

**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

**COMPARATIVE STUDY ON FEMALES' PARTICIPATION AND
PERFORMANCE IN INDUSTRIAL/CONSTRUCTION AND
BUSINESS FIELD OF STUDY IN TVET PROGRAM: The case of
Adama and Assela TVET Colleges**

**BY
TIBERHI TEFERRA**



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TIBERHI TEFERRA**

A Thesis submitted to the School of Graduate Studies of Addis Ababa
University in partial fulfillment of the requirements of Degree of Master of
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Abstract

The purpose of this study is to examine factors affecting the participation and performance of females in Industrial/Construction field of study when compared to Business field of study. After investigating the occurrence of significant difference in the enrollment of the two sexes in industrial/construction stream, identifying affecting factors and recommending solutions is the goal of the research. Two TVET colleges from Oromia regional state, namely Adama TVET College and Assela TVET College TVET colleges were selected for the study. Comparative study was employed in the research process. Sample population was composed of trainees from industrial/construction and business streams, trainers & department heads as well as deans, v/deans and vocational counselors of the two colleges.

Sampling was carried out through simple random, purposive and availability sampling techniques. Three set of questionnaires were prepared and administered for both groups of trainees as well as for trainers and department heads. Besides, interview was conducted with deans, v/deans and vocational counselors. Enrollment and graduation document of the two colleges was analyzed. Data collected through different instruments was analyzed and interpreted using percentage, t-Test, and narrative approach.

Regarding major findings, data from the enrollment document shows that there is wide gender gap between male and female enrollment in industrial/construction field of study. Concerning females' success, they are low achievers in industrial/construction area than in business area, when compared to their male counterparts. The reason is found to be mainly due to lack of self-confidence. Among the main hindering factor for females' low participation in industrial/construction field of study, lack of guidance and counseling service, low GPA in grade 10 national exams and fear of unemployment are the leading barriers.

In general, social and cultural norms play determining role in the selection process of future career. High schools and TVET colleges are not well organized in establishing guidance and counseling service to direct students in selecting field of study. Due to lack of awareness and negative attitude of the society towards females' performance in industrial/construction fields, fear of unemployment has become one of the main factors which blocks females from participating in industrial/construction fields. Based on major findings, strengthening guidance and counseling service in high schools and in TVET colleges, taking consideration regarding GPA in grade 10 national exam as the only placement yard stick in different TVET fields, promoting TVET widely and performing awareness creation in the society is highly recommended.

CHAPTER I

1 INTRODUCTION

1.1 Background of the study

Economic development of any nation calls for availability of trained labor force. Without full participation of skilled people the desired level of development can not be fully realized. Education and training contributes to individual's personal development, increase productivity at work, and facilitate everybody's participation in economic and social life.

The education system of any country, whether developed or developing ones, has its own emerging steps and historical background. As K. Salia-Bao, mentioned in his book "An Introduction to curriculum studies in Africa (1987)", there is major difference in the influencing factors for establishing favorable educational system between countries who were colonized and those, who were not. Concepts and implementation regarding curriculum also had its own history.

It also stated in his book that during the colonial days in Africa, the curriculum was static so long as it met the needs of the colonial government. Changes in the curriculum occurred only when the government expanded its exploitation of the country's natural resources. But after independence, in most African countries each government was determined to change the colonial education for a system that was African and relevant for development.

As Richard Pankhurst has stated in an article "The Era of the Judges and its End" (Selamta; 2006), Ethiopia was one of the ancient civilized countries. It was well known for advanced art and technology. The country has contributed the best architectural knowledge to the world, like the rock hewn church Lalibela, the palace of Fasiledes and Axum obelisks, which is the biggest piece of stone ever cut by man any where in the world.

However, after the golden age of arts and technology of the Axumite kingdom, when skills have been highly regarded, technology seemed to have ceased evolution in Ethiopia for a long

span of time. Because, from the second half of the 18th century to the middle of the 19th century, The Era of the Judges, “Zemene Mesafint”, different war lords were fighting among themselves for power and the country was largely disintegrated.

In addition to the fighting of warlords, Ethiopia’s technological advancement was also hindered by different obstacles such as backward traditions and illiteracy of the mass, out of which the number of illiterate females was very large. The status of manual skill had been deteriorated and the occupation was meant for the lower class of the society.

With regard to the process of transmission of skill, as Dessalegn referred Evan’s (1971) work, in his thesis (1996), traditionally, the father is responsible to his sons and the mother to her daughters in providing occupational information as they had acquired from their parents. Also, they follow the same pattern of transmitting skill what they have learned by trial and error during the generation of productive works.

Even in the early Jewish law it was made that the father is responsible for providing trade instruction for his son. According to Evans (1971), cited in Dessalegn (1996), the first written reference to organized apprenticeship was made in Babylonian Code of Hamurabi: “If an artisan takes a son for adoption and teach him his handicrafts, one may not bring claim against him. If he doesn’t teach him handicrafts the adopted son may return to his father’s house.” From this division of responsibility, one can infer that mothers transmit to their daughters what they do at home, that is all the house holding, food preparation and child care, while fathers transmit to their sons what they work in the field.

In Ethiopia, despite the efforts made to expand primary and secondary education in the past few decades, the enrolment of female at tertiary level is very low. It is a well-established fact that there is a very wide gender inequality when one goes from primary to secondary and then tertiary level of education due to so many reasons. Totally, before the Education and Training Policy of 1994, the education system in the country was suffering from problems of access, quality, equity and relevance. Besides, schools were very far from most of the rural community. Due to this, female students had difficulties to travel long distances in in-secured situation to look for schools. The history of Ethiopian modern education system shows that

more emphasis was given to academic fields for many decades of which the percentage of female enrollment was very, very low.

When we consider experiences of developed nations regarding technical and vocational training, countries like Germany, Japan and others, most of their students are trained as skilled and semi skilled in different occupations to fit the demand of the growing labor market. These countries captured the leading secrets of coordinating education and training with the demographic factors, the skill needs and demands of the market. This strategy shows that there is high correlation between education & national development in general and human resource development in particular.

According to UNESCO's revised recommendation concerning TVET, this sector of education should be taken as;

- An integral part of general education;
- A means of preparing for occupational fields and for effective participation in the world of work;
- An aspect of life-long learning and a preparation for responsible citizenship;
- An instrument for promoting environmentally sound sustainable development;
- A method of facilitating poverty alleviation.

But as it is indicated in various documents, in Ethiopia, technical and vocational education was the one which was neglected and undermined for many years. The over all perception of the status of artisans and craftsmen, in Ethiopian societies, was not encouraging to the later development of technical and vocational skills.

Especially people from the well to do family do not even think of sending their children to technical schools, which was even more serious with regard to female. They wanted their children to study only in the academic streams and be elites. Due to negative attitude towards technical field of study and backwardness of the society, it was after a lot of effort and struggle that in Ethiopia, the establishment of technical schools and the enrollment of students became practical. It was lately recognized that just producing few elites from higher

institution and making the student population aspire only to go to university was a wrong direction.

At present, MOE is developing a strategy to get people into employment either as wage laborers or self employment through the outcome-based TVET system. The program offers various fields of study in different technological fields. Some of them are Industrial technology, which covers automotive, general mechanics, electric/electronics, machining, and construction technology, which encompasses occupations such as surveying, drafting, road construction, building construction, plumbing, and other fields. But the problem is most of these technological fields of study are male dominated areas. Female participation among different streams particularly in those fields which are traditionally taken as men's domain is limited which in turn limits their career.

As it is observed in other educational sectors, female are under represented in those area. Most females choose specialties leading to the type of jobs which are occupied by women. They generally account for significantly higher percentage of enrollments towards commercial and service trades rather than towards industrial and engineering fields. Generally, females appear to avoid fields of the hard Natural sciences and the problem is particularly serious in industrial, engineering, construction area of study (Hoffman et. al., 1999).

But economic growth of any country is unthinkable without the full participation of women, which accounts more than 50% of the total population, in every sector of development.

In this regard, the purpose of this study is to assess the participation and performance of female trainees in the male dominated area focusing on industrial and construction fields in selected TVET colleges in Oromia regional state.

1.2 Statement of the problem

As it is stated in many documents, more than fifty percent of Ethiopian populations are females. To eradicate poverty, the country needs the full participation of all citizens in every sector of development programs. In the present labor market there is a high demand for semi skilled labor force in most occupations, mainly in industrial and construction technology as

well as other related fields. But the supply of skilled labor force to meet the current need of the labor market is almost insignificant. The huge portion of the population is not engaged in this highly demanded area. Instead, most females chose courses like secretarial, textile, marketing, purchasing, book keeping, home science, beautification, etc. which has relatively excess supply of manpower in the labor market.

The Educational Statistics, Annual Abstract for 2003 & 2004 which is published by Ministry of Education indicates that in each year, the enrollment of female trainees in Business and Home science fields is higher than in Industrial/Construction areas when compared with male trainees. This could bring large number of unemployment, which in turn results in wastage in economic and human resource.

From this condition, it is possible to understand that there is a lot of unused potential which could highly contribute to the technological demand of the nation and change the present condition of the national economy. Different strategies that are planned for poverty reduction can hardly meet its objectives in a situation where half of the population is left aside from technological occupations. As it is mentioned in the introduction part, most female students do not choose Industrial/Construction fields for their career.

According to the researcher's observation, trainees list, in most TVET colleges shows enrolment of very few females in Industrial/Construction field, but large number in Business. Hence, the main concern of this study is to compare the level of females' participation in Industrial/Construction and Business field of study, and identify main factors affecting their choice of career.

1.3 Objectives

The purpose of this study is,

- a) to see if there is significant difference in the enrollment of the two sexes in Industrial/construction field of study,
- b) to identify factors affecting female participation in these training areas.
- c) to assess the performance of those trainees who joined in one of these fields.
- d) to recommend solutions for the problems.

1.4 Research questions

In order to attain its objectives, this study has focused on seeking answers for the following questions.

- 1) What are the characteristics of participants in industrial/construction fields in TVET system?
- 2) Why do they participate in industrial/construction field of study?
- 3) What is the level of females' participation in Industrial/construction area when compared to females in business field of study?
- 4) What is the class performance of female trainees in Industrial/construction fields in relation to that of male trainees?

1.5 Significance of the study

In most cases, there is a general misconception that technical fields are meant for male. Due to this, most female do not participate in these areas of specialization. In trying to pinpoint the obstacles and recommend remedial actions, the researcher believes that the end result of the study would bring about a change in increasing the number of qualified female skilled labor force for the market and accelerate the economic development of the country. The findings of this study would assist different stakeholders in the following manner.

- a) It guides students, especially females who have interest to technical fields, to realize their potential, and facilitates the situation to join in the area of their interest.
- b) Educational leaders would be able to design different strategies to enhance the interest of female students to join this area of study and alleviate the scarcity of skilled manpower.
- c) Vocational guidance/councilors could be capable of directing female students to participate according to their potential and interest.
- d) Employing organizations would get the most competitive workers and solve the shortage of labor force.
- e) In general, it would increase the enrollment of females in the industrial and construction field of study. Besides, the study could give some input and serve as a pathway for further research in the area.

1.6 Delimitation

Despite the importance of having more comprehensive information on the issue under study, for the sake of manageable research, it is delimited to two TVET Colleges, namely Adama TVET College and Assela TVET College which are found in Oromia region near Addis Ababa.

Moreover, since there are various fields of study offered in TVET colleges, the focus of this study is delimited to comparing participation and performance of female trainees in 10+2 regular program in Industrial/construction and in Business field of study.

1.7 Limitations of the study

In the process of this study, acquiring relevant materials which are related to the topic was very difficult. Time constraint was also one of the major challenges. To obtain data from both colleges under study, especially data on enrollment and graduation, has taken a lot of time. Power interruption was also another obstacle to complete the research work on time. However, the researcher has made every possible effort to overcome the problems, and completed the study successfully on time.

1.8 Definition of Terms and abbreviation

- **Stream choice.** Preference of disciplines in education system or careers.
- **Achievement.** Successful completion of a training program and obtaining the required certificate.
- **Skill.** The ability to perform occupational tasks with the degree of proficiency within a given occupation.
- **TVET-----Technical and Vocational Education and Training**

1.9 Organization of the Study

This study is organized and presented under five chapters. Chapter I contains general background, statement of the problem, objectives of the study, significance of the study, delimitation and limitation of the study and definition of related terms. Chapter II deals with reviewing related literature and includes worlds experience regarding the topic. Chapter III describes methodology of the study. Chapter IV contains presentation and analysis of the data obtained from the research. Chapter V, which is the last chapter, covers the summary, conclusion and recommendations based on major find.

CHAPTER II

REVIEW OF RELATED LITRATURE

In this chapter an attempt has been made to establish an insight regarding females' participation and their performance as well as the critical gender inequalities in the area of technological fields of study. This is performed by assessing and looking at the research works carried out so far in relation to the research topic. Major areas which are covered in the chapter are:

- Historical background of technical and vocational education in Ethiopia,
 - a) Before the Italian invasion
 - b) After the expulsion of Italian
- The spread of technical and vocational education
- TVET from the global perspective,
- TVET in the present Ethiopian context,
- Women and Education,
- Gender stereotypes and choice of career
- Main factors for the educational imbalance between male and female,
- Importance of gender impartiality in Natural science education,
- Contribution of Vocational Guidance and Counseling.

2.1 Historical Background of Technical and Vocational Education in Ethiopia: Before Italian invasion and after its expulsion.

In Ethiopian history, the time of Axumite kingdom was the golden age of art and technology. It is the site of many remarkable obelisks, which are decorated to represent multi-story buildings, completed with doors and windows. The largest obelisk (35 meters long) broken, which lies on the ground, is the biggest piece of stone ever cut by man anywhere in the world.

Axum is the most ancient city and the capital of the historic Axumite state. Ruminants of different monuments are the living witness for its past glorious history. Some of Ethiopia's

technological advancement could also be seen from a rock hewn church of Lalibela and the palace of Fasiledes.

Wanna Leka (1988) also has indicated in his article “The current status of vocational/technical education in Ethiopia”, that the country had its own craftsmen and artisan for centuries. Yet, these men and women of talent were relegated to a lower status by the traditional Ethiopia for a long time. He further stated that in Ethiopian society, especially in rural areas, potters, blacksmiths, weavers, tanners are isolated and despised. They are labeled as sorcerers as having evil spirits.

However, after the golden age of arts and technology of the Axumite kingdom, when skills must have been highly regarded, technology seemed to have ceased evolution in Ethiopia for a long span of time. Because, from the second half of the 18th century to the middle of the 19th century, which was “The Era of the Judges/Zemene Mesafint”, different war lords were fighting among themselves for power and the country was largely disintegrated. The period was coincided with the industrial revolution in Europe (Pankhurst, 2006).

Despite its long history and ancient civilization, technical and vocational training is a recent experience for Ethiopia compared to other developed nations. This is to say that, for a long time technical and vocational training was not perceived as something important for the nation’s economic, political and social development. Due to backward tradition and illiteracy of the mass, this sector of vocational education and training could not get acceptance from the society.

It required a great deal of effort to change the traditional attitude in order to enable technical education to effectively respond to social demand. Until the early 1950, technical school was viewed as the core of the lower graded manual work and craftsmen. It is said that some nobility, whose sons joined the school persuade them to withdraw or change their profession through further education abroad or in any other available institution in the country after their graduation from the technical school. In those days participation of females in technical fields of study was totally discouraged.

In view of the history of Education in Ethiopia, it can be confirmed that the initiative to introduce modern technology and skill training in the country could be traced back to the effort of Emperor Tewodros II. The credit for him extended to the extent of introducing a military technology at “Gafat” in which the indigenous craftsmen and foreign missionaries were involved. Although his attempt failed due to a number of reasons the tradition of gunsmith and other crafts spread in the society.

No matter how backward the technological and the economic development of a country or an area is, at the moment, as Mesfin (2004) stated, the present and the future situation definitely require the use of highly educated and skilled manpower. In the same manner even though manual skill was not considered as key factor for development in Ethiopia for centuries, the period of Fascist Italian occupation is assumed to be a turning point for the development of technical and vocational education. This is because most Ethiopians were reported to have felt that they were occupied for five years as a result of technological backwardness of their country. Also they got a great deal of lesson from the way Italians live and their living standard, which created awareness towards the importance of technical skill.

Soon after the Italian occupation, there was no skilled manpower who would work in the newly emerging modern sectors of industry and commerce. This shortage of skilled manpower forced the government to establish technical and vocational schools. The then Ministry of Education and Fine Art also began encouraging such activities by including handcraft courses into the curriculum of the elementary schools and some vocational subjects like wood work, electricity and metal works in the 7th and 8th grade levels (Technical and Vocational Education handbook, 1965 E.C).

This was a significant contribution to the students’ orientation towards technical education and was a stimulus for many students to consider it as an alternative career profession. It is also interesting that the Ministry opened different handcraft schools for boys and girls, although most fields were male-dominated except Business and Home Economic.

Addis Ababa Technical School was the first technical school, which was founded in 1951. It was established to meet the growing demand of skilled technicians in industry. This was

followed by the establishment of Addis Ababa Commercial school, in 1952 (Teklehaimanot 2002:6). United States of America had also launched a program, Technical Project known as “point-4”. This project was very important because its special objective was to develop an indigenous staff of trained technical and academic personnel capable of implementing the development plan of the country.

The establishment of the above schools was followed by Bahirdar Poly-technique institute, Ambo and Jimma Agricultural school and the then Asmara Technical school which were sponsored by Ministry of Education. From 1950 up to 1970s the Technical schools used incentive mechanism that helped them to admit high achieving students from different parts of the country. However, this situation gradually deteriorated and its quality consequently was affected (Teklehaimanot, 2002). The training system could not effectively generate a work force capable of supporting and effectively contributing to the needs of the diverse sectors of the economy.

In the main time, there was a high dropout rate from schools, increasing difficulties of access to higher education and growing demand for skilled manpower in vocational areas. Due to these factors, in the early 1960s (Masresha: 2004), most of the senior secondary schools were converted to comprehensive secondary school. Though the program was meant to create employment opportunity for the young generation, employers were not anxious to take the product of the system.

As Masresha (2004) stated in his thesis, the superficial introduction of technical skills within the so called comprehensive curriculum was discontinued. The reason for the failure was subjects that were taught to students were more of academic subjects. He also put in his thesis that with the introduction of the Education and Training Policy, the issue of developing TVET came to be one of the priority areas in Ethiopian education system. He further stated the opening of 25 skill development centers in four regional states in 1997. The main purpose of opening those centers was to train a large number of school leavers with various technical skills especially for self employment in private sectors.

However, according to MOE (2002) cited in Masresha (2004), not more than 6% of school leavers had the opportunity to attend the training program. This was due to the limited scope and access of the program. In this training system, girls participation was less than 15% and almost all girls choose the traditionally female occupations such as Secretarial and Home Economics. In almost every situation one can observe that female occupations are the extension of household activities.

Besides, there were public organizations like, the Ethiopian Airlines (EAL), Ethiopian Road Authority (ERA), the Ethiopian Electric Light and Power Authority (ELPA) and Ethiopian Telecommunication Authority (ETA), and others, like Dabena, Kuyera, etc, and who had their own training centers. That means, the technicians were trained for their specific purposes. These centers are still operating by upgrading their facilities, equipment, manpower, training level and quality from time to time.

In general, even though there were different attempts to enhance technical education and training, the quality of training was poor due to inadequate fund, lack of sufficient and appropriate equipments as well as facilities, lack of qualified trainers and inflexible and unsuitable curriculum. But the demand of the labor market for skilled manpower was high. Due to this, the Ethiopian Government found it necessary to improve the system and to expand TVET by increasing its relevance and specially its accessibility for girls. However, segregation in the world of work remains as a drawback for females' full participation in technological field of study.

2.2 The spread of Technical and Vocational Education

Man has had long history of involvement in work to respond for his basic needs. But it was not as such well organized activity. In the pre-historic era, there was a time where the son inherited the trade after the father, the daughter after her mother. As time went on, a change in the whole system of the work force emerged and outcome of the changing relationship between man and work.

According to Zywiec (1993), cited in Ali's thesis (2007), until the 19th century, such an education and training was delivered in manufacturing centers other than schools. With the growth of industrialization in Europe in the 19th C, several countries notably Germany introduced vocational education. Thereafter, the need for technical and vocational education and training obtained thrust and grew every where in Europe and America. After World War II, following its gradual development, TVET became the prime concern of all countries. This was because economic development can not be achieved without having well trained skilled workers.

It is an established fact that work is a means to an end, which is a purposeful activity performed by man in producing goods and services of value. In this regard, the very purpose of TVET is to train and supply skilled manpower to the labor market. As Peters (1966), in Ali (2007), stated, training is the transmission of both knowledge and skill which will enable the learner to engage in a certain occupation more successfully which have implications for attitudes, commitments and habitual responses to certain situations.

2.3 TVET from the global perspective

The negative attitude towards technical education is not unique to Ethiopia. It is also observed in most developing countries. For instance, there was a survey study designed to test the outcomes of a Forum "Women in VET – Futures", which was held in Melbourne (Australia), on 30 April and 1 May 2002. It was found that participants in the forum identified key points like,

- Parents have negative perceptions of specific industries and Vocational Education and Training (VET).
- Parents view VET as a second class option for their children.
- Research on parent perceptions of VET in schools also identified parent perceptions as a barrier.
- parents are unclear about how VET programs fit into further study, and they say that Technical And Further Education (TAFE) is great 'but not for their kids. The survey study shows that parents are highly influential sources of

information and advice for young people and consistently reinforce the value of university-based education over all other options, including VET.

- Teachers and career advisers are also more likely to advocate university because it is what they have experienced themselves.

But Now-a-days, TVET is expected to perform as an instrument for social solidarity in addition to the preparation of people for the world of work. It is also anticipated to address the growing marginalization of young people and adults in both the industrialized and developed world. As it is elaborated in different documents, the particular is the under-representation of women in TVET. There is a need to respond with gender-inclusive training programs both in delivery and content.

At present, every nation is in a state of advancement in a form of global economy, Natural Science, Technology and Production as well. The growing versatile role of education in the development process emphasizes the interest of all country for more flexible, all-rounded and diversified training programs. The most important role of TVET is to enhance economical and social development of a country. TVET follows the most important approach in preparing human resources within the educational and economical system.

It is a clear fact that TVET by itself do not create jobs, but it is beneficial when it is associated with the actual needs of labor market. Training programs should match current and future labor market needs. Hence, instead of focusing only on the specific need of a certain country, training programs which are designed to produce professionals or technicians should be in line with the global requirements.

For instance, in Germany, Vocational Education is an educational sector which is given high priority. The country is well known for its dual system which is a central and largely standardized part of the German vocational training system. The system, seeking to teach theory and practice, combines learning and working which provides the basis for teaching vocational skills. Under this system, vocational schools and companies have a joint educational responsibility. During the training program, trainees spend one or two days in vocational school and three or four days in their company. Vocational training prepares people

for specific occupations and promotes employability in a changing work place- a work place that is shaped both by technical development and by the people who work in it (Germany's Vocational Education at a glance-2003).

The dual-system vocational training in Germany and in some neighboring countries is based on a long tradition of training young people. This tradition in some areas dates from the middle ages. Even though it has long history, it is still useful even in the age of globalization. The international interest in its basic structure has been growing (Germany's Vocational Education at a glance: 2003).

It is indicated in the same magazine under the topic "Responsibilities within the dual system", that policymakers, companies and unions in Germany all agree that good vocational training is an investment in the future. Studies and in company training are being combined, and knowledge is being linked with its applications. It can grant social prestige, provide an early opportunity to live on one's own, open up life opportunities and enhance one's social security.

Regarding the benefits from partnership of schools and industry or company, research in Australia, the United States and the United Kingdom also points out to a wide range of benefits for both schools and industry arising from partnership activities. The consultation report regarding women in VET (Women in VET, 2003), for schools and students, this partnership promotes wider applicability of teaching and learning strategies that value teamwork, interpersonal skills and problem solving. Besides, improving teaching quality and curriculum enrichment, updating subject knowledge; and enhancing the perceived relevance of Natural Science and Technology through the use of real world problems are some of the benefits for schools. Industry's benefits from such partnerships include:

- influencing the formation of skills in the labor force and increasing staff development opportunities;
- Sharpening competitive abilities and improving employee motivation; improving product and company image and public relations (Women in VET 2003: Consultation report).

According to Vanables (1956), cited in Kalayu's thesis (2007), technical education which is the smallest sector of the whole education system has a long lasting significance in meeting the economic needs of a country through industry and commerce. Without having well trained manpower in technological fields, commerce and in public service no country could be capable of utilizing its resource. In this respect, most countries have taken TVET as one of the essential parts of their educational strategy in their development program. For promoting social and economic growth of a country TVET is a determinant factor in producing skilled manpower.

To this end, training skilled labor force is the major objective of technical and vocational education, which is considered to be an essential component in human resource development. This encompasses the general objective of preparing trainees with adequate knowledge and skills in various occupations for their future life in the labor market. Otherwise it is highly probable that a country becomes chronically dependent on developed nations.

According to Middleton (1995), as cited by Getachew (2004), TVET is expected to achieve social goals such as improving the employability of the disadvantaged, providing path way to wage employment for women and improve the attitude of the young towards blue-collar and driving the youth from aspiration for white-collar employment and higher education. It is believed that the provision of such type of education and training will promote the culture of respect for work, positive work habits and high regard for workmanship.

In addition to the above mentioned points, the objectives of TVET which are stated by UNESCO (1996) are,

- To expose pupils in the basic education level to a wide range of practical activities in order to make them familiar with and to stimulate their interest in vocational subjects so as to give them equal opportunities to choose their future career.
- To equip students with relevant production and entrepreneurial skills that will prepare them for gainful employment or self-employment.
- To provide skilled labor to maintain the demand for manpower in the scientific, technological and commercial sector of the nation's economy.

2.4 TVET in the current Ethiopian context

Like other African countries, Ethiopia is in the process of educational reform to overcome the situation of being dependent on others. The initiation of this educational reform is due to the realization of the important role played by technical & vocational education in developed countries. The purpose of TVET in Ethiopia, which is not different from that of the global trend, is stated by MOE as supplying individuals with required skills, knowledge and attitudes, to enable them to be a fully accepted member of society, to generate their own income and to cope up with present and future manpower demands of the society.

It is also taken as a mechanism to solve the problem of unemployment. Employment for every eligible individual is a sign of identity and status. On the contrary, the state of unemployment affects the perception of social status of individuals (Chakrapani, 1996:28).

To this end, since 1994 with the introduction of the new education and training policy, technical and vocational education becomes one of the priority areas in the Ethiopian education system. In this regard, the new policy stipulates that,

“Parallel to general education, diversified technical and vocational training will be provided for those who leave school from any level of education, technical training will be provided for those who complete grade ten for the development of middle level manpower”.

On the basis of the above mentioned policy various TVET programs are planned and implemented by providing different courses in technological, home Natural science, business and other areas. On the other hand, it is incorporated in Getachew’s thesis that the expansion of vocational education and training alone will have long-term or short-term consequences. He stated that one of the problems is, the growth of unemployment of the school graduates.

The statement indicates that growth of TVET should be parallel with sufficient job opportunities to keep the balance between the need of the industry and the supply of labor force. In this case, it is advisable to give due attention to economic growth, investment and

other factors while developing educational planning and formulating policy. It is another duty of planning to decide the optimal balance of quantity and quality regarding skill formation.

2.5 Women and Education

Despite significant progress during the last two decades, equality of opportunity and treatment between women and men in the world of work remains intangible as we approach the 21st century. Society stands to be the loser for not fully exploiting all of its human resources towards its sustainable development. For thousands of years women have remained confined within more or less narrow limits. Their inferior status is linked to their traditional roll which was dictated by the prime necessity: survival.

As Jacqueline (1970) stated, women were confined with their inside duties like preparing food, carrying water and wood, preserves and clothing ranging, from spinning of the wool to the tailoring of the garments, pounding millet, tending animals, agricultural work which are exhausting tasks in addition to caring for children. But to achieve the goals of equality and development, education should be offered for all equally. Nevertheless, as Chombe pointed in his thesis (2005), schools usually plane to take in and educate all children in the same way regardless of sex difference. But in practice female enrollment is still low in Ethiopia like other developing countries.

The aim of industrial development, as Daniel (2002) stated in his article “The role of Natural science and Technology in Industrial Development”, is to raise peoples’ standard of living by increasing the domestic production for consumers, intermediate and capital goods thereby expanding incomes, markets technology and employment. He further stated that training may enable workers to contribute to improving product quality, to adaptation of technologies and to innovation.

Based on the above statement, society should be trained and be involved in the development of a country through Natural science and technology. Due to this fact women who are half of the total population of most society, should be given the chance of being trained in Natural science and technology to fulfill the manpower requirement in industrial sector. They should

have a part to play the role of main actress and be capable of strengthening innovation to achieve sustainable economy.

However, as it is explained in Chombe's work, it is confirmed that women remain underrepresented at all level of education relative to men. Fewer females than males enter educational program in formal or non-formal. Fewer receive technical and vocational training and women accounts for a very small proportion of enrollment in secondary education. Due to this, almost all women were forced to remain within the home limits. This dependent and subservience status in the past still weighs heavily on women's mentality everywhere.

The question of women has become an important issue and a center of attention at national and international level. The core of women's question is the desire to convert the age-old gender-biased socio-economic structure which has placed women in a relatively disadvantageous position. Their participation in formal education is still remains at a lower level than men. The persistence of this gender gap is caused due to various reasons.

Declaration of the Elimination of Discrimination against Women, which was adopted by the United Nations in November 1967, especially article 3 specifies:

"All appropriate measures shall be taken to educate public opinion and to direct national aspirations towards the eradication of prejudice and the abolition of customary and all other practices which are based on the idea of the inferiority of women" (Chabaud Jacqueline, 1970).

However, this idea still has currency. It is easily observed that women do not enjoy all the educational opportunities they should have, and often do not have it at all. In many places women working in various sectors are concentrated in unstable employment and have less access to professional development opportunities. They are concentrated in traditional areas, and less likely to seek promotion than male staff. Almost everywhere in the world they are given less education than men, and majority of female are illiterate. This state of affair contributes to the continuity of the status quo.

Various studies revealed that female participation in education when compared to male in most countries at all level is low. Besides, the number of female student in higher educational

institutions is proportionally smaller in fields like technical, engineering and other related areas in developing countries of Latin America, Asia and Africa.

According to Caroline (1994), cited in Women in VET 2003: Consultation report, Natural science and technology courses and careers are not going to attract women in great numbers, unless educators and industry approach is a way that appeals to the vital concerns of the majority of women (and many men). That is, Natural science and technology must be concerned with, and seen to be concerned with improving society and the condition of humanity.

The author further elaborated that a problem-centered approach that holds such values at its core will attract more women to wish to understand the theory and application of Natural science and technology. If industry wants to appear relevant to the mass of female students then it will have to clearly advocate social, human and ecological ethics. According to his analysis when the above mentioned points are an integral part of the culture of industry, as well as being valued in the curriculum, then Natural science and technology partnerships will be truly effective in attracting these students. The statement clarifies that the existing strategies to encourage the education of girls in Natural science and technology have achieved less than the desired outcomes of promoting increased participation of girls in Natural science and technology.

At present it is highly recognized that to enhance economic productivity, reduce fertility rate, lower infant and maternal mortality the best remedy is to educate women. The most effective development investment a country can make is to educate women which mean educating the society in particular and the nation at large. The education of females is a basis for all other elements on which the transformation of societies depend.

Nowadays, society is aware that women have the right to education. But still modern technological and scientific know-how remains in many cases the privilege of men. The opportunities of females tend to be limited by the force of habit and prejudice, lack of information, the innumerable difficulties that females encounter in the exercise of some occupations and the discharge of their domestic duties.

Effective management of environmental resources could be one of the mechanisms for poverty reduction. But it cannot be fully practical without educating and training women. In this regard, developing countries like Ethiopia, whose economic and social development is limited by fast population growth, should encourage female education and training in every sector. As long as there is less attention to female education, there is an immediate economic loss.

For instance women play a decisive part in the agricultural activities of their country. If they don't have the chance of education or occupational training agriculture can not progress. There is also an industrial and commercial loss, since the development of industry and commerce requires the mobilization of all available labor resources without which its economy could not sustain. To promote the development plan of a country, society should struggle against inequality and discrimination, not only for considerations of social justice and human rights, but in the interest of the economy and sustainable development.

Therefore, women's education is not only a question of providing the basics of an education on humanitarian grounds; women must be given all the means of participation in the building of the world. Issues and reasons regarding the limited participation of women in male dominated areas should be addressed. The issue of maintaining student interest in Natural science and technology, especially among girls, was addressed in 1994 by the Federal Government of Australia through the Women in Natural science, Engineering and Technology Advisory Group (Currie J. 1996). According to John Currie, gender harassment is still prevalent in Natural science and technology where boys continue to dominate access to experimental equipment and Computers, and curriculum materials in Natural science alienate girls.

2.6 Gender stereotypes and choice of career

Gender is a socially constructed category. It prescribes the life experience, opportunities, access to resources, and power balance between women and men. Due to this fact we must explore what is invisible, yet taken for granted in social constructionist analysis of gender-technology relations. Stereotypes are consistent with children's early choice of career. In several studies the majority of girls take nurse or teacher as their occupational choice. But boys select a wider range of traditionally male occupations representing trades and professions related to Natural science and engineering.

According to Ouston (1993), which is cited in Sara (2007), women face some barriers which are created within themselves, their perception of the ideal world and their self concept. Through the earlier socialization process, as Ouston's statement, women themselves acknowledge the world as masculine and perceive themselves as compliant, submissive, passive, less skillful than their male counterparts.

Regarding employment and career opportunities, there is still disparity between women and men even in countries where gender equality is formally achieved. It is observed that women often do not have access to certain sectors of fields of occupations. Such discrimination against women not only affects women's contribution, but it has the consequences of underutilization of the existing potentials which results in a loss for the economy of the nation as a whole.

Discrimination still has a major effect in all aspect of young women's lives. The gap exists between roles, rights, power and decision making of men and women. It causes a lot of young girls to lose confidence in themselves, as well as losing their self-esteem. They even lose faith in their ability to study. This confidence can be restored when they realize that they do have the capacity that they can do.

Conversely, although women's labor force participation rates have risen dramatically in many countries over the past decade, it is not as high as would be expected by their educational and demographic characteristics. In addition, women in the labor force face a situation of pay inequality, occupational segregation and gender discrimination. The practice of work-related

disparities between men and women is various: risk of unemployment or imposed part-time work, lower wages, more difficult access to managerial posts. These inequalities, which manifest themselves at the time of entry into working life, are often interpreted as the result of gender segregation in the educational process (Couppie, et.al. 2001).

As the case of gender disparity is the issue of the day, studies are made from every angle. Investigations are made regarding nontraditional training and employment for women, exploring failures, successes, and remaining barriers for women in the workplace. In the 1970s, the imbalance in gender distribution across occupations came to be recognized as a socioeconomic problem, and federal legislation aimed at education, training, and employment began to address the issue (Kerka, 1999). Every research justifies that cultural stereotypes in relation to appropriate occupation for women continue to affect employing organizations recruiting and promotion practices.

2.7 Main causes for the educational imbalance between male and female

From different documents one could recognize that there is no discrimination between genders in enrollment in Natural science and technological fields of studies. However, female participation in those areas which are traditionally categorized as male domain is minimal. As Biadgelign (2003) put in his conclusion for his article, the problems which prevented female from enjoying technical education includes unstudied disparities between males and females, socially unaccepted jobs, nicknames given to females, placement of females without their interest, tight learning programs, biased view of teachers, unfavorable interactive behavior of teachers, females' own adjustment to academic education, lack of self assertiveness and confidence.

Another factor which is stated by Dessalegn Mebratu (2006) referring Khale (1993), is that the stereotyping of subjects promoted by teachers in school environment to be one of the major obstacles for females towards a given field of study. Therefore, in order to have the necessary human resource to deal with the existing economical and social problems, this imbalance must be tackled proactively. It should be noted that women are the most active driving force in the world of work. However, women's increasing economic contribution remains undervalued.

On the other hand, even though women today have increased opportunity to be enrolled in technological area of training programs, the vast majority of them do not choose those fields of study as their career. As it has been noted in various documents, psychological barriers to pursuit of Natural science and engineering career accounts for large losses of women to these fields. Access of women to the technical profession is still restricted in that, scientific and technical careers are still a male preserve.

In general the root causes for the discrimination of females in the world of work or in education and training programs could be divided in to different categories.

Social and cultural factors

In principle the barriers to girls' education, other than those which are socio-cultural are all relatively easy to overcome. The major question could be related with money for building facilities and providing the necessary materials as required.

But reducing female–male disparities in every sector of education and training is very hard to achieve, because the problem is strengthened by social and cultural norms and practices which are difficult to change. According to MOE (2004:23), cited in Dessalegn Mebratu (2006), in Ethiopia it is indicated that families tend to influence the upbringing of their daughters based on the cultural values and religious norms.

Nevertheless, socio cultural factors highly influence families' decisions to enroll females to school or to withdraw them from school. This practice in turn influences females' academic performance and their grade level attainment even to the extent of their own decisions to drop out of school.

If reference has been made to the past in speaking of the inferior status of women, it is merely to show that the roots lie in a social system. Everywhere indeed women have the right to education. But if one asks to what kind of education, the difference could be vivid. Just as education was originally often the preserve of boys, modern technological and scientific know-how remains in many cases as the privilege of men.

According to Chabaud statement in her book “The education and advancement of women” (Chabaud: 1970), the age of bear-hunt was harder to women than the press-button civilization. But nevertheless, we shall see that a process which becomes mechanized and, in principle, requires less effort to perform tends to be taken over by men although it was previously carried out by women. Hence, women are thus prevented from really carrying on a skilled occupation.

Marginalizing women in decision making, leadership, control of resource, economic freedom, etc. begins in infancy. According to Getaneh (2004), argument referring Mensch (1998), the way children are treated during their childhood development and how they are expected to behave by their family and the society, have a great impact in their later livelihood. This implies that in their later choice of career, children will be influenced by the way they are brought up.

But there will still be women who can not dare or do not want to take advantages of the opportunities open to them due to social conditions. Parents as well as society in most developing countries expect boys and girls to act or behave within the socially and culturally accepted domains of males and females.

In contemporary world, as it is mentioned earlier, a high degree of discrimination of females in many aspects including the area of education is widespread especially in all developing countries. Important organizations and establishments in a male dominated society are headed by male. The reason is that men assume they are competent, efficient than women in providing the type of leadership required for the achievement of the organizational objectives.

On the other hand, in a situation where men and women have similar qualifications and possibilities to apply for a vacancy, in job interviews, certain questions are asked of women and not of men such as, whether or not they plan to marry or have children. Here, it should be noted that in essence this bears no relation to the job to be performed. In this regard, it can clearly be observed that occupational segregation by gender represents a major social problem for working women.

Considering better linkages between employment trends and opportunities for women, and VET offerings, Consultation report 55 in “Women in VET 2003” affirm the importance of training linkage to the world of work. Research and consultation with government agencies, industry, clients and training providers strongly identified the need for much closer linkages between vocational education and training (VET) and employment. The report also stated concerning structure of work and women’s choices.

Work culture in some industries continues to be dominated by men and this is a restriction for women seeking to enter non-traditional fields. This culture is extremely difficult to change - and most discrimination is hidden and difficult to counteract. Women’s choices about whether to enter an industry or occupation are influenced by perceptions about how open that industry is to facilitating work-life balance and providing opportunities for women. This includes issues like, offering maternity leave, or encouraging and supporting women to take up management roles. Women make realistic choices based on their assessment about the kind of life an occupation is likely to offer.

In recent decades some change has been made with the growing awareness of the need for gender equality. As Youyun Zhang wrote in her article “A high-priced slot in the world of work (1995: 9)”, many countries have adopted pay equity measures. Some countries has reduced wage differences between male and female in addition to other improvements in working conditions as well as other protection for some categories of women workers. It is also observed that affirmative action measures have been adopted by a number of governments, employers, trade unions and other relevant bodies to accelerate women’s positions.

As the author further stated, although inadequate, efforts have been made, to develop arrangements such as child-care facilities and parental leave provisions, to facilitate the reconciliation of work and family responsibilities. The role played by International Labor Organization (ILO) is also stated in the article. Owing to the cross-cutting nature of women workers and gender inequality problems in the world of work, the ILO advocates the adoption of a comprehensive integrated strategy for effectively addressing these problems.

Domestic factors

The social and cultural norms, in which girls are brought-up, the expectations of their parents and the society at large, are highly influential on their attitude towards their choice of subjects. The attitude that prevail girls to be limited to the home and family activities and not to traditional male dominated activities hinders their participation particularly in Natural science and technical-vocational areas.

Thus female students are disposed more to those subject that are associated to traditionally approved domestic role of female due to their childhood experience at home. This is clearly seen for example in disciplines like pure Natural science and mathematics, which need more time to exercise, girls would be unable to complete their assignments with male students that enjoy more spare time to study.

These ideas about the traditionally set appropriate roles and behavior for women besides making girls less participatory in schools than boys also makes them psychologically unprepared to compete with their male counter parts in fields which art considered as male domains. So as Yelfign (1998) put it clearly, the expectations of parents as to how a girl should behave will have an impact in the choice of subject she makes in school. This shows that family has a great influence on decisions regarding education, career and other personal life decisions.

Every child's educational and occupational aspirations are highly influenced by the expectations and support he/she receives from parents. The home environment in which girls grow, the perceptions, attitudes, experiences and expectations they develop during their childhood have contributed for their tendency to avoid or accept certain fields of study in their later ages. Social norms regard scientific and technological fields as male-domains and female students are not encouraged to aspire for these disciplines.

Within school Factors

Apart from parents and members of the family, the next most important socializing agents which shape the career ambition of children are schools. It is observed that the attitudes of school teachers continue to apply similar norm to the assignment of manual work for students.

As it is explained earlier, attitudes are formed at an early age and are toughened by established traditions and societal practices. It is only when the attitudes of both men and women are changed that the benefits of women be achieved. In this manner, consciously or unconsciously held beliefs which can act as barriers to equal opportunity of men and women will be gradually removed. This is to say that the traditionally gender specific beliefs and norms already established at home are further redefined and emphasized in the school system.

It is also conformed that the cultural and social factors which prevent girls from participating in Natural science and technology related fields are maintained by the educational system through out the world. This is widely practiced particularly in developing countries where the gender disparity at all level of education and training is more pronounced.

The experience of Australia in the case of vocational education and training in schools regarding its relation with female is elaborated in consultation report of "Women in VET 2003" as follows.

"The range of VET in schools offerings is narrow and does not adequately represent what VET has to offer. While girls value the hands on practical nature of VET in schools subjects, they are concentrated in a few subject areas. VET in schools subject choice is often determined by VET coordinators and influenced by parents who may have outdated perceptions about VET and industry. Many teachers in VET schools lack current industry experience and are not well equipped to represent an industry to female students. Gender distribution of teaching staff in VET in schools subjects tends to replicate occupational segregation, with male teachers concentrated in trade and other nontraditional subjects, and female teachers concentrated in subjects such as hospitality, retail and office administration".

In Ethiopian education system, until recently, boys were encouraged by their teachers to take up Natural science and mathematics while girls were advised to stick to such subjects that are considered feminine domains. This is the result of the gender classification of subjects in accordance with the traditionally perceived male female behaviors. Hence, boys were

perceived by their teachers to be hard workers and methodical and are able to deal with the most masculine subjects. On the other hand female students are perceived as having feminine nature and incapable of dealing with the masculine subjects.

To maintain the existing gender stereotypes in scientific and technological fields is to keep half of the human population out of the fields of the future development. As it is clarified by Jacqueline (1970:38), “This would certainly be injustice, but worse still it would be an incalculable loss of human resources for both sexes, for society and for the cultural heritage”. That means the gender gap in the Natural science & technology fields slow down the balanced development of any society.

From the above mentioned points one can infer that school environment also plays a crucial role for the establishment of gender inequality in the access to Natural science and mathematics related subjects and careers. There fore, in order to have the necessary human resource to deal with the existing economical and social problems, this imbalance must be tackled proactively.

Low self-efficiency expectation in the part of females

Self-perception of females about their capabilities in different subjects in turn is shaped by the attitude and expectations of other people. What people expect from children highly influence their aspirations. These expectations can come from every where- the media, parents, peers & teachers. Since every one is “primarily the product of expectations that others have of him/her, students’ self-perception is highly affected by these expectations. The result was a passive acceptance of the limitations of their traditional roles and hesitancy to the male dominated fields.

2.8 Importance of gender impartiality in Natural science and technical disciplines

Knowledge of Natural science and its application has various advantages for individuals. One of the importance’s of Natural science education to individuals is reflected by its vocational value. In this regard, Kumar (1995:40) stated, “In the present age we do not find any vocation that does not need the knowledge of Natural science”. Here the importance of Natural science

education lies on the fact that it opens a vast field of opportunities for joining vocational courses and for choosing a wide range of career. From this description one can conclude that equal opportunities and participation in Natural science & technological fields has manifold importance in the part of females. It allows them to have equal occupational opportunities as their male counter parts which in turn raise their social status.

In the statement given by Monika (2003), in her article “Robots and Girls-A Promising Alliance”, the importance of engineering and computer Natural science for European economy is ascertained as vital. The necessity of women to participate in the creation of future technologies and utilize their potential talents is also mentioned as a key issue. To increase the number of female participants in those fields, it is indicated that girls should be addressed so that education and training could inspire them to take up technical subjects.

As human beings females have equal right as their male counter parts to contribute to and benefit from the scientific and technological development. Hence not to effectively open all options to females is denying their human right.

Most countries, to tackle their economical or social problems, design different training strategies, to produce highly educated manpower especially in Natural science and technology. In this case since women cover the large portion of the total population in many countries, giving due attention to female training is vital. For instance in Germany, two strategies are practiced which are:

- a) gender mainstreaming,
- b) Promotion of women.

Regarding the promotion of women there are different projects implemented and practiced in Germany. These are,

- a) **Center of Excellence:** It is an information, service and co-ordination center with international orientation and networking which combines, reinforces and accompanies all activities concerning the assertion of equal opportunities for women in Natural science and research.

This project is run by the association “Women give new input to technology” which is intended to,

- publicize the usefulness of the internet,
- demonstrate how to utilize internet for future training,
- express internet for women in their family phase, who have little or no job perspective. The association coordinates the program “Women go on line”, with the purpose of motivating women to actively participate in IT society of the future, and creating network of female experts in many core area in IT sector (Federal Ministry of Education and Research, More women at the top:2002).

b) Girls’ day: In Germany, it started on 26th of April 2001 as a first nationwide campaign to bring about a change in girls’ professional orientation. On this day girls visit companies and research institutes. The program is to show future prospects of girls. It is also designed to enhance interest of the community in general, employing agencies in particular.

Research centers, universities and companies organize events for school girls, which give them insight into the professional world. This activity includes tours and lectures to play practical exercises. It shows what girls are doing in Natural science and technology.

c) Roberta-

It is one of the projects with a name given to a nice looking female robot. It is funded by the German Federal Ministry of Education and Research and used to change the teaching approach in Natural science and technology. In changing the teaching program learning by doing is found to be a promising way of raising the appeal of technical subjects, especially to girls and women.

The project “Roberta – Girls discover Robots”, conveys information for women about knowledge in engineering and computer in an exciting way and encourages them to join technological fields. Roberta transports girls and young women into the fascinating world of robots, where they can learn Natural science, technology and IT in an exciting and realistic way. The attractiveness of robots helps overcome inhibitions, because the playful approach

reduces skepticism. Besides, they become fascinated by robot development, which encourages their interest in the subject and their willingness to learn more (Monika: 2003).

d) Job Lab

It is a multimedia laboratory for vocational orientation. Job Lab is a game-like activity, which helps an individual to discover his/her professional orientation and find appropriate careers. It has 6 modules which are used for career counseling, getting short description of different jobs and comparing their similarities. It aids to highlight prospective careers, taking ones own interests, capabilities and wishes into account.

The above strategies signify that countries are planning and performing different strategies to avoid obstacles that prevent females' participation in scientific and technological sectors. By using different mechanisms they try to create equal opportunities for females which is one means of promoting social progress. (Federal Ministry of Education and Research: Bonn 2002 Germany).

2.9 Contribution of vocational guidance and counseling in choosing career

Technical and vocational education and training is a mode of delivery of training which combines training with productivity. It is a system of education that paves the way for individuals to realize their own potentials and contribute to the whole economy. Through this system, individuals could be masters of their own skill which ensures wage or self employment. It is one of the important strategies which foster attitudinal change towards work habit and optimum utilization of available scarce resources effectively and efficiently.

Different studies show that, Girls choices are strongly influenced by peers, parents and other key influences. They are most often influenced by parents and relatives when it comes to selecting courses/career. That means, Girls are more likely to turn to friends, teachers and parents than career counselors.

Similarly, in Mackay's report (Women in VET, 2003) it is stated that girls are strongly influenced by peers, and their social life is much more important to them than school or

career. They are also much closer to their mothers than their fathers, and they have more definite plans for marriage and family than they do for a career or further study.

To this end, the importance of guidance and counseling is the prime concern of technical and vocational training. Guidance is the assistance made available by qualified person without imposing his/her own view upon others. According to Anderson, D. (1969), cited in Berhane (2007), helping students understand, accept and use the abilities, aptitude, interests and other qualities is a function of guidance. It is a process of aiding individuals in systematic and professional manner, to make their choices and adjustment for effective self-direction in all life situations.

With regard to TVET trainees, guidance enables them to make their best choice of career, to participate in the training process freely and to the best of their ability and directs decision making on where to use their training skills. Due to this, guidance is a core service in the implementation of technical and vocational education and training program.

In Ethiopian education system, guidance and counseling is a recent strategy. The development of society is the cause for its establishment. This is because, the current generation requires up to date information and professional assistance to adjust their career. It gives direction to understand self and the situation around. In other words, initial guidance will help potential students to establish career direction, recognize their attitudes, and review what they have learnt from previous experiences. It provides clear idea about occupational fields in which they would be successful. By assessing and individual it helps to identify and develop ones own educational, vocational and psychological potentials and lead successful life. Guidance and counseling gives more emphasis for vocational and career matters.

In this regard, to maintain proper streaming and placement of students into different occupations, their interest and potential should be taken into consideration. As Dessalegn Lemessa forwarded, the selection of students for new program should be based on their interest on particular field of specialization and on a predicated reasonable chance of successful completion of the program.

CHAPTER III

Research Methodology

3.1 The research design

Comparative study was used in this research process. This is because to find out where females are underrepresented, comparing the participation and performance of female trainees in Industrial/Construction and Business stream is assumed to be the right approach.

3.2 Population and Sampling

Two TVET colleges, namely Adama TVET College and Assela TVET College were selected for the research setting. The research population includes,

- a) both male and female trainees in industrial/construction field numbering 130, and female trainees in Business (non-industrial) fields numbering 101, all in 10+2 regular program from the two colleges,
- b) Trainers & Department heads numbering 30, in industrial/construction stream as well as deans, v/deans and vocational counselors.

In selecting female respondents from industrial/construction stream, due to their limited number, availability sampling was used. Respondents from male trainees were selected using simple random sampling method because of their big number. Similarly, from business area female trainees were selected using purposive sampling technique. The main reason for considering only female trainees from the non-industrial/construction fields was that, these groups are believed to be the most appropriate source of information for the case under study.

3.3 Data collection procedure

Before the actual administration of the questionnaires a pilot study was made to check if there are some modifications to be done. Subjects in the pilot study were 10 male and 10 female regular trainees from industrial/construction fields as well as 10 females from the business stream. Five instructors from industrial/construction field were included in the pilot study. All questionnaires were prepared in English. However, based on the observation and the information obtained from the pilot study, questionnaires which were prepared for trainees were translated into Amharic and some other corrections were made accordingly.

As to the administration of questionnaires, explanation regarding the purpose of the questionnaires and how to fill them, as well as distribution and collection was done by the researcher.

Data collection instruments

Questionnaire

Three types of questionnaires were employed to collect primary data. The questionnaires were designed for three groups of respondents namely,

- a) instructors & department heads in industrial/construction sector,
- b) 2nd year trainees(both male and female) in industrial/construction field,
- c) 2nd year female trainees in non-industrial/construction i.e. business field.

Table 1 Number of questionnaires and interview administered

No.	Type of Respondents	Total	Questionnaires Distributed		Questionnaires collected		Number of interviewee
			No.	%	No	%	
1	Trainees in 10+2 program						
	a) Adama TVET College industrial/construction stream.	227	60	30	56	93	
	b) Adama TVET College business stream	182	54	30	54	100	
	c) Assela TVET College industrial/const .stream	236	70	30	69	99	
	d) Assela TVET College business stream	163	47	30	47	100	
	Total		231		226		
2	Trainers in,						
	a) Adama TVET College		20		18	90%	
	b) Assela TVET College		16		12	75%	
	Total		36		30		
3	Interviewee						
	3.1 Adama TVET College						
	-dean						
	-v/dean						1
	-vocational counselor						1
							1
	3.2 Assela TVET College						
	- dean						1
	- v/dean						1
	vocational counselor						1

All the questionnaires were constructed consisting different components. The first part is intended to obtain personal information about respondents. The other part of questionnaires deals about the possible school related barriers to female's participation in industrial/construction fields and various information regarding the influence of gender stereotyping of subjects & occupations which could be obstacles for female participation in industrial/construction fields.

Interview

Interview questions were prepared to interview the deans, vice deans & vocational councilors of the two TVET colleges. Questions were prepared in English. But for the purpose of clarity, the interview was conducted in Amharic.

Document analysis

By acquiring the data from the registrar office of the colleges, the enrollment of male and female trainees across different departments of industrial /construction fields and non-industrial/construction fields for five years has been collected and inspected. This is done to obtain information regarding the rate of female participation in each college under study. The data was intended especially to observe the gender disparity in industrial/construction streams.

Number of graduates during the last five years from the two colleges was secured. This was done for each stream to identify the pattern of achievements of male and female trainees in both training. This information was intended to analyze the performance of female trainees compared to their male counter parts.

3.4 Data analysis and management

Information was obtained from different sources by using various instruments. Relevant data gathered through document analysis, interview and questionnaires were organized; questionnaires were coded and interpreted accordingly. Percentage and t-test statistical methods were employed for data analysis. Especially, t-Test was used to check if there is any difference between the two groups of trainees' responses. Besides, narrative approach was used for data obtained from interview with deans, v/deans and vocational counselors.

Chapter IV

4. Analyses and Interpretation of Data

The major purpose of this research is to compare females' participation and performance in Industrial/Construction and Business field of study as well as find out factors affecting their participation in Industrial/Construction stream. Adama TVET College and Assela TVET Colleges are taken as sources of research data. This chapter is devoted to the analysis of data gathered through questionnaires and interview made with Deans, v/ deans and vocational counselors. Regarding results of the study, the data gathered using different instruments, were analyzed by applying t- Test and percentiles as tools in the analysis process.

4.1 Document analysis regarding enrollment & achievement

a) Enrollment document

The overall enrollment of trainees in Adama TVET College and Assela TVET College, from 1995-1999 (Eth.c.) has been collected. This was done to observe the enrollment pattern between the two area of study, namely, Industrial/Construction and Business streams and to investigate gender disparity particularly, in Industrial/Construction field of study.

There are different fields which are offered in Industrial/Construction & Business streams in the two TVET colleges under study. Trainees assigned to each stream are distributed across these departments. The total number of trainees enrolled in the two streams in each college from 1995-1999 (Eth.c), is as follows:

Table 2 Total enrollment of trainees in 10+2 regular program, by stream (1995-1999 E.C)

N o.	Yea r	TVET College	Industrial/construction					Business				
			M	%	F	%	Tota l	M	%	F	%	Tot. no.
1	1995	Adama	295	94.5	17	5.4	312	145	29.4	347	70.5	492
2	1996	Adama	285	80.7	68	19.2	353	118	19	500	80.9	618
3	1997	Adama	378	75.6	122	24.4	500	227	40.3	336	59.6	563
4	1998	Adama	413	84.2	77	15.7	490	178	32.8	364	67	542
5	1999	Adama	556	65.6	291	34.3	847	143	25.9	408	74	551
Total			1927	77	575	22.9		2502	811	29.3	1955	72.2
1	1995	Assela	132	78	37	22	169	70	39	109	61	179
2	1996	Assela	138	83	27	13	165	57	33	114	67	171
3	1997	Assela	150	75	49	24	199	35	29	149	81	184
4	1998	Assela	141	75	47	25	188	40	25.8	115	74	155
5	1999	Assela	152	74	53	25	205	50	27	134	72.8	184
Total			713	76.9	213	23	926	262	30	621	71	873

(Source: Registrar office of Adama and Assela TVET colleges)

The total enrollment of trainees in the two colleges from 1995-1999 is needed to observe the trend in the enrollment of female and male trainees and analyze gender disparity in Industrial/Construction area of study. Based on the data of five years, 1927 (77%) male and 575 (23%) female trainees in Adama TVET College, 713 (77%) male and 213 (23%) female trainees in Assela TVET College have been enrolled in Industrial/Construction fields.

On the other hand, when enrollment in the business stream is considered, things are reversed. Out of the total enrollment in Business stream at Adama TVET College, 1955 (72.2%) are females while only 811(29.3 %) are males. In Assela TVET College, enrollment in Business for the same duration showed that there were 621(71%) female trainees and 262(30%) male trainees. Based on this data it can be generalized that compared to males, extremely low female trainees were enrolled in industrial/construction fields of study. Hence, the information obtained from this data clarifies that there is a wide gender gap which designates females' under representation in Industrial/Construction stream.

The data regarding females' enrollment trend in Industrial/Construction field of study shows that, even though it is at a minimum rate, females' participation is increasing. From this condition, if effort is made through affirmative action, guidance and counseling, and other means, to encourage females to participate in the field, their number could be increased.

Table 3 Sex combination of total enrollment in both fields (1995-1999 Eth.C)

No.	College	Total enrollment									
		Industrial/construction					Business				
		Male		Female			Male		Female		
		No.	%	No.	%	Total	No.	%	No.	%	Total
1	Adama TVET	1927	77	575	23	2502	811	29.4	1955	70.6	2766
2	Assela TVET	713	77	213	23	926	262	30	621	71	873
	Total	2640	77	788	23	3428	1073	29.3	2576	70.7	3639

To understand the variation between enrollments of the two sexes in Industrial/Construction field of study, it is necessary to observe their combination in the two major areas of study. Table 3 above, indicates the sex combination of total trainees enrolled in Adama TVET College & Assela TVET College, in Industrial/Construction and business field.

Consequently, the table discloses the existing reality of gender disparity, which means difference between participation of male and female in traditionally male dominated field of study. On the other hand, enrollment of male in areas which are traditionally set female's domain is very minimum, like that of females in male dominated fields of training. The data signify the existence of the age-old gender-biased social system, which confined women to join only in soft courses. This inequality highly limits their participation in male dominated area, and alienates them from Natural Science and Technology.

This practice has a two-fold negative effect towards the development of any country. As it has been explained in the review of literature, restricting females from participating in various fields of occupation, not only affect their life, but results in the under utilization of huge potentials which in turn results in a loss of economy for a country.

4.1.1 Sex distribution across departments in Industrial/Construction stream

To identify the course choice pattern of the two sexes in the last five years, it is important to look at how the total male and female were distributed among the different field in Industrial/Construction area in the two colleges. (See Table 4)

Table 4 Sex distribution of enrollment across industrial/construction field (1995-1999 E.C)

Department	Adama TVET College					Assela TVET College				Total
	Male		Female			Male		Female		
	No.	%	No.	%	Total	No.	%	No.	%	
Automotive	387	87	57	13	444	99	88	13	12	112
General mechanics	410	92	36	8	446	107	89	13	11	120
Electronics	284	75	91	24	375	98	84	18	16	116
Electricity	358	73	129	26.4	487	89	73	32	26.4	121
Surveying						72	51	49	40.4	121
Drafting	51	61	32	39	83	69	58	48	41.0	117
Building	226	67	108	32.3	334	90	72	34	27.4	124
Wood work	208	90	22	10	230	89	91	8	8.2	97

The data shown in Table 4 discloses the following points:

- The percentage of female enrollment within Industrial/Construction stream shows that in both colleges relatively more female trainees were enrolled in drafting field, which is 32 (38.5%) in Adama TVET College and 48 (41%) in Assela TVET College. On the contrary, from the total enrollment, drafting is a field which attracted the least number of males, which is 51 in Adama TVET College and 69 in Assela TVET College.
- A field which has the least number of female trainees in Adama TVET College is General Mechanics which has 36 trainees. However, this field is the one that highly attracted more male trainees in both colleges. The least number of female trainees in Assela TVET College is in wood work field, with only 8 females, whereas the number of male trainees is 89 in five years time.

From the above information, there is still a problem of facing occupations which are male dominated and highly demanded by the labor market. This situation is related with the explanation of Ouston (1993), cited in Sara (2007). The statement declares that women face some barriers

which are created within them, acknowledging the world as masculine and perceiving themselves as compliant, as less skillful than their male counterparts. Due to this wrong perception they refrain from participation in occupations which are traditionally males' domain. Besides, the reason why most females do not join in these fields is treated next, on the bases of responses given by the targeted sample groups.

However, from the overall enrollment of trainees in the two colleges in 10+ 2 regular program, additional enrollment pattern can be observed. Even though it is not the main concern of this particular study, it seems of interest to see the pattern of field choice of female and male trainees in Business (non-industrial) stream. (See Table 5)

Table 5 Enrollment in the two TVET Colleges in business fields by sex (1995-1999 E.c.)

No	Department	Adama TVET College					Assela TVET College				
		Male		Female		Total	Male		Female		Total
		N	%	N	%		N	%	N	%	
1	Information technology.	247	50	243	50	490	59	43	78	57	137
2	Marketing	88	31	193	69	281	30	32	63	68	93
3	Purchasing	124	46	144	54	268	50	45	61	55	111
4	Secretarial	3	0.7	394	99	397	4	3	125	97	129
5	Accounting	237	48	258	52	495	60	41	87	59	147
6	Banking & Insurance	32	20	130	80	162	29	45	36	55	65
7	Hair dressing	6	3	184	97	190	12	18	55	82	67
8	Dress making	42	17	206	83	248	5	9	48	89	54
9	Cooking	-	-	-	-	-	4	6	68	94	72
10	Hotel service	7	6	106	94	113	-	-	-	-	-
11	Bakery	11	9	107	91	118	-	-	-	-	-

Wide difference in the choice of occupations between male and female is clearly seen from the above table. In the two colleges, females are highly attracted to secretarial field, which is traditionally categorized as one of female dominated occupations. In the case of males' choice, relatively great number of them is attracted to Information Technology and Accounting fields. It can also be observed that males are not interested to occupations which are widely known as females' domain. The five years data, in the two colleges shows that the number of male trainees joined field of study like, secretarial, hairdressing and cooking as insignificant.

In general, as of the information obtained from the above table, the existence of the socio cultural problem regarding the imbalance in gender distribution across fields of training is obvious. Technological and scientific fields are tends to be the privilege of males.

4.1.2 Analysis of females' success in Industrial/Construction fields

The fourth basic research question in this paper requires explanation regarding the performance of female trainees in their respective field of study. In order to answer this question, assessing the success or achievement of trainees in their study is found to be vital. By success or achievement in this research, is meant successful completion of the program and obtaining the required certificate. For this purpose, the number of graduates in each field of the two major streams in the two colleges was collected. Based on this, the magnitude of females' success in both major training areas was compared with that of males' to check the difference between the achievements of the two sexes.

4.1.3 Achievement comparison between sexes in major training streams.

Following the same approach in which enrollment data is collected; data of graduates in Industrial/Construction and Business fields were also collected from the two colleges. The data were analyzed in line with the total enrollment of trainees in each stream. Training completion of females was compared with male counterparts in each stream.

The purpose of analyzing the success of females in Business field was to check which groups of female trainees (Industrial /Construction or Business) had achieved better result when compared with male trainees. To this end, the major findings are illustrated in detail in the forthcoming tables and descriptions.

Table 6 Sex distribution of total graduates in both colleges by stream (1995-1999 E.C.)

No	Year	TVET College	Industrial/construction					Business				
			M	%	F	%	Total	M	%	F	%	Total
1	1995	Adama	100	93	7	7	107	66	43	89	57	155
2	1996	Adama	120	94	7	6	127	44	24	138	76	182
3	1997	Adama	69	80	17	20	86	73	29	176	71	249
4	1998	Adama	140	63	81	37	221	6	7	83	93	89
5	1999	Adama	171	68	81	32	252	18	24	58	76	76
		Total	600		193		793	207		544		751
1	1995	Assela	123	79	33	21	156	83	40	123	60	206
2	1996	Assela	108	84	21	16	129	61	34	117	66	178
3	1997	Assela	84	87	13	13	97	18	12	129	88	147
4	1998	Assela	77	74	27	26	104	41	26	115	73	156
5	1999	Assela	78	68	36	32	114	23	17	111	83	134
		Total	470		130		600	226		595		821

Table 6 shows the figure of the two sexes who graduated in the two main fields in five years time the two TVET Colleges. With a simple observation, it can be seen that in industrial/construction field, number of female graduates in Adama TVET College and Assela TVET College is 193 and 130 respectively. However, number of male graduates, which exceeds females' at a higher rate, is 600 and 470 in the two colleges.

On the other hand, the data of number of graduates from Business stream discloses the reality of different pattern from that of industrial/construction. The wide gap between male and female graduates in the field is indicated. 544 & 595 females and 207 & 226 males were graduated From Adama and Assela TVET Colleges respectively. This asserts the number of female graduates in business fields is higher than males whereas in industrial/construction field is very low.

To declare the level of performance of female trainees in detail, analyzing total enrollment in line with the number of graduates was found to be essential. To this end, by taking the total enrollment of trainees in both streams in to account, achievement difference between male and female trainees is examined in the two streams. The next table illustrates the result.

Table 7 Sex combination of total enrollment & graduates (1995-1999 E.C)

	Enrollment & graduation in Industrial/construction fields								Enrollment & graduation in Business fields							
	Male				Female				male				Female			
	Enrolled		Graduated		Enrolled		Graduated		Enrolled		Graduated		Enrolled		Graduated	
college	No.	%	N0.	%	No.	%	No	%	N0.	%	N0.	%	N0.	%	N0.	%
Adama TVET	1927	77	600	76	575	22	193	24	811	29	207	28	1995	71	544	72
Assela TVET	713	77	470	78	213	23	130	22	262	30	226	28	621	71	595	72

Table 7 indicates the relationship between the total enrolment and number of graduates in each stream. Comparison has been made between the number of male & female trainees in both streams. According to the illustrated data in the table, from the total number of Industrial/construction graduates in Adama TVET College, 76% are males while 24% are females.

Likewise from the total graduates of Assela TVET College in Industrial/Construction field, 78% are male and 22% are female. In the case of business field, from the total graduates of Adama TVET College 28% are males while 72% are females. From Assela TVET College total Business graduates 28% are males and 72% are females.

From this result it is understandable that there is no significant difference in the achievements of male and female trainees. However, the level of females' performance in Industrial/Construction area is less than their achievement in Business fields. While observing achievement of males, they are less than females in Business area, whereas in traditionally male-dominated fields they are high achievers. This could be due to low interest and giving less attention towards occupations which are traditionally females' domain.

4.2 Information from interview

Unstructured interview was conducted in Amharic with deans, v/deans and vocational counselors (all male), regarding participation and performance of female trainees in TVET College. According to most interviewee's response, the main reasons as to why most females do not join in industrial/construction field of study are, lack of orientation about the field and lack of self

confidence. These could be taken as the most hindering factors. Besides, most of them are not sure of getting job, because of society's negative attitude towards female workers in technical area.

According to the data obtained, to solve the problem different strategies are designed by some concerned bodies. Two of the interviewee said,

According to the plan of Oromia Education Bureau, TVET clubs are established in most high schools in the region. The purpose of establishing the club is to give orientation to high school students regarding TVET and the nature of different fields offered in colleges. This is believed to give insight and create awareness in the student community in selecting their future career from industrial/construction field of study.

The weakness of guidance and counseling service in TVET colleges and in high schools is also mentioned by most of the interviewees as one of the hindering factors for females' participation in Industrial/Construction fields. As most interviewee mentioned, awareness creation for students particularly in grade 9 and 10 could play an important role in selection of fields for future career.

For the question, which asks the level of females' participation in male dominated field of study, they asserted the existence of wide gender gap in enrollment to Industrial/Construction stream.

Regarding problems of physical strength of females, one of the interviewee said,

Since most of the activities are done with the help of machines, especially the field General Mechanics, it should not be taken as an obstacle. The problem is with female's lack of self-confidence and fear of acceptance by the society. This has to be clarified to students prior to field selection.

For question concerning the performance of those females who joined the field, the reply from most interviewees confirm that once they joined any field which are traditionally male dominated, they are committed and precise in their duty. In general, almost all interviewee confirmed that due attention should be given towards the activity of promoting TVET to the society.

4.3 Characteristics of trainee's respondents:-

To obtain some information regarding trainees' background different items were prepared. Out of these, response given to items concerning their subject preference up to grade 10 is illustrated as follows.

Table 8 Trainees' subject preference up to grade 10

Sex	Type of respondents	Subject preference		
		Natural Science	Social science	Total
Male	Industrial trainees, - In Adama	19	9	28
	- In Assela	17	20	37
	Total	26	29	65
Female	Industrial trainees, - in Adama	11	9	20
	- in Assela	6	19	25
	Total	17	28	45

As shown in Table 8, in Adama TVET College, 19 males and 11 females have preference for Natural science subjects while 9 males and 9 females preferred Social science subjects while they were in high school. In the case of Assela TVET College, 17 males and 6 females preferred Natural science subjects and 20 males and 19 females preferred Social science subjects.

While comparing Industrial/Construction trainees' background in the two colleges, more trainees in Adama TVET College had preference for Natural Science subjects than trainees in Assela TVET College. However, from this information, to take students' educational background as one of determining factor for selecting training field from Industrial/Construction area is difficult.

Regarding the age of trainees, the obtained information shows that 168 respondents are within the age of 16-20, while 28 are between the ages of 21-25, out of which 17 are male trainees and 5 are

females. The data shows the minimum age limit of trainees in technical and vocational streams is 16 and the maximum is 25. From this information it can be deduced that due to the maturity level of trainees while selecting their career, (at the age of 16), they need guidance and counseling to make the right choice of field.

4.4 Data related to teaching –learning process

After gathering personal data of respondents, items which are prepared to obtain information on different issues related to the teaching –learning process and to the attitude of trainees on various topics is organized below using percentages.

Regarding family support towards their field of training, from Adama TVET College 43(78%) male and female respondents, from Assela TVET College 53 (95%) respondent replied that they have sufficient support from their family.

To investigate self confidence of Industrial/Construction trainees in their study, particularly their present field of study. Respondents from both colleges numbering 105 (95%) respond that they expect good result. However, there are 5 respondents who don't expect good result due to lack of self-confidence and not having interest on the field.

For an item which asks if they have some one who helps them in their study, from Adama TVET College 42% and from Assela TVET College 49% of respondents replied that they have no one who helps them in their study. But very few respondents indicated that teachers, students and family give them help in their study.

Doing assignment on time is one of the factors that shows trainees' effort. Regarding this issue, 40 respondents (72%) from Adama TVET College and 52 (94%) from Assela TVET College respond that they do their assignment on time. The rest of respondents (18) who replied not doing on time, were complaining shortage of books, not having time, etc, as the major problem for them. The purpose of this item was to check if most trainees are not doing their assignment on time and identify the major factors which could be a problem not to do on time.

4.5 Choice of career

Table 9 Industrial/construction trainees' rational for selecting their present field

RANK ORDER (by Indu./Const. trainees)						
Variables	TVET College	1 st	%	2 nd	%	Total respondents
Interest to the field	Adama	38	68%	9	17%	48
	Assela	43	79%	15	27%	61
	Total	81		24		
To get job soon	Adama	7	14%	29	50%	48
	Assela	13	24%	32	56%	61
	Total	20		61		
Family influence	Adama	2	4%	6	12%	48
	Assela	3	5%	9	17%	61
	Total	5		15		
Observing role models	Adama	1	2%	4	6%	48
	Assela	2	4%	5	11%	61
	Total	3		9		

For the case why they choose their present field of study, Industrial/construction trainees' were asked to rank the proposed possible reasons. For the purpose of simplicity only first & second ranks are taken. As it is illustrated in Table 9, out of the total 109 respondents, 38 (68%) respondents from Adama TVET College, 43 (79%) respondents from Assela TVET College indicated that, "Interest to the field" is their first ranking reason to join the field.

Regarding the second ranking reason, 29 (50%) of Adama TVET College respondents and 32(29%) of Assela TVET college respondents gave rank two for the reason, "To get job soon". From this information it can be inferred that since most of them have joined the field with interest, and assume to be employed immediately after completing their training, they are motivated to do assignments on time and are expecting good result from their training. Their family acceptance to the field also contributes a lot for their success.

To confirm the assumption "most female do not join industrial/construction field of study", both groups of trainees respondents were asked to show their agreement or disagreement using likert scale. According to the information obtained, 26 (46%) respondent from Adama TVET College and 36 (65%) from Assela TVET College agreed that most females do not join the field. But 22

(37%) and 26(46%) respondents from Adama TVET College and Assela TVET College respectively did not agree with the assumption that most female don't join industrial/construction field of study.

However, from the total response it can be seen that majority have agreed on the stated point. Besides, respondents who agreed on the above issue were asked to rank their reasons of agreement. To simplify the analysis, the first and second reasons are taken.

4.5.1 Reason for most females not joining Industrial/construction fields:

To find out the reasons for less participation of females in Industrial/Construction field of study, respondents were asked to rank the given possible causes. To simplify the analysis, rank 1 and rank 2 which are given by industrial/construction trainees are taken for interpretation.

Table 10 Reasons for most females not joining Industrial/construction field

RANK ORDER (by Indu./Const. trainees)					
Variables	TVET College	1 st		2 nd	
			%		%
No interest to the field	Adama	7	12%	2	3
	Assela	10	17%	5	9
	Total	17		7	
Fear of job opportunity	Adama	3	5%	11	19
	Assela	4	7%	9	15
	Total	7		20	
Lack of self confidence	Adama	5	6	5	9
	Assela	7	12	7	12
	Total	12		12	
Low GPA in grade 10 national exam	Adama	1	2	2	3
	Assela	7	12	7	12
	Total	8		9	
Lack of role models	Adama	9	15	5	6
	Assela	6	10	6	10

As it indicated in Table10 above, out of the total 59 respondents, 17 (29%) gave rank one for “no interest” and 15 (25.4%) respondents for “lack of role models”. According to

industrial/construction trainees, these are considered to be first rank reasons for most females not to join the field.

In the second ranking reasons, for these groups of respondents, fear of job opportunity, by 20(34%) and lack of self confidence, by 12 (20%), are in the lead. This is totally as perceived by trainees who have got the chance and already joined the field.

To trace and generalize the main reason, it is important to obtain the reaction of Business trainees to the issue raised. To this end, the same question, “why most females do not join Industrial/Construction field of study?”, was given to them to rank the proposed possible reasons. For simplicity of analysis rank 1 and 2 are taken.

Table 11 Reasons for most females not joining Industrial/construction field

RANK ORDER (by Business trainees)					
Variables	TVET College	1st	%	2nd	%
No interest to the field	Adama	7	13	4	8
	Assela	2	4	4	8
	Total	9		8	
Fear of job opportunity	Adama	8	15	9	17
	Assela	4	8	7	13
	Total	12		16	
Lack of self confidence	Adama	2	4	3	6
	Assela	9	17	4	8
	Total	11		7	
Low GPA in grade 10 national exam	Adama	7	13	8	15
	Assela	2	4	9	17
	Total	9		17	
Lack of role models	Adama	4	6	4	8
	Assela	8	15	1	2
	Total	12		5	

As Table 11 illustrates, out of 53 respondents, 12 (22.6%) respondents gave first rank for “lack of female role models” and “fear of unemployment” to be causes for most female not to choose Industrial/Construction field of study. In the next ranking order, less GPA in grade 10 national exam by 17(32%) and fear of unemployment by 16 (30%) are considered to be the top in the second rank.

In comparing responses of the two groups, there are some deviations in their perception towards the issue raised. For example, regarding interest to the field, it is ranked number one for Industrial/Construction trainees, while it has less emphasis by business trainees. From this information, it can be realized that, it is not because most females don't have interest to technical fields that they don't join the field. According to Business trainees' response, the main reasons for most females are lack of self confidence, fear of unemployment and lack of role models.

4.5.2 Rational for Business trainees for choosing their present field of study

To find out and substantiate the central part of the problem, it is still found to be important to ask Business trainees to explain their rational for selecting their present field of study. To this end, Business trainees were asked to rank the given possible reasons “why they selected the field which they are studying at present”. To simplify the analysis, the first and second ranks are illustrated next in Table 12.

Table 12 Rational for Business trainees for choosing their present field of study

RANK ORDER						
Variables	TVET College	1 st		2 nd		Total
			%		%	
Interest on the field	Adama	23	26	10	12	
	Assela	26	30	4	5	
	Total	49		14	16%	
Low GPA in grade 10 national exam	Adama	19	22	13	15	
	Assela	11	13	20	23	
	Total	30		33		
To get job soon	Adama	4	5	16	18	
	Assela	1	1	10	12	
	Total	5		26		
Because the course is simple	Adama	-		4	5	
	Assela	1	1	5	6	
	Total	1		9		
Family influence	Adama	-		3	3.4	
	Assela	2	2	2	2.3	
	Total	2		5		

In their response to “why they selected the present field”, Business trainees have ranked the given possible reasons according to their perception. As shown in the Table 12, Out of the total 87 respondents “interest to the field” by 49 (56%), “low GPA in grade 10 exam” by 30(35%) respondents are ranked as first core reasons. While considering the second ranking reasons, “low GPA in grade 10 national exam” and “to get job soon”, are the ones that go in front by 33(38%) and 26(30%) respondents respectively. From this information it can be inferred that even if they indicated that they have interest to the field as one of the reasons, still their ranking shows that having low GPA and the case of job opportunity are also the determining factors for their choice.

From the general overview of trainees' response, it can be concluded that the root causes affecting female trainees from participating in industrial/construction field of study are,

- a) low GPA in grade 10 national exam,
- b) Fear of unemployment.

This implies that taking only GPA as a selection base for students' placement without taking their interest in to account, has some effect which needs further study.

Regarding job opportunity, as it is explained earlier in the review of literature, the social and cultural norms in which females are brought-up as well as society's expectations are highly influential on their choice of future career. As Yelfign (1998) stated in her work "the expectation of parents on how a girl should behave, will have an impact in the choice of subjects she makes in school.

4.6 Respondents' perception towards females' participation in industrial/construction training

To obtain attitudinal information regarding performance of females in Industrial/Construction area, similar items were prepared for both group of trainees, namely, trainees in industrial/construction fields and trainees in business stream. The item requires to rate their agreement or disagreement. The response of all respondents was treated by comparing their mean and analyzing using t-Test statistical method, as illustrated in Table 14 below.

Table 13 Perception of trainees on Female's performance in Industrial/Construction field

Variable	College	N	Mean	SD	t- value	Decision
Females in industrial/cons. support economic development	Adama TVET	94	4.71	.682	-1.657	N.S.
	Assela TVET	102	4.84	.342		
	Total	196	4.78	.553		
Females better train in business than in industrial/cons.	Adama TVET	94	3.61	1.166	-.466	N.S.
	Assela TVET	102	3.69	1.227		
	Total	196	3.65	1.196		
Females can do equally as male in industrial/constru.	Adama TVET	94	4.48	1.075	1.075	N.S.
	Assela TVET	102	4.31	1.072		

Level of significance at 0.05 level

To assess the attitude of the trainees regarding various issues, which are related to females' participation in Industrial/Construction fields, similar items were prepared for both Industrial/Construction trainees and business trainees.

As demonstrated in table 13 above, the data obtained from both group of trainees' response was treated using SPSS software program. Mean and standard deviation of responses as well as significant level in the two TVET colleges was checked through t- test. As a result, the following points can be drawn.

The attitude question starts with item which states "participation of female in industrial and construction can contribute to economic development". As it can be seen from the above table, highest number of respondents has agreed with the statement. The total mean of the two colleges' responses is 4.78 which imply the agreement of the majority. That means, the result indicates confirmation of majority to the importance of female participation in industrial and construction field of study, which enables them to contribute to the development of economy.

The next two statements were "female are better trained in Business than in Industrial/Construction", and "female can work equally as male in Industrial/Construction fields". Most respondents disagree with the assumption of putting or restricting females from participation in traditionally male dominated area of study. The mean of the total response 4.78 implies, females are not only in business but also better trained in Industrial/Construction fields.

With regard to females working equally, with that of male, more than half of the respondents showed their agreement with the statement. The total mean of their response is above average mean that is 4.39; there is also no significant difference in the perception of respondents in the two colleges under study. From this information, equal performance of females in technical or construction area can be affirmed.

4.7 Factors affecting female performance in Industrial/Construction field of study

There are a lot of obstacles which hinders females' participation in Industrial/Construction area. To obtain the attitudes of respondents, they were asked to rate their agreement or disagreement to the given different possible causes.

Table 14 Perception of trainees on Trainers-related factors

Variable	College	N	Mean	SD	t-value	Decision
Poor teaching method	Adama TVET	94	2.87	1.322	.413	N.S.
	Assela TVET	102	2.79	1.330		
	Total	196	2.83	1.323		
teachers do not give advice to students on how to study	Adama TVET	94	3.12	1.390	.692	N.S.
	Assela TVET	102	2.98	1.371		
	Total	196	3.05	1.379		
Low expectation to female performance	Adama TVET	94	2.73	1.525	1.564	N.S.
	Assela TVET	102	2.41	1.360		
	Total	196	2.57	1.447		

Level of significance at 0.05 level

As it can be observed from Table 14, hindering factors related to teachers, are rated within average mean between 2.41 & 3.12. Out of the three items, "teacher's low expectation to females result" is rated at low average mean value of 2.57 by the two colleges.

Factors "Teachers do not give advice to students on how to study", is rated at high average mean value 3.05. This indicates that, there is lack of sufficient advice from instructors to their trainees on how to study their courses. Trainees require advice from their teachers on how to study technical subjects so that they can be successful in their training.

Table15 Response of trainees regarding student- related factors

variable	College	N	Mean	SD	t-value	Decision
Females don't give attention to study	Adama TVET	94	3.34	1.308	-473	N. S
	Assela TVET	102	3.43	1.375		
	Total	196	3.39	1.341		
Females lack of interest to the field	Adama TVET	94	3.04	1.335	.608	N. S.
	Assela TVET	102	2.92	1.440		
	Total	196	2.98	1.388		
Low GPA in grade 10 national exam	Adama TVET	94	2.70	1.343	-173	N. S.
	Assela TVET	102	2.74	1.342		
	Total	196	2.72	1.339		
Females' low self confidence	Adama TVET	94	3.17	1.536	-256	N. S.
	Assela TVET	102	3.23	1.482		
	Total	196	3.20	1.504		
Lack of physical strength	Adama TVET	94	2.24	1.301	.100	N. S.
	Assela TVET	102	2.23	1.371		
	Total	196	2.23	1.334		
Lack of orientation on the field	Adama TVET	94	3.27	1.377	-979	N. S.

Level of significance at 0.05 level

Student-related factors are among the obstacles to females' success. As illustrated in Table 15, results of responses are rated above the average mean. From the six items, "females don't give attention to their study", "females' low self confidence" and "lack of orientation on the field" have mean of 3.39, 3.27 and 3.20 respectively. These items have higher mean than the other items.

This reflects that there are different cases which forces female trainees not to focus on their study. Lack of orientation concerning field of training and lack of self confidence could be due to weak vocational guidance service in schools and colleges. The figure also clearly indicates that respondents of Adama TVET College and Assela TVET College have almost equal perception on this issue, since their mean average is 2.24 and 2.23.

Table 16 Response of trainees regarding family- related factors

variable	College	N	Mean	SD	t-value	Decision
Lack of family moral support	Adama TVET	94	3.45	1.38	.482	N. S.
	Assela TVET	102	3.34	1.60		
	Total	196	3.39	1.50		
Family's poor educational background	Adama TVET	94	3.26	1.35	.295	N. S.
	Assela TVET	102	3.20	1.45		
	Total	196	3.22	1.40		
Family's low expectation to females' in technical fields	Adama TVET	94	3.23	1.41	-.886	N. S.
	Assela TVET	102	3.41	1.39		
	Total	196	3.33	1.40		

Level of significance at 0.05 level

In the above table the data shows the responses of trainees which is rating the three items concerning family related factors. Among these family related items, “lack of moral support” is rated higher (3.39) than the rest. This signifies that lack of moral support from family is one of the major factors that affect the performance of female trainees, as well as low attention of female trainees to their study.

Family's low expectation towards females' performance in technical fields is rated 3.33 which shows the second affecting factor. According to the researchers' view, reason for family's low expectation could be lack of awareness to female's performance and capability to do things equally as their male counter parts. From the total mean average of the above table much difference is not seen between the responses of the two TVET college trainees. They have nearly similar perception on the above mentioned factors.

For successful training program, institutes/colleges are expected to fulfill the necessary requirements to facilitate the teaching-learning process. Hence, in order to achieve the attitude of respondents towards the importance of school environment, for the success of female trainees, they were asked to rate the points illustrated in table 16 above.

Table 17 Response of trainees on Institute - related factors

variable	College	No	Mean	SD	t- value	Decision
Lack of text books	Adama TVET	94	3.55	1.47	-.953	N. S.
	Assela TVET	102	3.75	1.34		
	Total	196	3.65	1.40		
Lack of support from college administration	Adama TVET	94	3.15	1.51	-.842	N. S.
	Assela TVET	102	3.32	1.38		
	Total	196	3.24	1.45		
Lack of orientation on the field	Adama TVET	94	3.34	1.57	-.722	N. S.
	Assela TVET	102	3.49	1.33		
	Total	196	3.42	1.44		
Lack of guidance and counseling	Adama TVET	94	3.59	1.44	-.775	N. S.
	Assela TVET	102	3.74	1.26		
	Total	196	3.66	1.35		
Lack of health service	Adama TVET	94	3.24	1.55	-.179	N. S.
	Assela TVET	102	3.28	1.55		
	Total	196	3.27	1.54		
Trainees placement out of their choice	Adama TVET	94	3.70	1.46	.365	N. S.
	Assela TVET	102	3.63	1.40		
	Total	196	3.66	1.42		
lack of safety to study late in the library	Adama TVET	94	3.67	1.44	-1.286	N. S.
	Assela TVET	102	3.93	1.39		
	Total	196	3.81	1.42		

Level of significance at 0.05 level

The findings in Table 17 indicates that the total mean computed reveals the result of all Institute-related factors rated above average mean. Among the factors “lack of safety to study late in the library” is rated high (3.81) which indicates environmental problem such as violence against females as one of the most obstacles for females successful training. Assistance from college administration is rated lower than the other factor which has average mean of 3.24. Still the data indicates lack of assistance from college administration affects the expected performance of females in their training.

An item was included asking if they have been repeaters during their high school stay. Out of the total trainee respondents (N.197), 16 trainees replied they were once repeaters. The purpose of this item is to identify factors that cause females to repeat. Hence, respondents were asked to rank the given possible reasons. As a result, 10 of them (62.5%) rate health problem as the first reason, and 5 of them (31.2%) rated environmental problem as a second reason. From this

fact it can be deduced that, due to so many reasons, female face health problem and various environmental barriers which affect their performance in their training.

To check the attitude of business trainees towards female' performance in Natural science subjects an item which reads "do you agree that most female do not participate in Natural science stream" was included in their questionnaire. The information obtained from this response indicates that 65(76%) of them do not agree on low enrollment to Natural science and only 21 (24%) of them agree that most female do not join Natural science stream. The first and the second reasons given, according to the respondents, is that the perception of majority of the society is that most females do not do equally as males in Natural Science disciplines. This attitude by itself affects females' participation in Natural Science area of study.

However, even though most respondents do not agree on low participation of females in Natural Science stream, it seems that there is bias or favoritism in perceiving the existing reality. Because, even from the information obtained regarding their subject preference while they were in high schools, most respondents' preference was Social Science stream. So, this response is a misleading one.

To obtain trainers' perception towards females in industrial/construction training, different items were prepared so that trainers could show their agreement or disagreement. The result is illustrated in Table 18.

Table 18 Perception of trainers towards female in Industrial/Construction Training

Variable	College	Mean	N	SD	t-value	Decision
Industrial/construction is meant for male	Adama TVET	1.94	18	1.25	-.950	N. S.
	Assela TVET	2.41	12	1.44		
	Total	2.13	30	1.33		
Females training in technical field is not as Important as males	Adama TVET	1.61	18	.777	.433	N. S.
	Assela TVET	1.50	12	.522		
	Total	1.56	30	.678		
females face more problem than males in training	Adama TVET	2.55	18	1.29	-1.337	N. S.
	Assela TVET	3.16	12	1.11		
	Total	2.80	30	1.24		
females need more help to understand	Adama TVET	3.16	18	1.29	-.994	N. S.
	Assela TVET	3.58	12	.792		
	Total	3.33	30	1.12		
If encouraged & get moral support can do equally as male	Adama TVET	4.50	18	.618	1.200	N. S.
	Assela TVET	4.25	12	.452		
	Total	4.40	30	.563		
Female perform better in soft course than in industry	Adama TVET	3.11	18	1.27	1.018	N. S.
	Assela TVET	2.66	12	.984		
	Total	2.93	30	1.17		

* Level of significance at 0.05 %

As it is illustrated in table 18 above, the first item was “industrial and construction field is meant for male”. This statement is not accepted by most instructors. Besides, majority of trainers showed their disagreement with the statement “females’ training in industrial/construction field is not important”. The average mean for the two items is 1.56 & 2.13 respectively. This implies that female can be trained in Industrial/Construction fields and their contribution is important to the development of the economy.

It can be observed that the main point of the first two items is based on the capability of females training in industrial and construction field and its contribution to the economy. Regarding the third and the fourth items which are concerned with the problems of females in their training, most instructors have showed their agreement. The average mean for “female face more problem” is 2.8 and for “female need more help” are 3.33. From this result it can be affirmed that there are some problems which females face more than males, and female trainees need more help during their training.

In the case of encouraging and giving moral support for trainees to help them do equally as their male counterparts, instructors have indicated their positive attitude. Accordingly, the mean of their response is 4.4 which indicate their agreement to the statement. This result asserts that if females are encouraged and given moral support they can do equally as their male counter parts in technical fields.

However, regarding the statement” females perform better in soft courses than in industrial and construction”, mean average is 2.93 This indicates majority of the trainer respondents agree on the issue. But if factors affecting their performance are removed there is no doubt females do better in industrial/construction area as well.

Table 19 Trainers response towards student-related factors affecting female trainees

variable	College	Mean	N	SD	t-value	Decision
Less effort of females to study	Adama TVET	3.11	18	1.18	-.320	N. S.
	Assela TVET	3.25	12	1.13		
	Total	3.16	30	1.14		
Females low interest to technical field.	Adama TVET	3.38	18	1.24	-.246	N. S.
	Assela TVET	3.50	12	1.16		
	Total	3.43	30	1.19		
Females’ poor education. background	Adama TVET	3.94	18	.802	1.097	N. S.
	Assela TVET	3.58	12	.996		
	Total	3.80	30	.886		
Stress during exam	Adama TVET	3.16	18	1.09	.205	N. S.
	Assela TVET	3.08	12	1.08		
	Total	3.13	30	3.08		
Females’ low self confidence	Adama TVET	2.88	18	1.18	-1.359	N.S.
	Assela TVET	3.50	12	1.24		
	Total	3.13	30	1.22		
Females’ lack of physical strength	Adama TVET	2.61	18	1.24	-.917	N. S.
	Assela TVET	3.00	12	.953		
	Total	2.76	30	1.13		

Level of significance at 0.05

As it is illustrated in Table 19, in the case of student related factors which affect their academic performance, the total mean average 3.16 for the statement “less effort is seen by female trainees” shows the agreement of most trainers. Out of the given statements, “poor educational background of trainees” is also high ranked with a mean of 3.8, as obstacles for females’ success.

Regarding low self confidence of trainees as one of obstacles is rated above mean average by trainers' respondents, which is 3.1. In addition to this, "lack of physical strength" is just on the average mean of 2.7. This issue could be controversial. Because there are some fields that can be performed using mental ability, without requiring that much hard physical strength.

Table 20 Instructors response towards instructors- related factors affecting females

variable	College	Mean	N	SD	t-value	Decision
lack of female instructors role models	Adama TVET	3.11	18	1.32	-.304	N. S.
	Assela TVET	3.25	12	1.05		
	Total	3.16	30	1.20		
lack of instructors supp.	Adama TVET	2.66	18	1.18	-619	N. S.
	Assela TVET	2.91	12	.900		
	Total	2.76	30	1.07		
Low expectation of instructors to females' ability	Adama TVET	2.05	18	.872	-.848	N. S.
	Assela TVET	2.33	12	.887		
	Total	2.16	30	.874		
Sexual harassment by instructors	Adama TVET	1.66	18	.970	-1.303	N. S.
	Assela TVET	2.16	12	1.11		
	Total	1.86	30	1.04		
Instructors' poor educational background.	Adama TVET	2.16	18	.985	-1.789	N. S.
	Assela TVET	2.91	12	1.31		
	Total	2.46	30	1.16		

Level of significance at 0 .05 %

Table 20 above illustrates the attitude of trainers on obstacles which are instructors –related factors. To identify whether there are instructor-related causes which are obstacles to female performance, instructors were asked to clarify their agreement or disagreement on the listed possible factors. In their response, they show their agreement to statement "lack of role models", as factor for poor performance of female trainees. The mean is 3.1 which is above average. Most of them disagree with all the rest of the statement.

However, in comparing with business trainees' response, "lack of instructors support in giving advice" is rated at lower average mean of 2.7 by instructors. Its average mean rated by both groups of trainees is 3.5. Here we can see the difference in the response of the two groups. Even though instructors could not accept "lack of support from instructors in giving advice to female trainees" as an obstacle, it is declared as a clear fact by those who are assumed to have the experience of it. Average mean of 2.46 is give to instructor's poor educational background. The list mean average is for sexual harassment by instructor which is 1.86. Although this issue has

obtained less mean average in this data it is difficult to give less emphasis to this burning issue of the day.

Table 21 Institute- related factors affecting female trainees responded by trainers

variable	College	Mean	N	SD	t- value	Decision
lack of text books	Adama TVET	2.33	18	1.18	-4.320	Significant
	Assela TVET	4.00	12	.738		
	Total	3.00	30	1.31		
Lack of support from college administration	Adama TVET	2.83	18	1.29	-1.995	N.S.
	Assela TVET	3.66	12	.778		
	Total	3.16	30	1.17		
Lack of orientation program	Adama TVET	3.44	18	1.33	-.314	N. S.
	Assela TVET	3.58	12	.900		
	Total	3.50	30	1.16		
Lack of Guidance & counseling.	Adama TVET	3.55	18	1.09	-.068	N. S.
	Assela TVET	3.58	12	1.08		
	Total	3.56	30	1.07		
Trainees placement not on their choice	Adama TVET	3.77	18	.942	1.092	N. S.
	Assela TVET	3.41	12	.792		
	Total	3.63	30	.889		
Lack of health service	Adama TVET	3.11	18	1.18	-2.239	Significant
	Assela TVET	4.00	12	.852		
	Total	3.46	30	1.13		
Difficulty to study long b/c of safety Difficulty to study long b/c of safety	Adama TVET	3.55	18	1.24	1.272	N.S.
	Assela TVET	3.00	12	1.04		
	Total	3.33	30	1.18		

Level of significance at 0.05

Table 21 discloses, in the institutions-related factors, trainees' placement out of their choice, lack of orientation and lack of guidance and counseling service are given the highest level of agreement by trainer respondents. The average mean of the three statements is 3.6, 3.5 and 3.56 respectively. Lack of books with mean of 3.0 and lack of support from college administration with mean 3.1 are rated a bit less than the rest.

In the case of taking "lack of text books" as one of the problems, the data reveals the difference between the two colleges. According to the information obtained, Assela TVET College has shortage of text books more than Adama TVET College, which is one of the important inputs for teaching-learning process. This situation is also indicated by some trainees as a problem to do their assignments on time.

The average mean for “difficulty to study late in library due to problem of safety”, is 3.3. Here it is worth to emphasize this issue since it is stressed by the two group of trainees respondents. For successful completion of training students has to study for extended hours. Especially females, as they are expected to shoulder most activities at home, they have to be encouraged to spend out of class time in libraries. However, in a situation where there is safety problem around the school environment, this can’t be practical.

Table 22 Family - related Factors Affecting Female Trainees Responded by Trainers

variable	College	Mean	N	SD	t-value	Decision
Lack of parental support	Adama TVET	3.50	18	.923	-.454	N. S.
	Assela TVET	3.66	12	1.07		
	Total	3.56	30	.971		
Poor educational background of parents	Adama TVET	3.77	18	1.06	-.819	N.S.
	Assela TVET	4.08	12	.900		
	Total	3.90	30	.994		
Low expectation of parents on female’s technical	Adama TVET	3.88	18	1.02	-.782	N S.
	Assela TVET	4.16	12	.834		
	Total	4.00	30	.946		
Parents favor males’ training than females	Adama TVET	4.22	18	.732	1.084	N. S.

Level of significance at 0 .05

Trainers have also rated family- related factors which are assumed to be obstacles for females’ performance in their training. According to the illustration in Table 22, “parents favor males than female” and “law expectation of parents about female performance in technical fields” are the two high rated items. Their mean average is 4.1 and 4.0 respectively. The rest of the items are also above average mean.

This result designates the attitude of family towards children’s education & training has crucial effect for successful completion of the course they study. As it is stated in the review of related literature, almost every where in the world occupations are divided into male’s domain and female’s domain Due to low awareness, large portion of society assumes technical activities are meant for male. This practice has restricted females from exercising every activity and contributing to the development of a country’s economy.

Regarding the effort of females in doing their assignment, an item was forwarded to trainers. Out of the 30 trainers in the two colleges, 14 of them responded “females apply equal effort as males” which is nearly similar to that of trainees’ response. Concerning the level of participating in class, by asking or answering questions, trainers’ response designates female participation to be less frequently. However, according to trainees’ response, (53.5%) respondents rated moderately participate, and 20 (23.3%) rated highly participate.

4.8 Views of department heads

Department heads in industrial/construction stream were asked to give their response regarding the availability of different facilities in their respective colleges. Their total number is six. According to the obtained information from the six respondents of the two colleges, shortage of text books was indicated. In the institute-related factors, trainers from Assela TVET College TVET College have also shown the scarcity of text books in their college. In the questionnaire set for trainees, this situation was also explained by some trainees as a problem for completing their assignments on time. This fact signifies the magnitude of the problem which needs immediate reaction by concerned body.

Department heads also reveal the absence of clinic and sport facility as well as separate latrine for male and female trainees. The absence of these facilities is one of the main factors that affect especially females in their training. Trainers from Assela TVET College have also disclosed the problem of health service in their response for an item in the Institute-related factors. Regarding guidance and counseling service, out of the four respondents from Assela TVET College, three of them affirmed its availability. But in the case of Adama TVET College the two respondents declared that there is lack of guidance& counseling service in the college. Regarding other facilities like, library, workshop, electricity, water& classrooms, their response shows its availability.

Besides, to find out the reasons for females dropouts, if any, some items were forwarded to department heads to show their agreement or disagree for the given possible causes. The information obtained indicates that environmental problem and difficulty in subject matter are rated high while economic and health problems are rated at an average level.

Opinion of trainers was also asked regarding why most females do not choose industrial/construction fields for their training. This is mainly to identify the causes for their under representation in this area. According to their response, out of the total respondents numbering 30, 19 of them agreed on lack of female role models and 17 on lack of interest for the field. Fear of social acceptance is also indicated by 12 respondents as one of the main problems. Concerning fear of social acceptance, it is another way of explaining lack of job opportunity with regard to female graduates from industrial/construction fields. As long as there is gender biased society, it could be difficult for females to be employed in traditionally male dominated area.

4.9 Possible solutions suggested in improving females' participation in industrial/construction fields

After having identified problems and verified the existence of obstacles to females' participation in industrial/construction fields of study, proposing or pinpointing possible solutions is one of the major issues of this research. To this end, Business trainees were asked to rank the proposed possible solutions. To simplify the analysis the first two ranks, which are illustrated in Table 23 were taken.

Table 23 Suggested solutions as ranked by Business trainees

Variables	TVET College	RANK ORDER			
		1 st	%	2 nd	%
Give guidance to trainees	Adama	18	21	11	24
	Assela	23	27	11	20
	Total	41	48%	22	26%
Tutorial class	Adama	8	9	24	28
	Assela	4	5	20	23
	Total	12	14%	44	51%
Try to change society's attitude	Adama	9	11	4	5
	Assela	7	8	4	2
	Total	16	19%	8	9%
Advice trainees how to study	Adama	3	4	5	6
	Assela	3	4	2	2
	Total	6	7%	7	8%
Encourage females to ask/answer	Adama	8	9	2	2
	Assela	3	4	3	4
	Total	11	13%	5	6%

As it is observed from Table 23, out of 86 respondents, from the given possible solutions, “giving guidance and counseling to trainees”, by 41(48%) respondents, “trying to change society’s attitude” by 16 (19%) respondents are selected as rank one solution.

In the second ranking order, “Giving tutorial class” by 44(51%) respondents, “giving guidance to trainees” by 22 respondents are ranked second. To generalize the overall response given to the issue,

- giving guidance to trainees,
- making an effort to change societies’ negative attitude towards females’ performance in Industrial/Construction fields,
- providing tutorial class are the most relevant solutions suggested by Business trainees.

Table 24 Suggested solutions as ranked by Trainers

Variables	College	RANK ORDER									
		1 st		2 nd		3 rd		4 th		5 th	
		N	%	N	%	N	%	N	%	N	%
Give Vocational Guidance	Adama TVET	9	31.0	7	24.1			1	3.4		
	Assela TVET	8	28	3	10.3	1	3.4				
	Total	17	59	10	35	1	3.4	1	3.4	22	
Provide Tutorial	Adama TVET	1	3.4	3	10.3	5	17.2	4	14	4	14
	Assela TVET	1	3.4	9	31.0	1	3.4	2	7	1	3.4
	Total	2	7	12	41.4	6	21	6	21	5	17.2
Perform Awareness	Adama TVET	6	21	5	17.2	6	21	3	10.3	1	.9
	Assela TVET	3	10.3			7	24.1				
	Total	9	31.0	5	17.2	13	45	3	10.3	1	
Encourage females to ask	Adama TVET	1	3.4			2	11.1	2	7	12	11
	Assela TVET					1		1	3.4	4	
	Total	1	3.4			3		3	10.3	16	
Advise how to study	Adama TVET			2	7	4	14	7	24.1	2	7
	Assela TVET					3	10.3	9	31.0	1	103
	Total			2	7	7	24.1	16	55.2	3	

Level of significance at 0.05 levels

Trainers were asked to rank the given possible solutions to improve female’s participation in technical fields. Accordingly, 17 (59 %) gave first rank to giving vocational guidance for trainees as a major solution, while 9 (31%) respondent ranked “performing awareness creation” as first rank. Providing tutorial class is ranked second by 12 (41%) of respondents as solution to the problem.

In comparing the ranking order of solutions given by business trainees in Table 23, out of 86 respondents, 41 (48 %) of respondents selected “give guidance and counseling “as first solution, and 44(52%) of them ranked tutorial class as the second possible solution. In this manner, the result shows that trainers as well as trainee respondents have similar opinion concerning possible solutions.

From this information, we can generalize that to improve the participation of females in Industrial/Construction fields of study, providing guidance and counseling to trainees and performing awareness creation are taken as important tools. Tutorial class is also indicated as an essential element to develop the performance of female trainees in industrial/construction field of study.

Chapter V

Summary, Conclusion and Recommendations

Summary of major findings

Characteristics of respondents

Majority of trainee' as well as instructor respondents in Industrial/Construction stream are males. This is due to less participation of females in the field. Since females are many in business field, respondents selected are all females. The age of most respondents is between 16 & 21.

Enrollment:

Total enrollment data shows that there is a wide gender disparity in the enrollment in Industrial/Construction fields. The number of females is less than males by almost 54%. The gender gap is almost similar in both TVET colleges. This reflects the fact that females are underrepresented in Industrial/Construction fields of study. In the case of enrollment in business stream, females are more than male trainees.

Distribution of trainees across Industrial/Construction departments, by Sex:

According to the enrollment data, even from those who joined the field, majority of them are studying drafting courses, a field which attracts less number of males. On the other hand, general mechanics is a field of study in which the least number of female are studying. From this situation, it can be said that due to lack of self confidence females refrain from participating in traditionally male dominated area. The data shows that this field has highly attracted male trainees.

Females' success:

To check females' success, data was collected from graduation documents of the two colleges. Achievement comparison is also made between female trainees in Industrial/Construction and Business fields. Result of the study shows that females are doing well in the traditionally female dominated area of studies. When compared to males, female trainees are low achievers in areas which are traditionally set as males' domain.

Response regarding choice of fields:

From the total response obtained it can be concluded that low GPA in grade 10 national exam, fear of unemployment and lack of self confidence are the most affecting factors for their field choice. Information obtained also shows that majority of respondents agreed on the importance of females' participation in Industrial/Construction field for the development of a country's economy.

Perception of trainees regarding obstacles affecting females' choice of career:

- Teachers-related obstacles: - Information obtained indicates shortage of teachers' advice to trainees on how to study their course as one of the obstacles.
- Students-related obstacles: - Not giving much attention to study and lack of orientation are indicated as major obstacles.
- Family-related obstacles: - Lack of moral support from the family and their low expectation towards females' performance in technical fields are taken as obstacles.
- Institution-related obstacles: - Lack of safety in the college environment to study late in libraries and assistance from college administration is mentioned as main obstacle.

Solution suggested by Business trainees: - To improve the participation of females in Industrial/Construction fields, respondents were asked to rank solutions. As a result, "giving guidance and counseling to students and trying to change societies' attitude" are taken as first rank solutions while giving tutorial class is ranked as a second solution.

Perception of trainers regarding different factors affecting females' participation

- **Student-related factors-** "Less effort by female trainees" and "poor educational background" are ranked high by trainers, to be obstacles for females' performance.
- **Instructors-related factors;** - In their response trainers agreed on "lack of female role models" as major obstacle. Lack of instructor's advice is ranked least, which has been ranked high by trainees.
- **Institute-related factors:** - Placement of trainees out of their choice and lack of guidance and counseling is high ranked obstacle.

Parent-related factors- “Parent favor male’s training” and “parents’ low expectation to females’ performance in technical fields” are indicated as high ranked obstacles. Trainers were also asked why most female do not join industrial and construction field. In their response,” lack of role models” and “fear of social acceptance” are taken as main causes.

Possible solutions suggested by trainers: - Giving guidance and counseling for trainees and performing awareness creation to change the attitude of the society, are among the high ranked solution to improve their participation in Industrial/Construction fields of study.

Conclusion

Based on major findings obtained from the research, the following conclusions are drawn.

From the overall enrollment in five years time in the two TVET colleges under study, there is a highly pronounced gender disparity in Industrial/Construction field of study. The traditional male-dominated and female-dominated occupations are still widely practiced in the enrollment of trainees to technical and vocational area.

Regarding their achievements in their study females are high achievers in business area than males, but low in Industrial/Construction fields. This is due to lack of guidance and counseling and females' lack of self confidence.

According to the plan of Oromia Education Bureau, the process of establishing TVET club in each high school has been started. The purpose of the club is to orient students in grade 9&10 regarding TVET and the nature of different courses offered in the system. This is expected to create awareness to the student community about technical & vocational education which could help them in selecting their future career.

For question "why most females do not join Industrial/Construction field", from the total response it can be inferred that, "low GPA in grade 10 national exams, lack of females' self confidence and fear of unemployment" are the main causes which hold them back from participating in Industrial/Construction fields. Besides, the social and cultural norms in which females are brought-up, has greatly influenced their choice of career. The low expectation of parents towards females' performance in technical area is one example of social and cultural factors, which affect their participation in Industrial/Construction field.

Concerning possible solutions for the problems, Business trainees and instructors responses shows that, giving guidance and counseling to trainees and trying to change the attitude of society by performing awareness creation are ranked as major solution. Besides, providing tutorial class is taken as one of the means to help female trainees. From the over all data gathered, strengthening guidance and counseling service and performing awareness creation regarding TVET system are among the basic factors which determine females' participation and success in Industrial/Construction field of study.

Recommendation

Based on major findings obtained from the study, the following points are recommended.

1. To pave the way for students to select their future career, guidance and counseling service should be strengthened in every high school. The objectives and duties of vocational guidance & counselor in high schools as well as in TVET colleges/Institutes should be clearly defined.
2. As it has been indicated by some of the interviewees, the practice of establishing TVET club in high schools, which is started by Oromia education bureau, has to be taken as role model for others to follow and strengthen its performance. This club could orient students in grade 9&10 and believed to give them insight concerning their choice of career.
3. According to the information obtained from the questionnaires response, female trainees have less self confidence to participation in Industrial/Construction field of study. To develop their self confidence and make them able to participate in male dominated fields, guidance and counseling service is expected to play decisive role.
4. In addition to the above suggestion, different strategies have to be designed to develop females' self confidence and interest towards Industrial/Construction area. For instance, visiting different companies, organizations and relevant enterprises could be one of the systems to give the insight to select their future career. Promoting female role models is also very helpful to encourage female students to participate in Industrial/Construction field of study.
5. To attract female students to Natural science & technology, special programs should be designed. For example, publicizing and celebrating Girls day, organizing various programs like, Females in Natural science & Technology, Females & computer science, etc, has to be practiced to initiate the interest of females, to help them realize their potential and bring about a change in the development of a country.

6. Instructors in TVET colleges should have the motive to encourage and advice female trainees on how to study and understand the courses in technical fields, so that they can be successful.

7. Students' result in national examinations could be affected due to various causes. They could obtain results less than their expectation. Hence, placing students based only on their GPA may result in a mismatch between placement and trainee's potential. Therefore, consideration should be made in deciding trainees' placement in technical & vocational streams. Besides, due attention should be given to talent distribution in the process of trainees' placement.

8. Due to negative and narrowly defined images of females in industrial/construction area, employing organizations are reluctant to hire female graduates from industrial/construction field. Therefore, to improve the attitude of the society towards female's performance in technical fields, awareness creation is vital.

9. To facilitate the smooth running of training in TVET colleges, text books, clinic, separate latrine for males & females and other necessary materials has to be adequately available. Safety of the college environment should be assured to ease the trouble of female trainees while studying late in library.

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DECLARATION

This thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis has been duly acknowledge.

Student's Name: Tiberhi Teferra

Signature _____

SUBMISSION APPROVAL SHEET

This thesis has been submitted for examination with my approval as a university advisor.

NAME K.Eagavalli

Signature _____

Date of submission _____

Appendix A

Addis Ababa University
College of Education

Department of Curriculum and Teachers'
Professional Development Studies

Questionnaire for TVET college **instructors and dept. heads in industrial and construction streams**

Dear respondent,

This questionnaire is designed for the purpose of studying the factors affecting female participation in industrial/construction field of study in TVET program. The result of the study is expected to indicate problems related to female students participation and performance in the above mentioned fields which will help to provide some suggestions or recommendations on how to overcome the problems.

So your experience and suggestions are very important for the study and I am confident that you would cooperate by offering honest and frank response.

Direction

- No need of writing your name
- Put a π mark in the box or circle the number of your choice among the given alternatives.
- Your urgent reply is appreciated.

Thank you in advance for your cooperation.

1. Background information.

1.1 Name of the college you are working in _____

1.2 Your present position (instructor, department head) _____

1.3 Department _____

* Please circle the letter of your choice for the following questions.

1.4 Age

a) 21--25 b) 26--30 c) 31-35 D) Above 35

1.5 Sex

- a) Male b) Female

1.6 Training experience in TVET colleges

- a) 1 to 3yrs. ___
b) 4 to 6yrs. ___
c) Above 6 years ___

1.7 Your qualification,

- a) Diploma ___ b) First degree ___ c) Masters ___ d) PhD ___

2. The following points may reflect your attitude on females' training in industrial/construction fields. Indicate the level of your agreement or disagreement to each statement.

Statements	Strongly agree	Agree	Un-decided	Disagree	Strongly disagree
• Industrial/construction field is meant for male.					
• Females' training in Industrial/construction fields is not as important as males.					
• Females face more problems than male do in their training in indus./const. fields.					
• Females need more help to understand during their training than males do.					
• If females get encouragement and moral support they can do equally as their male counterparts in technical fields.					
• Females perform better in soft courses than in industrial or construction.					

3. How do you evaluate the following factors as affecting the academic performance of female trainees in indu./const. area? Please indicate the level of your agreement or disagreement.

Student related factors	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Less effort by female students in studying					
Low interest of females to technical fields					
Poor high school background					
Stress during exam					
Low self confidence of female students					
Lack of physical strength					
Instructors related factors					
Lack of female instructors/role models					
Lack of instructors support					
Low expectation of instructors for females ability in their study					
Sexual harassment by instructors					
Instructors' poor educational background					
Institutional related factors					
Lack of text books/reference materials					
Lack of support from the college management					
Lack of orientation (induction) program.					
Lack of guidance and counseling service					
Trainees field placement is not according to their choice					
Lack of health service					
Difficulty to study for long hrs. in the evening in libraries due to problems of safety					
Parent related factors					
Lack of parental moral support					
or educational background of parents					
Low expectations of parents about female performance in technical fields					
Parents favor males training than females.					

4. What should be done to improve female's participation & performance in technical fields? Please rank the following possible solutions in their ranking order.

Possible solutions	1 st	2 nd	3 rd	4 th	5 th
Give clear vocational guidance & counseling at registration					
Provide tutorial class					
Perform adequate awareness creation					
Advice on how they should study & do project works					
Encourage female students while they ask/answer questions					
If there is additional please specify _____					

5. In your opinion how do you evaluate the performance or achievement of female trainees compared to males in the following fields/subjects?

Fields	High	Average	Low
Metal/GM			
Automotive			
Electronics			
Construction			

6. How do you see the effort of female trainees in doing assignment?

(Put a π mark in front of your choice)

- a) Females apply less effort than males in doing assignment__
- b) Females apply equal effort as males in doing assignment__
- c) Females apply more effort than males in doing assignment__
- d) It is difficult to decide__

7. From your observation, females ask questions in the classroom,

- a) Less frequently__
- b) Frequently__
- c) More frequently__
- d) I can not decide__

8. In your opinion, what are the reasons for most female students not to choose industrial/construction fields? Please indicate your agreement or disagreement on the following factors.

	Agree	Moderately agree	Disagree
Lack of interest for the field			
Fear of job opportunity			
Lack of self-confidence			
Fear of social acceptance			
Lack of role models			

For Department Heads ONLY

1) Are there many female dropouts in your department?

- a) Yes
- b) No

2) If your answer for the above question is “yes”, please rate the extent to which of the following factors affected them.

Factors	High	Average	Low
Economic problem			
Environmental factors			
Difficulty in the subject area			
Lack of facilities in the college			
Health problem			

3) What does the availability of the following facilities look like in your college?

Facilities	Sufficiently available	Available	Not available
1. Library			
2. Text books			
3. Class rooms			
4. Guidance & counseling service			
5. Water			
6 Electricity			
7. Clinic			
8. Sport facilities			
9. Separate latrine for male & female			
10. Workshop			

Appendix B

አዲስ አበባ ዩኒቨርሲቲ የስርዓተ ትምህርትና የመሃሪዎች ስልጠና ደንብ

አዲስ አበባ ዩኒቨርሲቲ / የስርዓተ ትምህርት ስልጠና ደንብ በሚሰጠው የ2ኛ ዓመት ሲት ተማሪዎች የሚሞላ መጠይቅ

ውጭ ሰነድዎች

የዚህ መጠይቅ ዋና ዓላማ ሲት ተማሪዎች በአዲስ አበባ ዩኒቨርሲቲ ወይም በሌሎች ዩኒቨርሲቲዎች ስልጠና ላይ ተሳትፎና ውጤታማነት የሚያደናቅፉ ችግሮችን ስለሚያውቁት ሲሆን የጥናቱም ውጤት ስንብት የሆኑትን ነገሮች ለማስወገድ የሚያስችል የመፍትሄ ሃሳብ ለመጠቀም ያስችላል ተብሎ ይጠበቃል።

ስለዚህ ስለመጠይቅ የሚሰጠው መሰረተኛ ስልጠና ወሳኝ በመሆኑ ግልጽና ተከክለኛ ምሳሌ በመስጠት ስንደሞት ተባብሮ ስሜንቱ የፀና ነው።

ማሳሰቢያ

- ስም መሃፍ አያስፈልግም
- የሚመዘገቡትን መሰረተኛ ስልጠና ስለሚያስፈልጉት ደንብ ላይ የ ✓ ምልክት ማድረግ ይቻላል።
- ስለመጠይቅ ስፋጣኝ ምሳሌ መስጠት በስጅግ ይደገፋል።

ስለሚደረግ ግልጽ ቅጽ ተብብሮ ከወደቀ ስለመሰጠቱ።

የግል ሁኔታን የሚመለከቱ መረጃዎች

- 1.1 የተቋሙ / የኮሌጁ ስም _____
- 1.2 የምታጠኘው / የምታጠናው የሙያ መስክ _____

የትክክለኛውን መሰረት ፈጽሞ ክበቡ /ክበቡ/

1.3 ስድስት

ሀ. 16 - 20 ለ. 21 - 25 ሐ. 26 - 30 መ. ከ30 ዓመት በላይ

1.4 ወደ ኮሌጅ /ተቋሙ/ ከመግባት /ሽ በፊት የተማርክበት /የተማርሽበት ቦታ/

ሀ. ገጠር ለ. ከተማ

1.5 ፃታ

ሀ. ወንድ ለ. ሴት

1.6 ስሁን ያለህበት/ ያለሽበት የትምህርት ደረጃ፣

ሀ. 2ኛ ዓመት ተማሪ

ለ. 3ኛ ዓመት ተማሪ

1.7 ስለከ 10ኛ ክፍል ድረስ በጣም በፍላጎት የሚተከታተይው የሚተወጧው የትምህርት ዓይነት ምን ነበር?

ሀ. ስጅግ በጣም የሚወደው _____

ለ. በጣም የሚወደው _____

ሐ. የሚወደው _____

1.8 የቤተሰብሽ የትምህርት ደረጃ የትኛው ነው?

የትምህርት ደረጃ	ስድስት	ስባት
ምንም ያልተማሪ		
ከ1 - 4 ያጠናቀቀ		
2ኛ ደረጃ (9 - 12)		
ከሳምንት ጠቅላይ ተቋም ዲፕሎማ / ሰርተፊኬት ያገኙ		
የኮሌጅ ዲፕሎማ		
የሙያዊ ትምህርት ዲግሪ		
ከሙያዊ ትምህርት ዲግሪ በላይ		

2. ከትምህርት ሂደት ጋር የተያያዙ መረጃዎች

2.1 ወደ ኢንዱስትሪያል /ኮንስትራክሽን ሙያ ያልመረጥሽው ስምንድነው ?
(ስማዬጦቹን 1ኛ፣ 2ኛ ወዘተ በማስት ስለቀምጧቸው)

ሀ. ሙያውን ስለማሳወደው _____

ለ. ሥራ ያለማግኘት ስጋት _____

ሐ. በራስ አስመዘኛውን _____

ሀ. በ10ኛ ክፍል ሀገር አቀፍ ፈተና ውጤት ዝቅተኛ መሆኑን _____

ሠ. በሙያው ምሳሌ የሚሆኑ ሴቶች ባስመኖራቸው _____

2.2 በርካታ ሴት ተማሪዎች ወደ ኢንዱስትሪያል /ኮንስትራክሽን ሙያ አደገቡም የሚሰ ስምንት አሰሪ?

ሀ. አስኛ

ሰ. የሰኝም

2.3 በ2.2 መሰረት ሀ ከሆነ ምክንያቱ ምን ይመስላል? ቀጥሎ ያሉትን ነጥቦች 1ኛ፣ 2ኛ በማሰት የደረጃ ቀጥር (Rank) ስጧቸው።

ሀ. በሙያው ፍላጎት ማጣት _____

ሰ. ሥራ የማግኘት ስጋት _____

ሐ. በራስ አስመዘኛውን _____

ሀ. በ10ኛ ክፍል ሀገር አቀፍ ፈተና ውጤት ዝቅተኛ መሆኑን _____

ሠ. በሙያው ተምሳሌት የሚሆኑ ሴቶች አስማግኘት _____

3. ቀጥሎ የተዘረዘረት ዓይነት ነገሮች ሴቶችና የኢንዱስትሪያል/ኮንስትራክሽን ሙያ በተመለከተ ያሰረዘሩን አመሳክክት ያንጻግረው ይሆናል። ስለዚህ በተሰጠው የደረጃ መስኪያ መሠረት ስለሚገኙት ነጥብ ክታች በሰንጠረዥ ከተሰጠው ቀጥር አቅጠጫ የ" ✓ " ምልክት አድርገ

የቀጥሮች ትርጉም:-

5. በጣም አስማማሽሁ

4. በመጠኑ አስማማሽሁ

3. አስተያየት መስጠት አልቻልኩም

2. አስማማሽሁ

1. በግራሽ አስማማሽሁ

	5	4	3	2	1
የሴቶች በኢንዱስትሪያል /ኮንስትራክሽን መስክ መሳተፍ ስኬታማ ስድገት ክፍተት አስተዋጽኦ አለው					
ሴቶች ከኢንዱስትሪያል /ኮንስትራክሽን ደብዳቤ በቢዝነስና በመሳሰሉት ሙያዎች ቢሰሩ የበለጠ ውጤት ያመጣሉ					
ሴቶች በኢንዱስትሪያል /ኮንስትራክሽን መስክ ከወንዶች ስኬት መሥራት ይችላሉ።					

<p>የሴቶችን በሲንድሮስተሪዎች /ኮንስትራክሽን ሙያ ያሳቸውን ተሳትፎ</p> <p>የሚያሰናክሱ ጉዳዮች</p>	5	4	3	2	1
<p>1. <u>ከመሥሪያ ቤቅ የተያያዙ ጉዳዮች</u></p>					
<ul style="list-style-type: none"> ▪ የመሥሪያ ቤቅ ደካማ የሚሰማዎትዎት ዘዴ 					
<ul style="list-style-type: none"> ▪ ተሳታፊዎች እንዴት ማጥናት እንደሚችሉ ከመሥሪያ ቤቅ ምክር ስለሚያገኙ 					
<ul style="list-style-type: none"> ▪ መሥሪያ ቤቅ ሰራተኞች ውጤት ያሳቸው ዝቅተኛ ግምት 					
<p>2. <u>ከተሳታፊዎች ጋር የተያያዙ ምክንያቶች</u></p>					
<ul style="list-style-type: none"> ▪ ሴቶች ስጥናታቸው ተኩረት ስለመስጠት 					
<ul style="list-style-type: none"> ▪ ሴት ሰራተኞች በሙያው ላይ ያሳቸው ዝቅተኛ ፍላጎት 					
<ul style="list-style-type: none"> ▪ የሁለተኛ ደረጃ ተምህርታቸውን ደካማ መሆን 					
<ul style="list-style-type: none"> ▪ የሴት ሰራተኞች በራስ የመተማመን ስሜት ዝቅተኛ መሆን 					
<ul style="list-style-type: none"> ▪ የሰራተኛ ብቃት ደካማነት 					
<ul style="list-style-type: none"> ▪ ስለሙያው ያለው ግንዛቤ 					
<ul style="list-style-type: none"> ▪ ተጨማሪ ማብቂያ ካለ ይገለጹ 					
<p>3. <u>ከቤተሰብ ጋር የተያያዙ ምክንያቶች</u></p>					
<ul style="list-style-type: none"> ▪ ከቤተሰብ የሞራል ድጋፍ ማጣት 					
<ul style="list-style-type: none"> ▪ የቤተሰብ ዝቅተኛ የት/ደረጃ 					
<ul style="list-style-type: none"> ▪ ቤተሰብ ሴቶች በቴክኒክ ሙያዎች ያሳቸውን ብቃት በተመሰከተ ያለው ዝቅተኛ ግምት 					
<p>4. <u>ከተቋማት ጋር የተገናኙ ምክንያቶች</u></p>					
<ul style="list-style-type: none"> ▪ የመሰረተ /ስጥረት 					
<ul style="list-style-type: none"> ▪ ከኮሌጁ ስለተዳደረ ድጋፍ ማጣት 					
<ul style="list-style-type: none"> ▪ ስለሙያው ገለጻ ማጣት 					
<ul style="list-style-type: none"> ▪ የምክር ስገሰገሎት ስለመኖር 					
<ul style="list-style-type: none"> ▪ የጤና ስገሰገሎት ስለመኖር 					

7. እስከአሁን ባለፈው ዓመት በሮካታ ሴት ተማሪዎች ሳይንስ ነክ ትምህርቶች ሳይ በብዛት አዎንታዊም በሚሰው ሃሳብ ትስማሚያለች ?

ሀ. አዎ እስማማለሁ

ለ. አስማማም

8. በተራ ቀን 7 መሰለሽ " አዎ እስማማለሁ " ከሆነ ምክንያቱ ምን ይመስረዋል? ቀን- ያሉትን ነጥቦች በደረጃ አስቀምጧቸው (ምሳሌ: - 1ኛ፣ 2ኛ፣ 3ኛ)

ሀ. በሳይንስ ትምህርት ሴቶች ከወንዶች እኩል ውጤት ማምጣት ስለማይችሉ _____

ለ. ሴቶች በሳይንስ ትምህርት እኩል የመስራት ችሎታ የሳቸውም የሚሰ ግምት በብዙዎች ዘንድ ስላለ _____

ሐ. ሴቶች በራሳቸው ስለማይተማሙና ስለመስራትም ስለማይጥሩ _____

9. ቤተሰቦች በኢንዱስትሪያል /ኮንስትራክሽን መስክ ስለ ሴቶች ያሳቸው አመለካከት እንዴት ነው?

ሀ. ሴቶች እኩል እንደሚሰሩ ያምናሉ

ለ. ሴቶች በነዚህ ሙያዎች ያሳቸው ብቃት ዝቅተኛ ነው ይሳሉ ?

ቀን- ሳሉት ጥያቄዎች መሰሉን መርጠሽ ፈታሉን ክበቢ ::

10. ስንቼ ባለፈበት ክፍል ውስጥ ሴቶች የተሰጣቸውን የቤት ሥራ በሙሉ ራት በኩል ያሳቸው ትጋት

ሀ. ከወንዶች እኩል ይጥራሉ

ለ. ከወንዶች የበለጠ ይጥራሉ

ሐ. ዝቅተኛ ጥረት ያደርጋሉ

መ. ስሙወሰን ያሳቸዋል

11. በአንቺ አስተያየት በክፍል ውስጥ ጥያቄ በመጠየቅ በኩል

- ሀ. በብዛት ይሳተፋል.
- ለ. በመጠኑ ይሳተፋል.
- ሐ. በጥቂቱ ይሳተፋል.
- መ. ለመገመት እቸገራለሁ.

12. በሴቶች ተሳትፎ በኩል ችግሮች መፍትሄ ሊሆኑ የሚችሉ ነጥቦች ቀጥሎ ተቀምጠዋል። እንዲያው ሃሳብ ከሌላው በማበላለጥ (Rank በመስጠት) የ "✓" ምልክት በመስጠት አመልክቺ

የመፍትሄ ማሳሰቻ	1ኛ	2ኛ	3ኛ	4ኛ	5ኛ
ግልፅ የሆነ የሸኬሽናል ጋይዳንስና የምክር አገልግሎት ለተማሪዎች መስጠት					
ተጨማሪ የትምህርት ጊዜ መስጠት (Tutorial class)					
የማህበረሰቡን አመለካከት ለመለወጥ ጥረት ማድረግ					
እንዴት ማጥናት እንዳለባቸው አቅጣጫ ማስያዝ					
ሴቶች በክፍል ውስጥ ጥያቄ ሲጠይቁና መልስ ሲሰጡ ማበረታታት					
ተጨማሪ ካለ ይገለፁ.....					
.....					

Appendix C

አዲስ አበባ ዩኒቨርሲቲ የስርዓተ ትምህርትና የህመም ህድገት ሙያ ሰነድ ትምህርት ክፍል

በቴክኒክና ሙያ ትምህርት/ስልጠና ኮሌጅ በኢንዱስትሪያል/ኮንስትራክሽን ሙያ
በሚሰለጥኑ 2ኛ ዓመት ሠልጣኞች የሚሞላ መጠይቅ፡-

ውድ ሠልጣኞች

የዚህ መጠይቅ ዋና ዓላማ ሲት ተማሪዎች በኢንዱስትሪያል ወይም በኮንስትራክሽን
ሙያ ያላቸውን ተሳትፎና ውጤታማነት የሚያደናቅፉ ችግሮችን ለይቶ ለማጥናት
ሲሆን የጥናቱም ውጤት እንቅፋት የሆኑትን ነገሮች ለማስወገድ የሚያስችል የመፍትሄ
ሃሳብ ለመጠቀም ያስችላል ተብሎ ይጠበቃል።

ስለዚህ ለመጠይቁ የሚሰጠው መልስ በጣም ጠቃሚና ሠገኛ በመሆኑ ግልፅና ትክክለኛ
ምላሽ በመስጠት እንደምትተባበሩኝ እምነቴ የዐና ነው።

ማሳሰቢያ

- ስም መጻፍ አያስፈልግም
- የሚመርጡትን መልስ ፊደሉን መክበብ ለባዶ ቦታዎች ደግሞ የ✓ ምልክት
ማድረግ ይቻላል።
- ለመጠይቁ አፋጣኝ ምላሽ መስጠት በእጅጉ ይደገፋል።

ስለሚደረግልኝ ቀና ትብብር ከወዲሁ አመሰግናለሁ።

የግሰ ሁኔታን የሚመለከቱ ሙሉ ጸዎች

1.1 የተቋሙ /የኮሌጁ ስም _____

1.2 የምታጠኝው /የምታጠናው የሙያ መስክ _____

የትክክለኛውን መሰከ ፈደሰ ክበበው /ክበቢው/

1.3 ዕድሜ

ሀ. 16 - 20 ለ. 21- 25 ሐ. 26 - 30 መ. ከ30 ዓመት በላይ

1.4 ወደ ኮሌጅ /ተቋሙ/ ከመግባትህ /ሽ በፊት የተማርክበት /የተማርሽበት ቦታ/

ሀ. ገጠር ለ. ከተማ

1.5 ፆታ

ሀ. ወንድ ለ. ሴት

1.6 የቤተሰብ የትምህርት ደረጃ

የትምህርት ደረጃ	እናት	አባት
▪ ያልተማሩ		
▪ ከ1ኛ - 8ኛ		
▪ ከ9 - 12ኛ		
▪ ከተቋም ዲፕሎማ/ሠርተፊኬት (ከሙያ ማሠልጠኛ ከነርሲንግ ወዘተ፡)		
▪ የኮሌጅ ዲፕሎማ		
▪ የመጀመሪያ ዲግሪ		
▪ ከመጀመሪያ ዲግሪ በላይ		

ቀጥሎ ላሉት ጥያቄዎች መልሱን ክበቡ

2. ከትምህርት ሃይት ጋር የተያያዙ መረጃዎች

2.1 አሁን በምትሰለጥኑበት / በምትሰለጥንበት የሙያ ዓይነት ላይ የወላጆች አመለካከት እንዴት ነው ?

- ሀ. ስልጠናዬን ይደግፋሉ
- ለ. አይደግፉም
- ሐ. ምንም አስተያየት የላቸውም

2.2 እስከ 10ኛ ክፍል ድረስ በፍላጎት የምትከታተደው / የምትከታተለው የትምህርት ዓይነት ምን ነበር

- ሀ. እጅግ በጣም የምወደው _____
- ለ. በጣም የምወደው _____
- ሐ. የምወደው _____

2.3 በስልጠናው ላይ እንደሌላው ያታ ሁሉ ጥሩ ውጤት አስመዝግባለሁ የሚል እምነት አለሽ / አለህ ?

- ሀ. አዎ
- ለ. የለኝም

2.4 ለ2.3 ጥያቄ መልሱ የለኝም ከሆነ ቀጥሎ ያሉትን ምክንያት ሊሆኑ የሚችሉ ነጥቦች የደረጃ ቁጥር ስጫቸው / ስጣቸው (ምሳሌ 1ኛ. 2ኛ. ወዘተ)

- ሀ. ለሙያው ፍላጎት ስለሌለኝ _____
- ለ. እንደሌላው ያታ ጠንካራ ስላልሆንኩ _____
- ሐ. በችሎታዬ ስለማልተማመን _____
- መ. ውጤታማ ለመሆን ከሌላው ያታ የበለጠ እርዳታ ስለሚያስፈልገኝ _____

2.5 በጥናት በኩል አብዛኛውን ጊዜ የሚረዳሽ / የሚረዳህ ማነው? _____

- ሀ. መምህራን
- ለ. ተማሪዎች
- ሐ. የኮሌጁ ካውንስለር
- መ. ማንም አያግዘኝም
- ሠ. ወላጆች ወይም ሌላ ቤተሰብ

2.6 የተሰጠውን የቤት ሥራ ከትምህርት ሰዓት በኋላ በቶሎ ትሰራያለሽ / ትሰራለህ?

- ሀ. አዎ
- ለ. በቶሎ አልሰራም

2.7 ለ2.6 መልሱ "ለ" ከሆነ ቀጥሎ ከተጠቀሱት ውስጥ ምክንያት የሚሆኑት የትኞቹ ናቸው? (ከአንድ በላይ መልስ መምረጥ ይቻላል)

ሀ. የመጽሐፍት እጥረት

ለ. አብዛኛውን ጊዜ የሚሰጠውን ትምህርት ባለመረዳት

ሐ. ጊዜ ስለሌኝ

መ. የተመቻቸ ቦታ ስለማላገኝ

ሠ. ከመምህራን ድጋፍ ባለማግኘቴ

የተለየ ነጥብ ካለ መጨመር ይቻላል _____

2.8 የአሁኑን ሙያ ለመሰልጠን የመረጥከው /ሽው ለምንድ ነው? (1ኛ፣ 2ኛ በማለት በደረጃ አስቀምጧቸው)

ሀ. ሙያውን ስለምወደው _____

ለ. ሥራ ቶሎ እንደማገኝበት ስለምገምት _____

ሐ. በቤተሰቦች /ንደኞች ግፊት _____

መ. በሙያው የተመደቡ ሴት ሠራተኞችን በማየት _____

2.9 አብዛኞቹ ሴት ሰልጣኞች የኢንዱስትሪ /ኮንስትራክሽን ሙያ ላይ በብዛት አይሳተፉም በሚለው ሃሳብ ትስማሚያለሽ / ትስማማለህ?

ሀ. አዎ እስማማለሁ ለ. አልስማማም

2.10 ለተራ ቁጥር 2.9 መልስሽ/ መልሱ " አዎ እስማማለሁ " ከሆነ ምክንያቱ ምንድነው ?

ቀጥሎ ያሉትን ነጥቦች በደረጃ አስቀምጧቸው / አስቀምጧቸው (ምሳሌ:- 1ኛ፣ 2ኛ)

ሀ. ለሙያው ፍላጎት ማጣት _____

ለ. ሥራ የማግኘት ስጋት _____

ሐ. በራስ አለመተማመን _____

መ. በ10ኛ ክፍል ሀገር አቀፍ ፈተና ሠራት ዝቅተኛ መሆን _____

ሠ. በሙያው ተምሳሌት የሚሆኑ ሴቶች አለማግኘት _____

3. ቀጥሎ የተዘረዘሩት ዓረፍተ ነገሮች ሴቶች በኢንዱስትሪያልና በኮንስትራክሽን ሙያ ያሳቸውን ተሳትፎ በተመለከተ ያሰህን /ሽን አመለካከት ያንግባርቅ ይሆናል፡፡

ስለዚህ በተሰጠው የደረጃ መስኪያ መሠረት ስለደንዳንዱ ነጥብ ከተሰጠው ቀጥሮ አቅጣጫ የ " ✓" ምስክት አድርገ /አድርግ፤

የቀጥሮቹ ትርጉም፤

- 5. በጣም ስለማሳሳት
- 4. በመጠኑ ስለማሳሳት
- 3. ስለተያየት መሰጠት አሰቃቂ
- 2. ስለማሳሳት
- 1. በጥቅም ስለማሳሳት

	5	4	3	2	1
ሴቶች በኢንዱስትሪያል /ኮንስትራክሽን መስክ መሳተፍ ስለኮኖሚ እድገት ከፍተኛ አስተዋጽኦ አሰጡ					
ሴቶች ከኢንዱስትሪያል / ኮንስትራክሽን ደብቅ በቢዝነስና በመሳሰሉት ሙያዎች ቢሰሉኑ የበሰጠ ውጤት ያመጣሉ					
ሴቶች በኢንዱስትሪያል /ኮንስትራክሽን መስክ ከወንዶች እኩል መሥራት ይችላሉ					
<u>የሴቶችን በኢንዱስትሪያል /ኮንስትራክሽን ሙያ ያሳቸውን ተሳትፎ የሚያሰናክሱ ጉዳዮች</u>					
1. <u>ከመሥሪያ ቤቅ ጋር የተያያዙ ጉዳዮች</u>					
▪ የመሥሪያ ቤቅ ደካማ የማስተማር ዘዴ					
▪ ተማሪዎች እንዲት ማጥናት እንዳስባቸው ከመሥሪያ ቤቅ ምክር ስለማያገኙ					
▪ መሥሪያ ቤቅ በሴት ሰራተኞች ወጤት ያሳቸው ዝቅተኛ ግምት					
2. <u>ከተማሪዎች ጋር የተያያዙ ምክንያቶች</u>					
▪ ሴቶች ሰጥናታቸው ትኩረት አሰጠላቸው					
▪ ሴት ሰራተኞች በሙያው ሳይ ያሳቸው ዝቅተኛ ፍላጎት					
▪ የሁለተኛ ደረጃ ትምህርታቸው ደካማ መሆን					
▪ የሴት ሰራተኞች በራስ የመተማመን ስሜት ዝቅተኛ መሆን					

Appendix D

Interview questions for deans, V/deans, and vocational counselors.

The purpose of this interview question is to find out the factors for the under representation of female trainees in industrial/construction field of study. Besides, it is assumed to help in directing possible solutions for problems encountered by female trainees.

1. To what extent do you know that female students do not choose technical field of study?
2. What is your attitude towards female performance in Indus./const. area?
3. Do you think the role of females in industrial/construction area important for economic development of a country?
4. What do you suggest parents of girls can do to encourage their children study industrial/construction fields?
5. What factors do you think could be reasons for females under representation in technical fields?
6. What efforts do you think should be done by the society to encourage female's participation?
7. What should be the role of schools to facilitate females' participation in indust./const. fields?

DECLARATION

This thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis has been duly acknowledge.

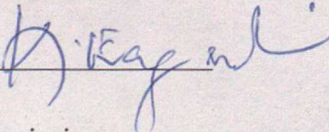
Student's Name: Tiberhi Teferra

Signature 

SUBMISSION APPROVAL SHEET

This thesis has been submitted for examination with my approval as a university advisor.

NAME K.Eagavalli

Signature 

Date of submission _____

ADDIS ABABA UNIVERSITY

ADDIS ABABA ETHIOPIA