondents based on age and the findings are shown in table 4.2.

**Table 4.2 Age of respondents**

<table>
<thead>
<tr>
<th>Age</th>
<th>Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-26</td>
<td>107</td>
<td>91.45</td>
</tr>
<tr>
<td>27-35</td>
<td>6</td>
<td>5.12</td>
</tr>
<tr>
<td>Above 36</td>
<td>4</td>
<td>3.43</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>117</strong></td>
<td>100</td>
</tr>
</tbody>
</table>

The findings in table 4.2 show that 91.45% (107) of respondents were aged between 18-26 years. This is as a result of most of the respondents being students.

4.4 Outcomes expectations and female students’ enrollment in science-oriented courses in TTI in Bungoma County.

The study sought to investigate the influence of outcomes expectations on female students’ enrolment in science-orientated course under the following themes.

Investigation on the influence of future salaries expectations of female students enrollment in science oriented courses yielded the following findings 87.17% (102) respondents indicated that they were greatly influenced with salaries expectations in future to enroll in science oriented careers, 9.4% (11) cited that salaries expectation had
nothing to do with their enrolment in science oriented courses while 3.43% (4) respondents were undecided. The table 4.3 shows the study of findings.

**Table 4.3 Future salaries expectations on female students enrolment in TTIs**

<table>
<thead>
<tr>
<th>Future salaries</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatly influenced</td>
<td>102</td>
<td>87.17</td>
</tr>
<tr>
<td>No influence</td>
<td>11</td>
<td>9.4</td>
</tr>
<tr>
<td>Undecided</td>
<td>4</td>
<td>3.43</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>117</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From the table 4.3, it can be deduced that majority of respondents revealed that they were influenced by future salaries expectations with 87.17%, it is assumed that people, who are informed about possible future salaries and about their abilities have a better chance of choosing careers, are more prepared to achieve their goals and enter careers that fit their personalities.

The study also sought to establish the influence of identity expectations in future on female students enrollment in science oriented courses and the findings revealed that 58.97% (69) respondents cited that future identity expectations greatly influenced their decision to enroll in science based courses, 26.49% (31) strongly disagreed that they were influenced by future identity expectations while enrolling in science oriented courses while 14.54% (17) were undecided. The table 4.4 shows the study findings.
Table 4.4 Identity expectations and female students’ enrolment in science-oriented courses in TTI in Bungoma County

<table>
<thead>
<tr>
<th>Identity expectations</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly influence</td>
<td>69</td>
<td>58.97</td>
</tr>
<tr>
<td>No influence</td>
<td>31</td>
<td>26.49</td>
</tr>
<tr>
<td>Undecided</td>
<td>17</td>
<td>14.54</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

The findings in table 4.4 show that the bulk of respondents were strongly influenced by identity expectations in future while choosing to enroll in science-oriented course in TTI with 58.97%. Many factors influencing career choice can either be intrinsic or extrinsic or both, most people are influenced by careers that their parents favour, others follow the careers that their educational choices have opened for them, some choose to follow their passion regardless of how much or little it will make them while others choose the careers that give high income.

The study sought to establish the influence of future chances of employment on female students enrolment in science oriented courses and the following findings revealed 77.77% (91) of the respondents revealed that high chances of employment in future greatly influenced their enrollment in science oriented courses, while 13.67% (16) indicted that they made their course choice based on personal feelings rather than future
employment chances while 8.56% (10) respondents were undecided. The table 4.5 shows the study findings.

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment chances</td>
<td>91</td>
<td>77.77</td>
</tr>
<tr>
<td>Personal feeling</td>
<td>16</td>
<td>13.67</td>
</tr>
<tr>
<td>Undecided</td>
<td>10</td>
<td>8.56</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

The findings in table 4.5 show that the bulk of respondents cited that employment chances in future influenced their enrollment in science-oriented courses with 77.77%. Numerous external factors influence student’s career choices.

4.5 Female student’s attitudes and enrollment in science-oriented course in TTI in Bungoma County.

The study also sought to investigate the influence of female students’ attitudes on enrollment in science-oriented courses in TTI in Bungoma County under the following themes.

Investigation to establish whether career counselor at KCSE level had any influence on female students, enrolment in science-oriented courses in TTI in Bungoma County; The study findings revealed that 58.11% (68) of respondents cited that career counselors at KCSE level had little influence to their enrolment in science oriented course, this was followed by 32.47% (38) revealed that they were influenced by career counselors at
KCSE level to enroll in science oriented course, while 9.42% (11) were undecided. The table 4.6 shows the study findings.

**Table 4.6 Career counselors at KCSE level and female students’ enrollment**

<table>
<thead>
<tr>
<th>Career counselors</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little influence</td>
<td>68</td>
<td>58.11</td>
</tr>
<tr>
<td>More influence</td>
<td>38</td>
<td>32.47</td>
</tr>
<tr>
<td>Undecided</td>
<td>11</td>
<td>9.42</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>117</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The findings in table 4.6 show that majority of the respondents were not influenced by career counselors at KCSE level to enroll in science oriented course with 58.11% responses. Generally, the choice of a career is influenced by parents, friends, and counselors however variations occur from one population to the other. In Kenya, every year form four secondary school students make their career choices before sitting for their final Kenya Certificate of Secondary Examination.

The study also sought to establish the influence of gender stereotype on female students enrolment in science oriented courses and the findings revealed the following findings, 83.76% (98) respondents cited that they were not influenced by gender stereotype while enrolling into science oriented courses in technical training institutes, while 16.24% (19) indicated their enrollment with science oriented course was limited to their KCSE grades.

The table 4.7 shows the study findings.
Table 4.7 Gender stereotype and female student’s enrollment in science oriented courses

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. influence by gender stereotype</td>
<td>98</td>
<td>83.76</td>
</tr>
<tr>
<td>Limited by KCSE grades</td>
<td>19</td>
<td>16.24</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

From the table 4.7 it can be summarized that majority of respondents cited that they were not influenced by gender stereotype while enrolling into science oriented courses by 83.76%, students holding favourable attitudes have successful learning experiences.

The study also sought to establish whether technological advancement had any influence on female students enrollment in science oriented comes in TTIs in Bungoma county and the findings revealed that 67.52% (79) respondents cited global technological advancements had no influence to their enrolment in science oriented courses, while 25.64% (30) citing that it mild influence while 6.84% (8) were undecided. The table 4.8 shows the study findings.
Table 4.8 global technological advancement and enrolment of female students in science oriented courses

<table>
<thead>
<tr>
<th>Global advancements</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No influence</td>
<td>79</td>
<td>67.52</td>
</tr>
<tr>
<td>Mild influence</td>
<td>30</td>
<td>25.64</td>
</tr>
<tr>
<td>Undecided</td>
<td>8</td>
<td>6.84</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

The findings in table 4.8 show that majority of respondents indicated that global technological advancements had no influence to their enrollment in science-oriented courses with 67.52%. This can be as a result of lack of information.

4.6 Social economic factors and female student enrollment in science oriented courses in TTI in Bungoma County.

The study also sought to investigate the influence of social economic factors in female students’ enrollment in science-oriented courses under the following themes.

The study sought to establish whether parents had any influence on female students enrolment into science oriented courses and the findings revealed that, 49.57% (58) respondents cited that they were greatly influenced by other family members, 35.89% (42) citing that they were influenced by peer group members, while 14.54% (17) citing that they were influenced by their parents, the table 4.9 shows the study findings.
Table 4.9 parental influence and female students’ enrolment in science-oriented courses

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other family members influence</td>
<td>58</td>
<td>49.57</td>
</tr>
<tr>
<td>Peer group members</td>
<td>42</td>
<td>35.89</td>
</tr>
<tr>
<td>Parental influence</td>
<td>17</td>
<td>14.54</td>
</tr>
<tr>
<td>Total/average</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

From table 4.9 it can be deduced that the bulk of respondents were influenced by other family members to enroll in science based courses by 49.57%. Factors influencing career choice can either be intrinsic or extrinsic or both.

The study also sought to establish the influence of science, engineering and technology (SET) government bursary find an on female students enrollment in science oriented courses in TTI in Bungoma county, and the findings revealed that, 83.76% (98) cited, that they were not influenced by SET bursary fund to enroll in science oriented courses, followed by 10.25% (12) who cited that they were influenced by SET bursary fund to enroll in science oriented courses, while 5.99% (7) were undecided. The table 4.10 shows the study findings.
Table 4.10 SET bursary and female student enrolment in science oriented course in
TTI in Bungoma County.

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No influence</td>
<td>98</td>
<td>83.76</td>
</tr>
<tr>
<td>Influenced</td>
<td>12</td>
<td>10.25</td>
</tr>
<tr>
<td>Undecided</td>
<td>7</td>
<td>5.99</td>
</tr>
<tr>
<td>Total/average</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

The findings from table 4.10 shows that majority of respondents indicated that they were not influenced by SET government bursary to enroll into science oriented course with 83.76%. Changes in the education system made science subjects compulsory in all Kenyan public schools. The new education policy found many schools ill-equipped to start science classes coupled with the extra demand for science teachers. The new education system's high demand for science facilities and teachers hardly gave room for teachers' professional development of how to implement the new curriculum. This has remained so for sometimes now with little done in terms of provision of bursary facilities to students.

4.7 Instructional materials available and female students’ enrollment in science-oriented course in TTI in Bungoma County.

The study sought to investigate on the influence of instructional materials available and female students’ enrollment in science-oriented courses in TTI in Bungoma County under the following themes.
Investigation to establish the influence of available training facilities on female students enrollment in science oriented courses in TTI in Bungoma county revealed that, 49.57 (58) respondents cited that they were influenced by the availability of science, engineering and technology workshops, 35.89% (42) indicated that they were influenced by the available well stocked science libraries, while 14.54% (17) revealed that they were influenced by the available practical lessons. The table 4.11 shows the study findings.

**Table 4.11 Available training facilities and female student enrollment in science oriented courses.**

<table>
<thead>
<tr>
<th>Instructional materials</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshops</td>
<td>58</td>
<td>49.57</td>
</tr>
<tr>
<td>Libraries</td>
<td>42</td>
<td>35.89</td>
</tr>
<tr>
<td>Practical</td>
<td>17</td>
<td>14.54</td>
</tr>
<tr>
<td><strong>Total/average</strong></td>
<td><strong>117</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From the table 4.11 it can be deduced that the bulk of respondents revealed that they enrolled into science-oriented courses due to available science, engineering and technology workshops with 49.57%. There has always been an interest in the development of positive students’ attitudes towards sciences. The objectives of any curriculum include fostering favorable feelings toward sciences as well as imparting cognitive knowledge.

The study also sought to find out the influence of past performances of the science departments on female students enrollment in science oriented courses and the findings revealed that 81.19% (98) respondents cited that they were greatly influenced by past
performance of the science department to enroll into science oriented courses, followed by 13.67% (16) who indicated that they were mildly influenced by past performances of the science based department while 5.14% (6) were undecided. The table 4.12 shows the study findings.

**Table 4.12 Past performances of the science department and female students’ enrollment in science-oriented courses in TTI in Bungoma County**

<table>
<thead>
<tr>
<th>Past performance</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knec 2011</td>
<td>95</td>
<td>81.19</td>
</tr>
<tr>
<td>Knec 2010</td>
<td>16</td>
<td>13.67</td>
</tr>
<tr>
<td>Knec 2009</td>
<td>6</td>
<td>5.14</td>
</tr>
<tr>
<td>Total/average</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

From table 4.12 it can be deduced that the bulk of respondents indicated that they were greatly influenced by past performance of the science departments to enroll into science-oriented courses by 81.19% responses.

The study also sought to establish the Influence of registrar of students on enrollment of female students in science oriented courses in TTI in Bungoma county and the findings revealed that, 82.05% (96) of the respondents were not influenced by registrars, to enroll into science oriented courses, while 15.38% (18) indicated that they were mildly influenced by registrars to enroll into science oriented courses, while 2.57% (3) were undecided. The table 4.13 the study findings
Table 4.13 Deans of students and female students’ enrollment in science-oriented courses in TTI in Bungoma County

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No influence</td>
<td>69</td>
<td>82.05</td>
</tr>
<tr>
<td>Mildly influenced</td>
<td>18</td>
<td>15.38</td>
</tr>
<tr>
<td>Undecided</td>
<td>3</td>
<td>2.57</td>
</tr>
<tr>
<td>Total/average</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

The findings from table 4.13 show that majority of the respondents revealed that they were not influenced by the registrars of students into enrolling in science oriented courses in TTI in Bungoma County with 82.05% responses. It has been argued that one way of addressing the difficulties students experience in Kenya science classrooms is through appropriate teaching interventions that can be realized through professional development of science teachers. It is hoped that professional development programs for science teachers will equip teachers with appropriate teaching skills and instruction strategies that are necessary to effectively implement science curricula in schools.
CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter provides a summary of major findings as deduced by the study, it also presents Conclusions, Discussion, Recommendations and areas of further research.

5.2 Summary of findings.

The study sought to investigate the influence of customers’ expectations on female students’ enrolment in science-orientated course and the following were the study findings.

Investigation of the influence of future salaries expectations of female students enrollment in science oriented courses yielded the following findings 87.17% respondents indicated that they were greatly influenced with salaries expectations in future to enroll in science oriented careers, 9.4% cited that salaries expectation had nothing to do with their enrolment in science oriented courses while 3.43% respondents were undecided. The study findings also revealed that 58.97% respondents cited that future identity expectations greatly influenced their decision and enroll in science based courses, 26.49% strongly disagreed that they were influenced by future identity expectations while enrolling in science oriented courses while 14.54% were undecided. The findings also revealed 77.77% of the respondents revealed that high chances of employment in future greatly influenced their enrollment in science oriented courses, while 13.67% indicted that they made their course choice based on personal feelings rather than future employment chances while 8.56% respondents were undecided.
Investigation to establish whether career counselor at KCSE level had any influence on female students, enrolment in science-oriented courses in TTI in Bungoma County; The study findings revealed that 58.11% of respondents cited that career counselors at KCSE level had little influence to their enrolment in science oriented course, this was followed by 32.47% revealed that they were influenced by career counselors at KCSE level to enroll in science oriented course, while 9.42% were undecided. The findings revealed the following findings, 83.76% respondents cited that they were not influenced by gender stereotype while enrolling into science oriented courses in technical training institutes, while 16.24% indicated their enrollment with science oriented course was limited to their KCSE grades. The findings also revealed that 67.52% respondents cited global technological advancements had no influence to their enrolment in science oriented courses, while 25.64% citing that it mild influence while 6.84% were undecided.

The study sought to establish whether parents had any influence on female students enrolment into science oriented courses and the findings revealed that, 49.57% respondents cited that they were greatly influenced by other family members, 35.89% citing that they were influenced by per group members, while 14.54% citing that they were influenced by their parents. The findings also revealed that, 83.76% cited that they were not influenced by SET bursary fund to enroll in science oriented courses, followed by 10.25% who cited that they were influenced by SET bursary fund to enroll in science oriented courses, while 5.99% were undecided.

Investigation to establish the influence of available training facilities on female students enrollment in science oriented courses in TTI in Bungoma county revealed that, 49.57 respondents cited that they were influenced by the availability of science, engineering
and technology workshops, 35.89% indicated that they were influenced by the available well stocked science libraries, while 14.54% revealed that they were influenced by the available practical lessons. The findings revealed that 81.19% respondents cited that they were greatly influenced by past performance of the science department to enroll into science oriented courses, followed by 13.67% who indicated that they were mildly influenced by past performances of the science based department while 5.14% were undecided. The findings revealed that, 82.05% of the respondents were not influenced by registrars, to enroll into science oriented courses, while 15.38% indicated that they were mildly influenced by registrars to enroll into science oriented courses, while 2.57% were undecided.

5.3 Discussion of the study findings.

This section discusses the findings of study. The purpose of the study was to investigate the factors influencing enrollment of female students in science oriented courses in technical training institutions in Bungoma County.

Concerning the influence of outcomes expectations on female students’ enrollment in science-oriented courses in TTI in Bungoma County it can be deduced that majority of respondents revealed that they were influenced by future salaries expectations the findings are in line with other findings by Sharf, 2002; Hayes & Hopson, 1977; Brown et al. (1996) assumed that people, who are informed about possible future salaries and about their abilities have a better chance of choosing careers, are more prepared to achieve their goals and enter careers that fit their personalities. The bulk of respondents were strongly influenced by identity expectations in future while choosing to enroll in science-oriented course in TTI. The findings are supported by other findings by Hewitt (2010), factors
influencing career choice can either be intrinsic or extrinsic or both. Hewitt further states that most people are influenced by careers that their parents favour, others follow the careers that their educational choices have opened for them, some choose to follow their passion regardless of how much or little it will make them while others choose the careers that give high income. Students perception of being suitable for particular jobs also has been found to be influenced by a number of factors including ethnic background, year in school, level of achievement, choice of science subjects, attitudes and differences in job characteristics (McQuaid and Bond, 2003). The bulk of respondents also cited that employment chances in future influenced their enrollment in science-oriented courses. The findings are also in line with other findings by Stebleton (2007) indicated that the students had an external locus of control and believes that there are numerous external factors which influence their career choices. These external factors include; political and economic considerations, previous work experience and the influence of key individuals in a person’s life. Pimmel, Harwood and Lavallee (2008) reports that external influences that helps to shape an individual career aspirations.

Concerning the influence of female students’ attitudes on enrollment in science-oriented course in TTI in Bungoma County the findings shows that majority of the respondents were not influenced by career counselors at KCSE level to enroll in science oriented courses. The findings are in line with other previous findings by Oyamo and Amoth (2008), show that rural students tend to seek help from parents more than urban students and that parents more than teachers play a major role in the career choice of students. Generally, the choice of a career is influenced by parents, friends, and counselors however variations occur from one population to the other. In Kenya, every year form
four secondary school students make their career choices before sitting for their final Kenya Certificate of Secondary Examination. The result of this final examination determines who joins university since admissions into various careers are determined by grades obtained from the Kenya Certificate of Secondary Education. Before making their subject choices, students are often provided with a list of careers from which they are supposed to make choices. Most of the students lack adequate information regarding various careers hence the choices that they make are embedded in their perception of the ideal job and the subjects they study in secondary school. It can be summarized that majority of respondents cited that they were not influenced by gender stereotype while enrolling into science oriented courses. The findings are supported by Lingren (1980) supported this view by stressing the importance of students holding favourable attitudes if learning experiences are to be successful. Several definitions have been offered as to what attitudes are. Fishbein and Ajzen (1975) stated that an attitude is one’s general feeling of favour or otherwise toward some stimulus objects. A similar definition was offered by Thorndike and Hagen (1975) and Richardson (1977). They added that this judgement or feeling is towards an individual, a group, an object, an institutions or a proposition. The findings shows that majority of respondents indicated that global technological advancements had no influence to their enrollment in science-oriented courses. The findings are supported by Stead and Watson (1999), who asserted that the negligence of the previous dispensation to provide career guidance in former disadvantaged schools in South Africa was observed in a study done with first year students at universities in the Cape. Students from disadvantaged schools in Cape Town were found unable to choose study directions at university level. This attitude regarding
the status of career guidance in schools has not changed to date. The result is that most South Africans and Namibians were never made aware of the importance of choosing a career through career guidance at schools and, therefore, were never afforded the opportunity to make informed choices about careers. The situation is still the same today, especially in rural schools. Young people do not have all the information they need to make informed decisions about their future careers.

Concerning the influence of social economic factors on female student enrollment in science oriented courses in TTI in Bungoma County it can be deduced that the bulk of respondents were influenced by other family members to enroll in science based courses. The findings are in line with other findings by Hewitt (2010), factors influencing career choice can either be intrinsic or extrinsic or both. Hewitt further states that most people are influenced by careers that their parents favour, others follow the careers that their educational choices have opened for them, some choose to follow their passion regardless of how much or little it will make them while others choose the careers that give high income. Students perception of being suitable for particular jobs also has been found to be influenced by a number of factors including ethnic background, year in school, level of achievement, choice of science subjects, attitudes and differences in job characteristics (McQuaid and Bond, 2003). The findings shows that majority of respondents indicated that they were not influenced by SET government bursary to enroll into science oriented courses. The findings were also in line with other previous findings by Mackay report (1981). This asserted that changes in the education system made science subjects compulsory in all Kenyan public schools. The new education policy found many schools ill-equipped to start science classes coupled with the extra demand for science teachers.
The new education system's high demand for science facilities and teachers hardly gave room for teachers' professional development of how to implement the new curriculum. This has remained so for sometimes now with little done in terms of provision of bursary facilities to students.

Concerning the influence of instructional materials available on female students' enrollment in science-oriented course in TTI in Bungoma County it can be deduced that the bulk of respondents revealed that they enrolled into science-oriented courses due to available science, engineering and technology workshops. There has always been an interest in the development of positive students' attitudes towards sciences. The objectives of any curriculum include fostering favorable feelings toward sciences as well as imparting cognitive knowledge. It can also be deduced that the bulk of respondents indicated that they were greatly influenced by past performance of the science departments to enroll into science-oriented courses. The findings are in line with It should be noted that subject vary in nature, context and depth. A tool that is suitable for one subject may not be suitable for another. For example, in 1971 Jerome Brunner carried out a research in Canada with the aim to standardize the application of instructional materials. The instructional materials used for mathematics are virtually not suitable in the class of economic or government. Brunner also noted the difference when social science subject like economics was taught through vocalization only and later visualizations only and then the combination of both. The results are as follows: Rate of assimilation was 52% for vocalization only, Rate of assimilation was 22% for visual aids only and Rate of assimilation was 76% when both vocalization and visual aids were used. The findings shows that majority of the respondents were not influenced by the deans of
students into enrolling in science oriented courses in TTI in Bungoma County. It has been argued that one way of addressing the difficulties students experience in Kenya science classrooms is through appropriate teaching interventions that can be realized through professional development of science teachers (SMASSE project, 1998). It is hoped that professional development programs for science teachers will equip teachers with appropriate teaching skills and instruction strategies that are necessary to effectively implement science curricula in schools.

5.4 Conclusion

The study sought to investigate the factors influencing enrollment of female students in science oriented courses in technical training institutions in Bungoma County.

On the influence of outcomes expectations on female students’ enrollment in science-oriented courses in TTI in Bungoma County it can be deduced that majority of respondents revealed that they were influenced by future salaries expectations. The bulk of students were strongly influenced by identity expectations in future while choosing to enroll in science-oriented course in TTI and lastly the respondents also cited that employment chances in future influenced their enrollment in science-oriented courses.

Concerning the of female students’ attitudes on enrollment in science-oriented course in TTI in Bungoma County the findings shows that majority of the respondents were not influenced by career counselors at KCSE level to enroll in science oriented courses. It can be summarized that majority of respondents cited that they were not influenced by gender stereotype while enrolling into science oriented courses. Majority of respondents indicated that global technological advancements had no influence to their enrollment in science-oriented courses.
Concerning the influence of social economic factors on female student enrollment in science oriented courses in TTI in Bungoma County it can be deduced that the bulk of respondents were influenced by other family members to enroll in science based courses. The findings also shows that majority of respondents indicated that they were not influenced by SET government bursary to enroll into science oriented courses.

Concerning the influence of instructional materials available on female students’ enrollment in science-oriented course in TTI in Bungoma County it can be deduced that the bulk of respondents revealed that they enrolled into science-oriented courses due to available science, engineering and technology workshops. It can also be deduced that the bulk of respondents indicated that they were greatly influenced by past performance of the science departments to enroll into science-oriented courses. The findings also shows that majority of the respondents were not influenced by the registrars of students into enrolling in science oriented courses in TTI in Bungoma County.

5.5 Recommendations

On the basis of the findings and conclusions above, the following section presents the recommendations of the study.

1. The study recommends that female students should be encouraged to enroll into science oriented courses as their male counter parts.

2. The study also recommends that female students should be assisted to develop positive attitudes towards science oriented courses from early stages of learning.

3. The study also recommends that female students stand to gain more if they make career choices based on the available instructional materials in TTIs.
4. The study also recommends that college administration and other education stakeholders should provide SET bursary information to female students to enable in enroll in science oriented courses.

5.6 Areas for further study

1. A similar study to be carried out in other counties to compare the study findings.

2. Effects of physical facilities on enrolment of students in science oriented courses.

3. Effects of SET bursary on female enrolment in science oriented courses.
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APPENDICES

APPENDIX I. LETTER OF INTRODUCTION

Date: ………………… 2013.

To whom it may concern;

Dear sir/Madam,

Ref: request for collection of data.

I Joseck Simiyu Wataka, Reg. No. L50/74501/12, I am a post graduate student at the school of continuing and distance education, university of Nairobi. I am concluding a research study titled “Factors influencing enrolment of female students in science oriented courses in technical training institutions in Bungoma County. Kenya”.

You have been selected to form part of the study, kindly assist by filling in the attached questionnaire. The information given will be treated in strict confidence, and will be purely used for academic purposes. Do not indicate your name or unwanted details on the questionnaire.

A copy of this find report will be availed upon your request. Your assistance and cooperation will be highly appreciated.

Yours sincerely,

Joseck Simiyu Wataka
Student L50/74501/12

Prof. Gakuu
Senior Lecturer,
Department of Educational studies
University of Nairobi.
APPENDIX II: RESEARCH PERMIT FROM THE MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY.
APPENDIX III: QUESTIONNAIRE FOR THE FIRST YEAR STUDENT.

Thank you for your interest in participating in this survey.

The purpose of this study is to collect data on the factors influencing enrolment of female students in science oriented courses in technical training institutions in Bungoma County in Kenya.

This Questionnaire is a part of Master of Arts in Project Planning and Management at the University of Nairobi, and is completely anonymous. Your answers will be treated with confidentiality. Please indicate the correct option as honestly and as correctly as possible by putting a tick (✓) on one of the options. For the questions that require your opinion, please complete the blanks.

SECTION A: GENERAL DETAILS (PLEASE CHECK ALL THAT APPLY)
1. Indicate your age: …………………………………………………………………..
2. Are you a day scholar or a border: ………………………………………………..
3. Indicate your KCSE grade: …………………………………………………………
4. Indicate your home county: ………………………………………………………..

SECTION B: OUTCOME EXPECTATION
On a scale of SD, DM, AM, SA, N. Please tick the answer that best describe your responses.
SD – Strongly Disagree
DM – Disagree Mildly
AM – Agree Mildly
SA – Strongly Agree
N – None

1. Definitely made my course choice on my own
   SD   DM  AM  SA  N

2. I have made course choice based on outcomes expectations such as future salaries
   SD   DM  AM  SA  N
3. My course choice in sciences was based on identity expectations in future

SD  DM  AM  SA  N

4. My course choice in science was based on high chances of employment in future

SD  DM  AM  SA  N

SECTION C: ATTITUDES/GENDER

5. My career counselors at KCSE level had the greatest influence in my course enrollment in science

SD  DM  AM  SA  N

6. I am limited to my course enrollment in sciences due to my KCSE grades

SD  DM  AM  SA  N

7. I am not limited to my course enrollment in services due to gender stereotype

SD  DM  AM  SA  N

8. My career choice in sciences was based on global technological advancements

SD  DM  AM  SA  N

SECTION D: SOCIAL ECONOMIC FACTORS

9. My parents had the grateful influence in my course choice in sciences

SD  DM  AM  SA  N

10. Other family members have been the greatest influence in my work choice in sciences

SD  DM  AM  SA  N

11. My course choice in sciences was based on the science, engineering and technology (SET) government

SD  DM  AM  SA  N

12. My course choice in science was based on peer influence

SD  DM  AM  SA  N

SECTION E: INSTRUCTIONAL MATERIALS

13. I am limited to my course choice in sciences by the available training facilities

SD  DM  AM  SA  N
14. My course choice in sciences was based on the available science course books

SD  DM  AM  SA  N

15. My course choice in sciences was based on past performance of the science department

SD  DM  AM  SA  N

16. My course choice in science was based on the college Dean’s influence.

SD  DM  AM  SA  N
APPENDIX IV. QUESTIONNAIRE FOR THE DEAN OF STUDENTS

Thank you for your interest in participating in this survey.

The purpose of this study is to collect data on the factors influencing enrollment of female students in science oriented courses in technical training institutions in Bongo County, Kenya.

This Questionnaire is a part of Master of Arts in Project Planning and Management at the University of Nairobi, and is completely anonymous. Your answers will be treated with confidentiality. Please indicate the correct option as honestly and as correctly as possible by putting a tick (✓) on one of the options. For the questions that require your opinion, please complete the blanks.

SECTION A: GENERAL DETAILS (PLEASE CHECK ALL THAT APPLY)

<table>
<thead>
<tr>
<th>Participant details</th>
<th>Description</th>
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<tbody>
<tr>
<td>Age</td>
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<td>Boarding</td>
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SECTION B. FACTORS INFLUENCING COURSE ENROLLMENT IN HUMANITIES

1. Would you please state your role as registrar of students?
2. How do you rate the factors influencing enrolment of female students in science oriented courses from most influential to the least influential? 


<table>
<thead>
<tr>
<th>Factors influencing subject enrolment</th>
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<tr>
<td>Environmental factors</td>
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<td>Out come expectations</td>
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<td>Available instructional materials</td>
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3. In your opinion what factors influencing course enrollment have come out to be so effective (please give an explanation).

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4. As a career teacher, what motivates/steer you to intervene during students course enrollment i.e. incase you find that the student has not made the right decision...........................................................................................................................................

5. In your opinion, what factors influences students’ course enrollment in science oriented courses should be relied on when a student makes a career choice?
☐ Outcome Expectation
☐ Personal Interests
☐ Educational Attainment
☐ Instructional Materials
☐ Environmental Factors
☐ Parents and Education

If none of the above, please mention the suitable one ...........................................
............................................................................................................................
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APPENDIX V: QUESTIONNAIRE FOR TECHNICAL EDUCATION OFFICER

Thank you for your interest in participating in this survey.

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☐ Outcome Expectation
☐ Personal Interests
☐ Educational Attainment
☐ Instructional Materials
☐ Environmental Factors
☐ Parents and Education

If none of the above, please mention the suitable one ...........................................

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