

***THE IMPLEMENTATION OF WATER TECHNOLOGY
CURRICULUM IN TWO SELECTED TVET
COLLEGES IN OROMIA REGION***

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BY

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TABLE OF CONTENTS

	<i>Pages</i>
<i>Acknowledgements</i>	<i>I</i>
<i>Table of contents</i>	<i>II</i>
<i>List of tables</i>	<i>V</i>
<i>Acronyms and Abbreviations</i>	<i>VI</i>
<i>Abstract</i>	<i>VII</i>

CHAPTER ONE

1. The problem & Its Approach.....	1
1.1. Background of the study	1
1.2. Statement of the problem	4
1.3. Objectives of the study	5
1.4. Basic Research Questions	6
1.5. Significance of the study	6
1.6. Delimitation of the study	7
1.7. Limitation of the study.....	7
1.8. Operational Definitions of key Terms.....	8

CHAPTER TWO

2. Review of the Related Literature	9
2.1. Historical Development of Technical and Vocational Education.....	9
2.2. The Importance of Technical and Vocational Education & Training....	12
2.3. Technical and Vocational Education & Training policy.....	16
2.4. The objectives of TVET programme.....	19
2.5. An Overview of TVET in Ethiopia. /TVET in Ethiopian Context.....	21
2.6. The Technical and Vocational Education & Training Curriculum.....	25
2.7. Courses Offered in Middle level TVET Curriculum.....	27

2.8. The Concept of Curriculum Implementation.....	29
2.8.1. The Curriculum Implementation Process.....	30
2.8.2. Streaming & Occupational Placement of Students.....	33
2.8.3. The TVET Apprenticeship Training Programme.....	35
2.9. Factors Affecting the Effective Implementation of Curriculum.....	38
2.9.1. The Human Factors.....	39
2.9.2. Implementation Strategies and Resource facilities.....	41
2.9.3. The Nature of Curriculum/ Characteristics of the Innovation.....	44

CHAPTER THREE

3. Research Design and Methodology.....	47
3.1. Research Method.....	47
3.2. Sources of Data.....	47
3.3. Sampling Techniques.....	47
3.4. Instrument for Data collection.....	48
3.5. Data Analysis.....	49

CHAPTER FOUR

4. Presentations and Data Interpretation.....	50
4.1. Background of the Respondents.....	50
4.2. The Relevance of Water Technology Curriculum	53
4.3. The availability of Instructional materials in teaching/learning Process.....	57
4.4. The Role of Administration service in Curriculum Implementation.....	60
4.5. Respondents concerning Apprenticeship programme.....	64
4.6. Trainer's Activity and Subject area knowledge.....	65
4.7. Trainer's professional and Training field area.....	67

CHAPTER FIVE

5. Summary, Conclusions and Recommendations.....	71
5.1. Summary.....	71
5.2. Conclusions.....	74
5.3. Recommendations.....	74
Bibliography.....	76
Appendices.....	82

List of Tables

Table I: The number of Respondents as sample size in selected TVET
Colleges48

Table II: Respondents characteristics.....50

Table III: Respondents views regard to Relevance of the Water Technology
Curriculum.....53

Table IV: Frequency Distribution of Respondents concerning material
provisions.....58

Table V: Respondents views regarding the Administration service.....62

Table VI: Students views concerning Apprenticeship Training.....64

Table VII: Trainees’ Respond concerning Teachers Activity.....66

Table VIII: Percentage and Frequency Distribution Concerning Trainers’
Professional Training Field Area.....69

ACRONYMS AND ABBREVIATIONS

ADLI	Agriculture Development Led Industrialization
ESDP	Educational Sector Development Program
ETP	Education and Training Policy
FMECG	Federal Ministry of Economic Cooperation of Germany
ICDR	Institute of Curriculum Development and Research
IER	Institute of Educational Research
MOE	Ministry of Education
NGO	Non-Government Organization
OEB	Oromia Education Bureau
SDCs	Skill Development Centers
TVET	Technical and Vocational Educational and Training
UNESCO	United Nation Education Scientific and Cultural Organization
OTVETA	Oromia Technical and Vocational Education and Training Agency
MWR	Ministry of Water Resource
EMT	Electromechanical Technology
RWSS	Rural Water Supply and Sanitation
SSID	Small Scale Irrigation and Drainage
NTTC	Naziret Teachers Training Colleg

ABSTRACT

The purpose of this study was to examine the implementation of the curriculum of Water Technology stream in two selected Middle-level TVET College of Oromia Region. To meet this purpose a descriptive survey research method was employed in the study. In this endeavor, data were collected through questionnaire, interview and Observation. The subjects of the study were 140 trainees, 30 trainers, 4 Deans and 2 vocational counselors. The interview respondents were purposely selected from the two selected study areas, namely: Asella and Welliso TVET colleges. The study revealed that the quality of the implementation of the water technology curriculum was affected by many factors related to inadequate training materials such as machines, hand-tools, workshop and equipment, the nature of the curriculum designed, lack of administration service and lack of appropriate teaching methodology. Consequently, it has indicated that the implementation of the program in these water technology streams was marked by the existence of: theory-laden instructions and lack of adequate awareness on the part of the Regional TVET Agency and the administration of the institutions. Based on the findings of the study, it is suggested that the sampled TVET institution workshops must be equipped with adequate and necessary training materials & equipment, the water technology curriculum needs revision, the trainers must get updating training in the area of methods of teaching and better relationship must be established between OTVETA and Private Companies to facilitate apprenticeship training are recommended.

CHAPTER ONE

1. The problem and its Approach

1.1. Background of the study

Education and Training play a crucial role in helping individuals and societies to adapt to profound social, economic and cultural changes and foster the development of human capital needed for economic growth. The ability of education and training systems to fulfill these roles depends on whether teachers develop and deliver educational content in ways that meet the needs of today's and tomorrow's citizens(UNESCO,2001:5).

The need for trained workers has become extremely important to meet the ever increasing technological demands of our society. No longer can persons hope to find employment in business and industry without some kind of education and training (Ecclestone, 1996:83). All worthwhile occupations require a minimal amount of training, and many demand years of planned education and skill-development activity.

TVET is a part of education system that is designed to equip trainees with the knowledge, skill, attitude and capacities required to make them ready for the world of work (Ziderman, et al., 1993:9). The development of any country is related to the vocational and technical skills of its people to utilize the natural resources.

Water is a precious natural resource – vital for life, national development and the environment. It can be an instrument for economic survival and growth. It also helps to reduce poverty besides its importance for household needs and livestock. In addition to drinking and personal hygiene, water is needed for agricultural production, industrial and manufacturing processes, hydro-electric power generation, waste assimilation, recreation, navigation, enhancement of fish and

wild life, and a variety of other purposes. Ethiopia is endowed with one of the largest surface fresh water resources in Sub-Saharan Africa, sometimes considered as the water tower of East Africa.

Since 1992, Ethiopia has been implementing the Agricultural-Development-Led Industrialization (ADLI) Strategy that identifies agriculture as the key to growth and poverty reduction in the short and medium term (MWR, 2000:36). ADLI contains various components needed for agricultural growth, including the provision of technology and finance, the construction of a rural infrastructure and external markets, and paying attention to the role of TVET and the private sector (Lasonen, 2005:16).

So that TVET equips individuals with relevant skills and knowledge that enables trainees to be competitive in the labor market or to create their jobs. Technical and vocational education offers a specific training in particular vocations for ensuring the students transition from school to the world of work.

The primary objectives of the TVET programs in Ethiopia is to provide various skill training for the present and future labor force in order to adapt to the requirements of the labor market.

Apparently, the 1994 education and training policy outlined the following major objectives of the middle level TVET programme:

- To create middle level technical work force in various occupation
- To provide adequate skills and knowledge that builds problem solving capacity.
- Enable trainees to utilize resources wisely and economically for the benefit of individuals and the society.
- Enables to take business risks by establishing their own business relevant to their skill trade (MOE, 2004:32).

These days, substantial share of governments education budget goes to the TVET; that is undertaking construction of new TVET centers, upgrading the existing centers and furnishing and equipping the TVET facilities (MOE, 2004:18). Thus, in assessing the country's water resources careful statements as to its availability in time and space is imperative. Therefore, the Ethiopian government formulates the new water resources management policy (MWR, 2000:3).

To enhance and promote all national efforts towards the efficient, equitable and optimum utilization of the available water resources of Ethiopia for significant socio-economic development on a sustainable basis.

In order to achieve the above water resource management policy, a successful training system should be institutionalized at all levels of regional, zonal and urban/community water supply bodies. Thus, in 2003 the Ethiopian government establishes the new Water Technology streams to train skilled manpower for utilizing the water resources. TVET consists of water technology as one of its major component fields of study. The water technology college offers three main programs: Small Scale Irrigation & Drainages, Rural Water Supply & Sanitation and Electro-mechanical Technology.

The existing TVET curriculum is practice oriented to the extent that it constitutes 70% practice and 30% theory. It involves practical competency rather than the existing teaching script (OEB, 2006:10). Teaching practical skills is different from teaching knowledge or theory because it requires some special considerations (Lasonen, et al., 2005:68). It is the fact that teaching is an activity that requires continuous improvement through a systemic assessment of actual teacher performances. The effect of trainers in any school is profound and it has even a long lasting impact on the students (Aggarwal, 1996:36).

1.2. Statement of the Problem

Even though Ethiopia has abundant water resources, the country has repeatedly suffered from drought and the aridity of much of its lands (MWR, 2002:3).

The major problems of the water sector are lack of adequate qualified technical manpower, workshop and laboratories, materials-equipment, machine, specialized training institutes to develop professional skills and attitudes through short-term and on-the-job-training (UNESCO, 1973:28).

The regional water technology colleges and organizations could play a key role in training the human resources needed for successful implementation of the water sector development program (MWR, 2002:65, and UNESCO, 2004:202).

In addition, lack of regulatory framework for the planning and development of the local water supply schemes, together with the lack of capacity in the functioning of an improved institutional structure and absence of managerial and technical systems are hampering the achievement of the water sectors' objectives.

Therefore, to ensure the realization of the water sectors' objectives, promoting the training and development of staff at different level are critical factors for institutional capacity building.

Some of the recent research papers, for instance, Megerssa (2007:12), Bizuneh (2006:8) and Mesfin (2003:22) revealed that, the current TVET training quality is inefficient and handicapped by a number of limitations like insufficient number of qualified teachers, limited funding, inadequate resources, outdated occupational training standards, lack of stakeholders participation, and inefficient management. With regard to this UNESCO's (2004:70) study also confirmed that, the existing vocational training in many developing countries is inefficient. Curriculum implementation is a formidable task in most countries and also the teaching method and streaming of trainees has its own impacts.

Today, several manpower shortages in such a key professional fields as hydraulic, irrigation, water resources and geo-technical engineering as well as in the agricultural sciences, including soil and irrigation agronomy are observed in Ethiopia in general and in Oromia region in particular.

Though the government is boosting both in terms of enrollment and increased in current quality of the training from time to time, people are usually heard complaining about the effectiveness of the programs in preparing the trainees with right skills that the labor market requires.

The researcher was interested to conduct a research on the implementation of water technology curriculum at middle -level TVET colleges in Ethiopia with specific reference to the Oromia Region.

1.3. Objectives of the Study

The general objective of this study was to analyze the current practices of the implementation of the TVET water technology curriculum, with particular reference to Asella and Welliso.

The specific objectives of this research study were:

- ❖ Investigating factors affecting the implementation of middle level TVET Water Technology curriculum,
- ❖ Examining the appropriateness of training methods and techniques employed by trainees,
- ❖ Looking at the extent of human, materials, and financial resources available and used to implement water technology curriculum,
- ❖ Identifying major problems and to suggest possible solutions for the improvement of the implementation of middle level TVET water technology curriculum in the region.

1.4 Basic Research Questions

Based on the statement of the problem and the objectives of the study, the researcher set the following research questions:

1. How is the allocation of students into the department of Water technology determined?
2. Are there adequate training facilities and effective utilization of the existing resources in the colleges?
3. How the apprenticeship training programme was implemented?
4. What type of training methods have been employed to implement the Water technology curriculum?
5. What major constraints of the program that required serious improvement for better implementation of the programme?

1.5 Significance of the Study

Any technical and vocational education and training program should be implemented in order to respond to the social and economic demand of a country. The effectiveness of the developed curriculum could be clearly understood after implementation. Hence, assessing the status of water technology TVET Curriculum implementation and identifying the major problems encountered by the program and there by generating necessary information for decision making and corrective action is essential. Thus, it is hoped that the findings of this study would help the following instances:

1. It provides information for Regional water sectors, Instructors, Administrative personnel's, Regional TVET Agency's to improve the actual practice in the study area and to find solution for the problems.
2. It helps curriculum planners in identifying the instructional strategies and methods that are functioning well that need to be improved.

3. Moreover, the study may serve as stepping- stone for further and in-depth studies in the area of water technology curriculum.

1.6. Delimitation of the Study

In Ethiopia there are nine Water Technology TVET colleges. To make the study relatively manageable, it is delimited to only those water technology TVET colleges that are found in Oromia Region.

In Oromia Region there are two water technology colleges, namely Asella and Welliso water technology campus, which are administered under Regional TVET Agency and with financial support of Federal Ministry of Water Resource. Furthermore, it is delimited to water technology curriculum implementation focused on:

1. Small Scale Irrigation& Drainage(SSID)
2. Rural Water Supply and Sanitation (RWSS)
3. Electromechanical Technology (EMT) which are implemented in both colleges of the region.

1.7. Limitation of the study

The study was conducted to assess the current practice of the implementation water technology curriculum. In conducting this study, some limitations were encountered. The following were of the major factors that contributed to the limitations of the study.

- There was a problem of getting documents that are related to the water technology curriculum.
- Lack of related research work materials on the topic was one of the shortcomings.

- Lack of written books in the topic including electronic media were also some among the many. However, the researcher tried to overcome those pitfalls and finally emerged with this outcome.

1.8. Operational Definitions of key terms

Curriculum: It refers to the planned/ written document designed for training

Implementation: It refers the method of putting the planned policy to practice or the strategy of changing the planned policy to action/ the way of exercising the curriculum.

Skill: Aspect or part of competency that describes all methods and techniques that are related to activities.

Trainees: means a person who participates in technical and vocational education and training programme provided by a training institution with a view to acquiring skill and Knowledge on water technology

Trainers: Instructors who provide and perform training activities in TVET.

Water Technology: According to this study a branch of TVET or one stream of TVET that includes EMT, RWSS and SSID departments.

Chapter Two

2. Review of Related Literature

2.1. Historical Development of Technical and Vocational Education.

National development of a country could be seen from economic, social and political aspects. The social sector in turn encompasses culture, health, education and economic development. Economic development of a country depends on the availability of trained manpower when the economy of a certain country develops, the education sector will have a chance to promote its activity in scope and content due to institutional and financial support (Yekunoamlk, 2000:223)

The history of vocational education is as old as the history of human beings. It started when people learned essential skills through a trial and error method and advanced when they started to acquire education in its informal form. Generally, it stated when man began to live together and started to produce for his basic needs (food, clothing and shelter). Historically, work was the true site of vocational training. In this regard, the primitive society used the digging sticks, stones, bones and fire to clear the vegetation and hunting and gathering their food. During this period, the process of learning was simple imitation of skills and knowledge passed from father to son and from mother to daughter continuously and verbally Abramson and others (in Yekunoamlak, 2000:223).

Gradually, people learned to use fire to cook and melt metals to produce tools. Consequently, these skills necessitated division of labor and sedentary life that made people work as smiths, carpenters, weavers etc. These ancient craftsmen (like Greeks, Romans and men of the middle age) added much to the civilization of mankind, and these arts and technical skills made the life of the people more

comfortable and easy. At that time, the home served as the production center or craftsmen's shop and the place of living, while apprenticeship was the means of providing training (UNESCO, 1998:18, in Bizuneh, 2006:15).

In most African societies, parents and elders played a very important role in the skill training of young children. The mother educated the female child how to live and work as a woman in the society, and the father and the elders trained the male children to become competent craftsmen, and responsible skilled persons (Benson, 1987:33).

In this regard, Antonios (2006:21) noted that in most African societies, life work and learning are inseparable she argued that in such societies, knowledge is holistic, that is to say, it is not compartmentalized in to theoretical and practical, intellectual and emotional a mental and spiritual. Every member of the society is expected to acquire it in order to live responsible life as an average member of the society he/she represents.

Traditional skills training existed until the 1400s in the developed world. But it is still continuing to exist in most part of the developing world, especially in Africa, where it is used as a major provider of vocational skill training (Antonios, 2006:22). Technical training in the modern sense developed during the industrial revolution period in the 18th century, in order to produce the skilled human power required for the newly established factories at that period, in which TVET was seen as an opportunity for the people leaving the peasantry life (Delors, 1998:310).

Technical and Vocational education and training (TVET) is designed and intended to develop skills that can be used in a specific occupation or job. In England and Wales, it is known as further education and in Colombia and other South American countries it is called SENA. In most of the world the most common label is technical education (Benson, 1987:34).

In the mid of the 19th century, the mass production was developed and individual craftsmen became obsolete and the production of goods shifted from the small shops in to huge factories. It was the huge production system that forced the big factories to establish vocational schools, in or near their own plants, for the aim of training their own future workers before they actually assume their production duties (Delors, 1998:312).

According to Benson (1987:34) there are three essential characteristics of vocational characteristics of vocation education:

- a) The programs are intended to serve people who are seeking to enter the work force at some level above that of unskilled labor
- b) The jobs for which people are being prepared do not normally require application to hold a university or baccalaureate degree; and
- c) A portion of the training is offered in a publicly administered form of instruction.

In the twentieth century, technical schools were expanded and post-school trainings were arranged to have a strong link with industries. In this period, more over, the night classes were expanded and enabled the workers to improve their skills when they were out of work. This period was the period when there was a great pressure to expand TVET to satisfy the needs for the labor market and when industrialized countries understood that the qualified manpower had move decisive importance than any other production factors (Maris, 1994:86).

The 21st century, is the era of information and communication on one hand, and of knowledge and skill on the other hand where computers and other recent technologies do not only provide a myriad of new products for the markets but also the way the work is carried out Teklehaimanot (in IER, 2002:1).

Now a day, the development of the world economy and society is influenced and accelerated mainly by three factors: demography, the world wide interdependence

(globalization), and scientific and technological progress. This dynamism of technology and the world wide globalization put TVET on the top of the development agenda of the countries in order to produce well-trained and qualified man-power in the shortest possible period of time to cope with the changing situation and to compete in the world market (St. Mary's College, 2004:16)

2.2. The importance of technical and vocational education & training

The development of any country depends on the active and responsive participation of its population. Without having an adequate work force with the necessary knowledge, skills and attitudes, one cannot imagine changes that lead to development in the social and economic sectors.

Several educators claim that education is the cornerstone for any development. Ecclestone 1996 in Antonios (2006:275), for instance, writes, the quality of the economic performance of a country is a function of the quality of the performance of its education. While strengthening this, Atchoarena and Esquiú (2002:42) on their part also contend that no country can give up training its young people because their technical skills are needed to increase productivity both in the formal and informal sectors of its economy.

It is justifiable that every government's economic development policy usually includes human resources development component, most of which will be realized through education in one form or another. Indeed, among the different categories of education, it is the technical and vocational education and training (TVET) that is largely believed to determine the competitive strength of a country's productive work-force (Antonios, 2006:276).

TVET represents a comprehensive and inclusive approach intended to help people achieve their full educational potentialities and as a result make meaningful participation in the development efforts of their community. In most countries of the world, thus, the introduction of systematic, well planned and rigorous programs of TVET has become a vital component of education and training programs (UNESCO, 2002:19).

The purpose and objectives advanced for technical and vocational education in countries portrays the scope within which TVET is to be implemented and developed. An over view of various countries TVET programmes clearly indicates the similarity of purpose and agreement in several objectives. To meet the challenges of rapid economic and technological changes or to implement poverty and unemployment alleviation strategies, countries have pursued a philosophy of vocationalisation to which TVET is instrumental (World Bank, 1993:16). On this line, Gillis (1973:47), indicates that, vocationalisation is a reform to replace institutions that offer academic oriented curricula with technical, agricultural and vocational courses which give due emphasis to the training of practical skills.

The TVET was needed to strengthen the acquisition of knowledge and skills required by most manufacturing and service industries and to give the labor force more flexibility to meet the changing requirements of the workplace (Atchoarena and Andre 2002:32). According to Atchoarena, TVET has been regarded as a tool for economic recovery and development. This was, in fact, due to the very conviction that prospects for economic growth and development are to a large extent for both traditional and new industries, such as agriculture, business, technical services, etc.

Technical and vocational education serves different purposes. Smith (1990:262) writes it is used to:

- ⇒ Provide skills and experience considered valuable by students;
- ⇒ Facilitate the mastery of both non-vocational and vocational skills needed by students.
- ⇒ Provide hands on learning opportunities;
- ⇒ provide curricula that are closely related to every day life needs of students; and
- ⇒ serve as an alternative for potential school dropouts

Developing countries including Ethiopia also need to improve productivity through their economics in order to be competitive in the era of rapid economic and technological change. Improved productivity requires not only, capital investment but also a skilled labor force. Besides the level of a country's skilled workers and technicians competency is a key determinant factor of labor force productivity. TVET indeed is successful in terms of worker productivity (Middleton, 1993: V, 51).

Aggarwal (2004:201) contended that education does not produce jobs but vocational education and training makes it more conducive and timely for an individual to secure a job or to be a master of his own either by establishing a new business or a service which may satisfy the need of the communities.

TVET offers a specific training in a particular vocational for ensuring the students' transition from school to the world of work. An equally important rational for TVET in relation to employment potentials is that it enables young people who are academically less able to learn a craft or manual trends, thus enabling them secure gainful employment. This is, in fact, a

major justification for TVET in those countries that have achieved high levels of secondary enrollment over all, and thus stream students based on their academic achievements to an appropriate form of training and education (World Bank, 1993:20).

The current rationale for the indispensability of TVET rests on four arguments. McNeil (1996:332) indicated that first; it serves a national interest by

- a) Conserving and developing resources;
- b) Promoting a more productive agriculture;
- c) Preventing waste of human labor; and
- d) Helping to meet an increasing demand for trained workers.

Secondly it helps in realizing equity by helping the youth, the refugees and the hard-to employ to find a place in the economy through training in general or specific occupational skills and the related work habits. And finally, it helps in facilitating the students' understanding about various issues related to society, technology, work, environment and their own future career developments (Antonios, 2006:280).

To sum up, the world is collectively addressing the big challenge of globalization through wider and deeper integration spirit. This is also perceived in the labor markets and the world of work and change is indispensable, especially in the area of vocational and technical education and training. Therefore, training for future changes will be one of the major objectives of TVET programmes.

2.3. Technical and Vocational Education and Training (TVET) policy

In recent years, many countries are devoting more and more attention to the role of TVET to meet their development needs. Indeed, political leaders economic planners and educators appear to consider the development of TVET as the keystone of an educational system best adapted to the individual, industry, economy and society as a whole (UNESCO, 2001;9). In this regard, currently, progress has been made at making education more responsive to social and economic development requirements and expanding TVET to meet the skilled human power demand (MOE, 2004:38).

The TVET policies followed by the newly independent developing countries such as Ethiopia were aimed at providing the managers and skilled labor, which these countries needed to support the growth of the modern sector. Education and training policies are key elements in economic and human resources development (Megerssa 2007:46). In the past, development of TVET has been supported by the aid of among others, the United States, the Soviet Union, Italy and many national non-government organizations (NGOs), and recently by Japan and Germany. After the sector wide programme in education was established, the foreign projects had to support the goals defined in Ethiopia (Lasonen, 2005:32).

TVET policy framework for the proposed TVET Originates from the new education and training policy of 1994, and the Education sector strategy that followed it. In addition, TVET derives its strategy and structure from several important studies that have been under-taken in preparation for the development of the TVET strategy (MOE, 2005:7).

A poly technic programme was introduced and developed in Ethiopia from the 1970s with Russian support. Students were offered general polytechnic courses in Grades 9 and 10, after which three-year advanced technical/vocational training programmes were delivered. The programmes prepared middle level skilled manpower and staff for technical, managerial or administrative positions at paraprofessional level. Teachers assigned to the junior and senior secondary schools were expected to have college diplomas and bachelor degrees. Some NGOs and missionary groups have also played an important role in vocational education and skills training (Lasonen, 2005:29).

Community skill Training Centers (CSTCs) were established in the mid-1970s by the Derg regime as a part of a national education system. The centers aims were designed to promote indigenous skills and increase productivity in the community. Training courses were offered in trades and fields such as weaving, sewing and embroidery, woodwork, pottery, making and using fuel saving stoves, candle and soap making, dying, basket and mat making, metalwork, agriculture, home economics, carpentry and construction (Lasonen,2005:32).

The recent policy documents such as the Agriculture Development Led Industrialization strategy (ADLI), the Interim Poverty Reduction strategy paper, the Development Framework and plan For Action 2001-2010, the Education and Training policy and ESDP emphasize the important role of education and training to promoting equality and to reducing poverty (MOE, 2004:54).

The transitional government of Ethiopia (1994) issued an education policy and strategy. The policy papers identified three major areas of change.

- ◆ Making education more relevant to the demands of the community and curriculum change;
- ◆ Quality improvement; and
- ◆ The expansion of primary and vocational education.

In line with the New Education and Training policy of 1994 the following have been identified as general objectives of TVET.

- To provide basic education and integrated knowledge at various levels of vocational training.
- To satisfy the country's need for skilled manpower by providing training in various skills and at different levels.
- To make education supportive tool for developing traditional technology and for utilizing modern technology.
- To provide education that promotes the culture of respect for work, positive work habits and high regard for workmanship (MOE, 2003:23).

The 1994 policy documents have provided guidelines for the planning of TVET reforms by the ends of the 1990s. An urgent need for capacity building has been acknowledged at the highest political level.

The new middle level technical education programme (10+1 & 10+2) will be introduced almost 130 schools (SDCs, TVET schools, former Comprehensive secondary schools) and will involve 2000 TVET teachers. The teachers have varied qualifications and experience for becoming

instructors in one of the 24 trades offered in the programme within four main occupational areas.

- | | |
|----------------------------|---------------------------|
| 1. Business Education | 2. Home Science |
| 3. Construction Technology | 4. Industrial Technology. |

The content of the programs will be built on each other thus the successful completion of one training program provides, the entry requirements for the next higher qualifications level. However, according to MOE (2003:5) to step from basic to junior level and from junior to middle level the educational gaps are expected to be filled by additional bridging courses. Since the training programs are designed in a modular way entry and exit within different programs nonflexible be handled.

Basic level technical and vocational training aims at performance of basic skills that makes living competencies to improve the basic needs, conditions and for mining work in rural areas. Junior level technical and vocational training is performance of pre-vocational competencies to a selected occupational area in an initial stage to carry out a simple work process.

Generally the strength of an educational system often is determined by the quality and quantity of trainers assigned and trainees' academic achievement and success is, in most cases the reflection of trainers in the institution.

2.4. The objectives of TVET programme

Schools every where are being asked to prepare young people for the jobs of tomorrow, and TVET has an important role to play in this process. The multi disciplinary nature of technical/vocational and its supposedly close to the world of work make it one of the education sectors that contributes most to the training of

skilled labor and gives both young people and adults the knowledge to apply a trade (Atchoarena and Andre, 2002:15).

TVET represents a comprehensive and inclusive approach intended to help people achieve their full educational and vocational potentialities and as a result make meaningful participation in the development efforts of their community (UNESCO, 2002:19). On this line FMECG (1992:3) as cited on Bizuneh (2006:16) indicated, that, TVET is used to resolve the problem of unemployment by training young people and adults for various skilled and service occupations. The purpose and objectives advanced for technical and vocational education in countries portrays the scope with in which TVET is to be developed and implemented. An overview of various countries TVET programs clearly indicates the similarity of purpose and agreement in several objectives.

Although, the individual countries can be set the general principles of guidelines and objectives of TVET based on its socio-economic demand and available resources.

The general objectives of TVET are:

1. To contribute to the achievement of the societies (social, cultural and economical development) and to greater democratization. At the same-time it develops the individuals' potential for active participation in establishment of the society's developmental goals.
2. To enable to people comprehend the scientific and technological aspect of contemporary civilization and to be capable of acting up on it
3. To empower people to contribute a sustainable development that is suited to their environment through their occupations (UNESCO, 2001:1).

As summarized and cited by different authorities, most countries formulated in one form or a number of objectives of TVET as follows:

- a) Training skilled labor force that can adapt to the requirements of the labor market. TVET is well-conceived and delivered in meeting of the challenges imposed by shortage of skilled labor force as it benefits individuals and society at large (Benson, 1987:20).
- b) Raising productivity. TVET contributes to the successful achievement of country's self-sufficiency in different sectors of the economy, such in agriculture, industry and informal sectors by developing suitable skills. Since well trained and motivated work force can be readily maximized and newly industrialized societies have invariably invested a huge amount of capital in education and manpower training. This investment, consequently, has been paid of in the form of productivity gains (Atchoarena and Andre, 2002:38, Aggarwal, 1994:200)
- c) Attaining employability. Although TVET programs may not create jobs, they can practically provide individuals with skills required to give them enhanced opportunities for self employment, wage employment, informal sector initiatives and re-employment (UNESCO,1998:5;MOE, 2003:31)

Supporting this, Atchoarena and Andre (2002:37) as cited in Bizuneh (2006:17) stated, "The primary objective of TVET is to train a skilled labor force that can adapt to the requirements of the labor market". Now days, the major objective of the TVET is not simply to bring economic development but also to enhance the over all social development. It helps to fight against poverty and integrate young people in to the world of work.

2.5. An Overview of TVET in Ethiopia and its Context

Even though Ethiopian had a long history in art and culture there was no significant sign of development in science and technology that helped for socio-economic development of the country. This was because the craftsmen, artisans

and manually skilled people were insulted and discriminated against their works like pottery, leather works, weaving and metal works etc. were viewed as an inferior occupation (Teklehaimanot, 2002:1).

Long before the coming of the western type of education to Ethiopia, the heterogeneous societies of the country had their own craftsmen and artisans who were traditionally trained through parent to child on the job coaching. This father to son and mother to daughter type of job training system was the basic source for the skilled people such as potters, blacksmiths weavers, tanners, and many others (Antonios, 2006:23). Supporting this idea, Bizuneh (2006:38) stated that, in any traditional society, vocational skills were transmitted from family to new generation as a family tradition. The children were learning by observing and practicing the job with their elders and it became the job of their own by which they earned a living later on.

Like other developing countries, Ethiopia has launched similar programs within the framework of expounding education& employment links since the 19th century. Before the introduction of technical and vocational education in the country, there was an attempt made by Menelik II to introduce European technologies like railway, telephone, vehicles, electric light, tap water, hospitals. He also made an effort to train local technicians and aviation workers by German and French scholars (Mesfin, 2003:27).

It was after the expulsion of the Italians that Ethiopian government paid some attention to the establishment of vocational technical schools in Ethiopia as a part of its education system. Wanna (1998:56) identified three time periods with regard to the TVET development in Ethiopia. During the first era (1940's–1960's).Ethiopia was rebuilding its educational institutions and very few schools served students from all over the country. However graduates from high schools that could not join tertiary level of education, lacked skilled to be employed

among secondary school graduates the government in 1962 converted the existing high schools in to 'comprehensive high schools'.

The second era (1960s-1980s) was mainly characterized by the attempts made to vocational high school education with the mission of reducing unemployment among young high school completers. However because of lack of materials and human resources, shortage of qualified teachers and limited budget, the quality of graduates was not as expected and the problem of unemployment among high school completers did not improve much. It was during the third era (1980s -1994) that the government decided to strengthen a number of selected comprehensive as well as other vocational technical schools in order to give effective skill training. Seventeen TVET schools were consolidated to give three years of training to students who completed grade ten in an academic stream.

According to UNDP policy discussion paper Wana (1998:305), the 10+3 vocational technical program was established through external support since it was donor-driven; it was not as effective as it was expected. There was shortage of qualified staff, machines and spare parts.

Twenty five skills development centers (SDCs) were established without a through needs assessment to train secondary school leavers in the areas of Auto-mechanics, Building-construction, Electrical/Electronics, Metal-works, Surveying/Drafting and Woodwork. Moreover, Technical Drawing, Applied Mathematics and Entrepreneurship are given as Common Courses. The Ethio-Germany TVET program is offering technical assistance to solve the problems in these centers. The program was initiated in 1997 and the duration of the training is one academic year (Yekunoamlak, 2002:226).

The New Education and Training Policy of 1994 give special attention to the technical and vocational training and divided into various complementary

programs. The new organization of technical and vocational training bases itself on analyses of the training needs of the country's economic and social development (MOE, 2003:3).

Middle TVET program comprises three certificate levels; certificate level I (10+1), Certificate level II (10+2) and diploma level (10+3). Middle level technical and vocational education and training level I is performance of basic vocational /Entrepreneurial competence in a selected occupation to carry out several work activities such as simple equipment operation and maintenance within a routine work process and supervision, and particularly in a program that lasts for one year (MOE, 2003:5).

Middle level TVET level II, which takes two years duration of training time for completion and a performance of intermediate technical-vocational /Entrepreneurial competence in a selected occupation to carry out a variety of work activities such as production work, operation and maintenance of relatively complex equipment systems and workshop organization within a non-routine work process requiring considerable autonomy. The last form of Middle level TVET leads to an award of diploma and it has a training length of three years (MOE, 2003:5, in Bizuneh, 2006:25).

It is the performance of advanced techniques and vocational /entrepreneurial competencies in selected occupation to carry out advanced skilled work activities for examples, analysis, evaluation, operation and maintenance of complex equipment systems and workshop organization with in a non-routine work process required autonomy and particular guidance of others.

The water TVET College was established in the year 2005 in Ethiopia in some selected regions. From these regions in Oromia two TVET colleges were selected, Asella and Welliso. The aim of this middle-level TVET is to produce adequately trained middle level skilled manpower in Small Scale Irrigation & Drainage, Rural

Water Supply & Sanitation and Electromechanical advanced technicians that can be capable enough to establish plan, and manage their own and private enterprises.

2.6. The Technical and Vocational Education & Training Curriculum

A curriculum is an action plan of what is to be provided in school as education or training. Hence, the curriculum as a field of study it includes how school programs are developed, implemented and evaluated (Gillie, 1973:394 in Mekonnen, 2004:18).

TVET curriculum must be relevant in terms of the needs of trainees, employers and society. It incorporates the needs of trainees because they are the primary beneficiaries of the programs the needs of private enterprises, because they are the ones that employ the products of these programs and the needs of the society and the state because they are responsible for the socio-economic well being of the youth (Zideman, 1994:59).

Hence there should be strong participation of stakeholders at different hierarchal levels in planning, developing, implementation and evaluation of curriculum. Curricula for quality TVET programs are developed on the basis of a careful analysis of the occupation indifferent employment areas by systematically studying what a successful worker does and needs to know in the practical (Veen, 1964; in Antonios, 2006:36).

The focus of TVET Curriculum is preparing the trainees for employment. Therefore considering the needs of the society, employers and trainees is pertinent. Regarding this Gillie (1973:54) states that data and information that involves students characteristics, characteristics of society at large, the world of occupations, types of knowledge and skill relevant to the program being designed, principles, functions and objectives of learning, parameters of students population,

administration and academic framework of the school, facilities and finance available should be obtained by the program designer of occupational education.

The wealth of the world is created by the work of skilled hands on raw materials. Many countries have introduced productive or practical works into their educational programmes. They intended to employ both as a training method and as a means of relating education more closely to the world of work.

Vocationalizing is intended to bring school leavers into jobs or self-employment under conditions of widely spread youth unemployment (Lauglo & Gillis, 1988:5; Byram and Wenrich, 1965:55). Vocationalization policies are a quest for great labor market, relevance of education for better articulation between the content of schooling and subsequent application of acquired skills, attitudes, and knowledge in the world of work both in obtaining a livelihood and in becoming more productive in the work obtained (Gillie 1973; in Masresha, 2004:21). The emphasis is given to the relevance is to match it with the needs of society and the individuals. Marsi (1994:36) indicates that a balanced combination of both theory and practice optimizes the effectiveness of vocational education and its status.

The school curriculum should be changed by adding the facility of work shops and vocational preparation so that the graduates can function effectively in the labor market. To enhance such a provision the curriculum used for training in schools must be based on comprehensive occupational analysis outcomes. This is to mean that jobs that are available in the present labor market must be identified and analyzed to develop relevant curricula. It should be carefully planned and implemented to satisfy the dynamic and complex labor market demand. This shows that the curriculum development should be based on the need assessment (Bizuneh, 2006:46).

In Ethiopia the middle level training program curriculum is designed in modularization that emphasizes the specification of particular knowledge and

skills, and their application to the standards of performance required in the work place. The modules should be broad enough to cover as many occupations as possible in order to minimize the danger of training individuals for only few specific jobs, which might become obsolete through time and technological advancements for living in an era of globalization (king, 1994:6250 in Antonios, 2006:37). To this end, Mason (1994:74) writes Quality vocational education results from a balanced curriculum of vocational and general education causes.

The training module is structured into occupation, jobs, duties and tasks. Occupation is the major area in which the trainees can be qualified. Jobs are the main branches of occupations, which are assumed to be employable by themselves if trainees are in need of it and not to continue the next job or part of occupation. Duties are the main frame of work to be performed in the job. The tasks are the smallest possible activities in the duties (Bizuneh, 2006:48).

2.7. Courses/Subjects Offered in Middle level TVET Curriculum.

The middle level TVET programs are organized in the separate TVET schools to function along side with the academic upper secondary program.

According to MOE (2005:9) in Bizuneh (2006:47) the middle level TVET is carried out in 33 fields of specializations. The main Streams are:

- ◆ **Business and Information Technology:** the main departments under this areas are Accounting, Banking and insurance, Marketing, purchasing, Secretarial Science and IT.
- ◆ **Home Sciences:** It comprises Textile Technology, Male Garment, Dress making, Cooking, Bakery & Confectionery, House Holding, Hotel Service and Hair Dressing
- ◆ **Construction Technology:** It contains Building Construction, Drafting, Surveying, Road construction and wood work.

- ◆ **Industrial Technology:** It includes Auto Mechanics, General Mechanics, Electricity/Electronics and Machine Technology:
- ◆ **Water Technology:** It Consists Electromechanical Technology, Small Scale Irrigation & Drainage, and Ruler water Supply & Sanitation
- ◆ **Health Training:** Clinical Nurse, Pharmacy-Technician, Laboratory Technician and Health Extension.
- ◆ **Others:** These include Bal couch, Law and Human Resource Management.

The curriculum of the middle level TVET programs provide different packages of courses that can be broadly classified in to: main courses, supportive courses and common courses. The main courses provide a number of independently prepared modules and the time allotted to them is 600hours. The project work and apprenticeship are part of the major courses for which, 156 and 312 hours are allotted respectively.

The supportive courses are meant to help the acquisition/pre-requisite courses for the main course. The time allotted for these courses are varies from course to course however it is 160 hours for most occupations. While the common courses are designed in order to undergraduate the trainees' academic competences that may help them in their future career advancement (MOE, 2003:68; Mekonnen, 2004:16). These courses are Mathematics, English, IT, Entrepreneurship and Civic education. The time allotted for these common courses is 320 hours. But for Water Technology Stream physics and chemistry courses are categorized as supportive courses. The time allotted for these prerequisite courses is 100hours each. The evaluation performance of trainees' is based on the 70% practical and 30% theoretical skill in terms of product, time and quality (MOE, 2002: in Buzuneh, 2006:48).

2.8. The concept of curriculum implementation.

A curriculum is plan for an educational program that is prepared for some intended purposes. It is developed to be used in the formal education program with the view to bring about a behavioral change in the learners, which is the main objective of education in general and schooling in particular. The concept of curriculum implementation, though expressed in different words by different scholars, denotes the same meaning in the literature. To mention some, Derebssa (2002:177), assume implementation as a process of putting the developed /planned curriculum in to effect. The process is developmental and occurs at different levels. It focuses on the extent to which actual change in practice occurs and those factors which influence the extent of change.

According to Mekonnen (2004:44) explained curriculum implementation is a process by which a program is conducted using a variety of teaching/learning administrative procedures, aimed at fulfilling the designers' expectation of a target audience. Derebssa (2001:177) define implementation as a making use of the developed curriculum materials in the whole school system or putting the documents as official alternatives. Veen (1964:58) considers implementation to be a process involving the reduction of differences between existing practices and practices suggested by innovators or change-agents. Implementation attempts to influence behavioral change in a direction or directions deemed necessary. It occurs in stages; it takes time to win people over to an innovation.

Allan and Francis in Derebssa (2002:12) view implementation as involving extensive actions by many parties-not just for example, an offer to staff few workshops and also involve developed and piloted attempts to change individuals' knowledge, actions and attitudes. It is an interaction process between those who have created the program and those who are to deliver it. Still others define curriculum implementation as a stem which involves extensive action by many

parties in which attempts are made to change individual's actions, knowledge and attitude.

Ecclestone (1996:125) defines curriculum implementation as follows:

It is a process of behavioral change in the directions suggested by an innovation, occurring in stage, overtime as obstacles to such change is over come.

To sum up curriculum implementation, it is one of the major components of curriculum development process of which continues even after the plans are tried out. As mentioned above, all the definitions given have a common agreement that, curriculum implementation is a stage at which an innovation is changed into practice in a classroom.

2.8.1. The curriculum implementation process

The implementation effort to be successful, that needs various considerations like careful planning in advance, establishing effective communication process, obtaining cooperation of various individuals groups and providing effective support services, money, as well as materials (Derebssa, 2002:177).

a) Planning

Careful planning is a necessary pre-requisite to implementation, which would address the needs, changes necessary and resources required for carrying out intended actions. Planning and resources required for carrying out intended actions. Planning is an activity of setting the mechanisms and the basic requirements for the implementation. No curriculum is effectively implemented without effective planning of the conditions required. It involves establishing and determining how to administer a policy that will govern the planned actions. To ensure that the processes of planning and implementation are effective and meaningful, the relationship between the two must be carefully considered (Ibdi).

Derebssa (2002:178) continued that, planning focuses on three major factors: People, programs and organization. These factors seem to be inseparable; educators view them differently with respect to implementation. Some feel that educators must deal primarily with the people to facilitate implementation of a change, because if people change, the program or organization will change. Others consider that the primary focus should be the program then people will adapt easily the ways to meet the objectives of the schools programs. According to some others, attention should center on the organization within which people work. If departments are organized and spaces are remodeled, then people will adjust in the directions necessary for successful implantation. In general it is better to consider all the three factors people programs and organization in an implementation process.

b) Communication

Communication is a process of making people to be informed about the new one or changed curriculum. Derebssa (2002:178) has stated that, communication has been defined as the transmission of facts, ideas, values, feelings and attitudes from one individual or group to another. It deals with message processing between the sender and the receiver of the message. The curriculum specialist must be sure that the communication network is comprehensive and those avenues for message sending exists in all levels of the system. Unless people are made aware of the conditions, it is difficult to realize the curriculum. This can be done through seminars, workshops, symposia, panel discussions, meetings, role playing situations, demonstration sessions etc.

Communication involves messages among people, not hardware. Thus leaders needs to create a climate conducive to effective communication among all members of the educational staff and community, person to person through mass communication media.

c) Cooperation

Cooperation is an interaction between people, who are engaged in the implementation. Cooperation between all people who are to be involved with program implementation must occur if a change is to be successful and to become institutionalized. The teachers' full cooperation is required in practicing the new ideas and programs that will find expression in their classrooms (Derebssa, 2002:179). Teachers usually need the cooperation of those people who are involved in the planning process and those who are managing resources. Teachers' cooperation is a determinant element in curriculum implementation.

Derebssa (2002:179) viewed that teachers need to feel that the change under process has professional value to them and they should be motivated to implement the new program. It is said that the best educational practice is unlikely to fulfill its promise in the hands of an inadequately trained or unmotivated teacher. Educators need to consider teachers' needs level of commitment and skills while determining when and how to involve teachers in implementation. For proper implementation of the curriculum adequate training prior to implementation and support and monitoring during implementation is a standard approach.

Other participants in curriculum development also need to cooperate in the process. Those who advocate reform in schools raise the issue of involving community members, students in the development and implementation of programs. Sometimes, various minority groups would like to be involved in the development and implementation stages in order to ensure that their views are represented and that their children are not discriminated against in the initial implementation of the new program (Ibid).

d) Support

Curriculum designers need to provide the necessary support for their recommended programs or program modifications to facilitate their rapid

implementation. Desirable support in terms of money as well as technical and materials would help building self-confidence among those affected in change. Money is required for materials and equipment in order to institutionalize a new program and also to have human support for implementation effort (Derebssa, 2002:179).

In-service training program for teachers, administrators and such other personnel acquainting them with new program and practice aspects can be a necessary support activity. In-service programs must reach the intended audiences and should be accessibly scheduled for curriculum implementers. A trusting relationship must exist among all administrators and teachers. Some times teachers spend a large amount of their working time with students in classrooms and spending minimal communication with their peers.

Since implementation is a collaborative effort to many parties their cooperation and support secured from different groups help in implementing the curriculum. Opportunities for teachers to work together, share ideas jointly solve problems and cooperatively create materials greatly enhance the probability of successful curriculum implementation.

2.8.2. Streaming and occupational placement of students

The selection and placement of students into different training fields of study is an important principle that characterizes the quality of any training program. The students' career and occupational placements can affect positively or negatively the performance of trainees in training center. Individuals/trainees who join TVET programs in accordance with their full interest, aptitude, and capabilities are proved to be more motivated to learn different skills than those who are without. And hence, for the most effective learning of occupational skills, an optimal level

of motivation should to be established and maintained (Antonios, 2006:37; MOE, 2003:5).

The selection and streaming of students must consider the students interest, abilities and preference, mental & physical fitness and manpower demand. It is obvious that students have different interest, talent and potentials to join different fields of study. However, in most cases, students pick up courses with out considering their abilities and potentials. Supporting this idea, Aggarwal (1996:648) in Bizuneh (2006:33) states that many students end up in selecting courses based on availability, instructor's popularity or their criteria that may have nothing to do with their career plans, learning styles, or basic skills needed. Parents also due to their set notions interest their children to study certain subjects which they think to be very useful with out realizing whether their children possess the required ability or not. Students who do not get a chance to be enrolled according to their need and interest will face stress, anxiety and tension, which result in dropout and failure.

Therefore to alleviate the problems, the selection and placement of students in to diverse education and training areas requires a cluster of services that include vocational guidance and counseling which help students to acquire appropriate positions for their careers, either academically or in the world of work. Appropriate vocational counseling helps students make wise choices for their future careers (Antonios, 2006:37).

The career and streaming of trainees / students in technical and vocational fields should be planned and match the required skilled manpower and the supply of available resources at hand. Generally , in order to cope with ever changing science and technology, the quantity and quality of trained man power should be planned ahead of time each year and this should be considered during selection and streaming of students to different fields of study.

2.8.3. The TVET Apprenticeship Training Programme

Apprenticeship is a system by which young people entering enterprises which are given through instruction and experience both at the end of the job, in all the practical and theoretical aspects of the work in a skilled trade. It is a means through which students learn practical skills on the job under the tutelage of master craftsman (Murphy, 1971:45).

Apprenticeship training is a particular mechanism of cooperation between enterprises and TVET institutions in delivery of practical training. It is aimed at achieving quality of training and exposing trainees to the real world of work. It is also a method through which trainees get on the job training in addition to the theoretical and basic practical training in training institutions. The trainees are acquainted with the relevant skills and attitudes, which enables them to integrate easily in to the work environment (OEB, 2003:22).

During the middle ages, apprenticeship was served under the guilds association (association to protect the interest of members in the same craft). Since the transmission of family heritage and unconscious learning was not satisfactory, apprenticeship came into being (Lauglo, 1994:6; in Yekunoamlak, 2006:222).

Finch and Cronkite (1989:4) found that the earliest type of vocational education took the form of apprenticeship. Organized apprenticeship programs in Egypt were recorded as early as 2000 B.C. On top of this, society developed the need for vocational education and these needs were slow to filter into the formal education and apprenticeship continued to be the chief means of training vocational education.

In apprenticeship system, training and production are integrated towards the development of the apprentices into adult life. Traditional apprenticeship was the major means of vocational training in the Western World until the second

industrialization in the mid 19th century. It emerged as a system of skilled training during the time of the ancient Greece and Romans; and took root as a formalized training system in the 13th century European guilds (Murphy, 1971:46 in Antonios, 2006:22).

Modern apprenticeship involves a contractual agreement between the apprentice and the employer where the latter provides training and allowance in return for the formers' untrained labor. It is different from cooperative education or alternative training. Lauterbach, (1994:312) indicated that in the alternative training scheme, students who attended school based technical and vocational training in the full time TVET are assigned to different enterprises for the intention of facilitating their vocational orientation and career choice, or giving them some on the job experience in the world of work.

Veen (1964:104) states that apprenticeship involves a formal agreement covering a definite period of time, which binds the employer to provide training in turn for the work of the apprentice. Most apprenticeship run between two to four years though this duration varies from crafts to crafts and place to place. To Murphy (1971:5) apprenticeships training to organize the process of transition of the young labor force into the labor market.

Countries like Germany, Austria and Switzerland experience the most advanced and sophisticated scheme of apprenticeship program, known as the dual system. (The dual system involves the combination of last two years of theoretical vocational education in the vocational schools with three years of on the job apprenticeship training in the firms). The dual system of apprenticeship is one of the most effective and successful occupational skill training means in to day's world. As a study conducted in some sample firms taken from Great Britain and Germany indicated, the work force skills and productivity of the workers in

Germany, who have been trained through the dual system, were found to be more efficient and flexible to cover much range of skill areas than their British counterparts, who have been trained in the full time vocational schools (Mason, 1994:76).

Apprenticeship has a long history of serving traditional trade areas in Ethiopia. Its merit in serving the skill needs of different sectors is today fully recognized. Put differently, the endeavor made through policy intervention for improvement of traditional apprenticeship, through introducing school based components, and establishing or expanding modern form of value attached to the TVET System (Mekonnen, 2004:35).

The Guideline prepared by MOE disclosed apprenticeship training as a work based method for learning and gaining of qualifications. It is in company training based on agreement between a training institution (public or non-public TVET institution) and an employer for the purpose and training of trainees in any commercial, industrial or service giving organization/establishment. The main objectives of apprenticeship is to enable youth learn any trade under the supervision of master craftsmen and according to established specification. It does not only equip trainees with appropriate skills and increase their employability, apprenticeship training also builds up the work discipline and self confidence of the trainees (MOE, 2000:37).

It is now accepted generally that, TVET programs to be of good quality and relevant, they must reflect the state of the art in the world of work. To do so, it is advisable that they cooperate with the existing enterprises which have the latest technologies and production process that most TVET graduates will aspire to work with. Based on this, the Ethiopian TVET strategy, under memorandum of agreement, forwarded duties and responsibilities that are expected to be carried by both TVET institutions and enterprises (MOE, 2003:97-99).

However, most enterprises will avoid it if possible on the ground that the training is expensive and because of the following reasons:

- ◆ Under the present of economic down turn, most enterprises, operate below capacity and then fear that taking in experienced trainees would further reduce their production and profits as well;
- ◆ Trainees on attachment are risk factors for enterprises because they are not often insured against accident;
- ◆ Most large enterprises have wider international interest besides training a majority of local enterprises are still small and weak. They do not have sufficient capacity to co-operate with TVET institutions to conduct training programs,
- ◆ Lack of policy and regulatory mechanisms, that contribute to promote cooperative links with TVET institution and enterprises in most countries,
- ◆ Inappropriate method of assessment and inadequate incentives for enterprises and trainees are among the major problems.

In addition to this Lauglo (1994:33) noted that a common problem in dual training is weak coordination between the two training arenas as to content and sequence of what is thought.

2.9. Factors Affecting the Effective Implementation of Curriculum

There are a lot of factors that hamper the current curriculum implementation. Some factors such as the availability of curriculum materials, contents knowledge of teachers and the feasibility of the curriculum are easily visible and are also manageable but where as others such as budget size, socio-political conditions, and cultural factors takes long periods to manipulate them. Supporting this idea, Derebssa (2002:180), viewed that, the major factors that affected the effective implementation of the current curriculum include the educational administrative

and supervisory system, teacher's qualification and readiness and, quality of curricular materials and its provision. Those factors that are pertinent and within the scope of this study are presented in this review, namely, Human factors, Implementation strategies and Availability of training resource facilities, and the nature of the curriculum.

2.9.1. The Human Factors

One of the factors that influence effective implementation of the curriculum is the human factor. The most related human factors are a teacher's qualification, administrative and supervisory system, and trainees. The qualification of trainers has profound influence for the effective operation of the training programmes. Accordingly, TVET is considered as the preparation of individuals for the work, trainers in this area should have special qualification and experience for they are preparing trainees for the world of work. No doubt that in training institutions trainers are the key actors and very crucial in achieving the overall objectives of the institution. Thus, the strength and efficiency of any organization can be conducted through proper use of skills and talents of its quality of trainers (existing of human resources).

The Human factor is related to the preparation of adequately trained teachers and other professionals who shoulder the responsibility of preparing students with quality marketable skills for the dynamically changing world of work. The quality of TVET programs are distinguished by having a highly trained, experienced, technically competent, and enthusiastic staff including the coordinator, teachers, counselors, and all others who assist them in the instructional process(King,1994, in Antonios;2006:38).

According to Coe, (1973:58), teachers, coordinators, and counselors are expected to have three different occupational and professional skills:

- a) They should be experienced and skilled in the occupation for which they are providing the training;
- b) They should be equipped with a strong theoretical knowledge or expertise in their areas of specialization; and
- c) They should have adequate pedagogical skills that help them during the instruction of the occupational skills.

As far as teachers are concerned as one of the human factor no one is in doubt that they are the chief agent in the process of curriculum reform and in determining the success or failure of curriculum implementation is also given emphasis by educators. A Vocational trainer must know how to adjust, the theoretical and practical training to the level, ability, needs and interests of trainees. It is an obvious, that teachers/ trainers would not successfully implement a curriculum, if they don't have the knowledge and understanding about the curriculum. Hence, it is unquestionable to consider teachers existing knowledge and understanding of subject matter before implementing a curriculum at large scale if the implementation process is to be effective.

Another human factor that influences implementation of the curriculum is school administrators/principals. In order to bring about effective curriculum implementation in the school, principals should change their role from managerial to an instructional aspect. They have to give more attention for effective curriculum implementation than administration. On top of this, Derebssa (2002:180) indicates that, quality in education is a result of high standards and interims of relevant factors in the educational administrative system, namely supervision and monitoring badger allocation and adequacy of teaching materials. The most important factor influencing the implementation of the current curriculum is the qualification and experience of the head teachers. A lack of job-specific/academic training was found to be a factor that hindered the effective

implementation of the current curriculum because they were unable to provide academic advises to their teachers. Developing support organizational arrangement, training and ongoing information support, consultation and reinforcement, and monitoring and evaluation, thus, the administrators need to have adequate knowledge about the curriculum and its planning process to have an effectively implemented curriculum.

The response of the practitioners' acts against the intention of the designers, even the most carefully prepared and strongly supported plan is unlikely to be implemented as intended. Therefore, much of the educational outcomes of students depend on trainers' pedagogical skills, subject matter knowledge, good support & encouragement, supervisions and evaluations of the educational administrative system.

In conclusion, the implementation of any plan, be it in curriculum or any other social policy, largely depends up on the daily activities of the organizational who are in charge of its successfulness.

2.9.2. Implementation Strategies and Resource facilitates

The quality of any TVET program is largely dependent up on the degree of its organization of its training facilities, the application of methods, activities, teaching materials and assessment strategies in the teaching learning process by teachers as intended in the syllabus. The process of planning incorporates objectives, instructional contents, teaching methods, student's activities and teaching material to be used.

The success of a TVET program depends on the competence of its teachers to select and use the right instructional methodology for the teaching of a particular skill .As most educators agree; there is no unique and best teaching method for the

instruction of all types of objectives in varied practical circumstances. However, most educators agree that, TVET instruction becomes more successful when it is carried out in a student- centered mastery learning approach by emphasizing on the students to perform practical activities.

To accomplish successful implementation of new curriculum material and structural adjustment and behavioral changes of teachers are highly needed. Rather it requires developing and applying appropriate methods such as in-service-training, resource support and participating teachers in decision- making. Before the new curriculum is put in to effect it is necessary to arrange in- service-training, which is one of the common strategy of implementation (Masresha, 2004:51).

The provisions of materials- resource support and time are another implementation strategy that needs to be considered by curriculum planners and policy makers. Structural alteration, like grouping, text books preparation, classroom spacing etc. need to be made in line with the planned curriculum.

It is difficult to think of the effective implementation of a curriculum in the absence of resources. In respective of their type, resources are very essential in the teaching- learning process due to the fact that they help the teacher to facilitate the planning of instruction and the choice and organization of the methods and learning activities. In this case resources could be financial, material or human (Mekonnon, 2004:31).

Training facilities are the major and fundamental resources to run TVET programs effectively and efficiently. The major components of training facilities in TVET institution are the building, machines, equipment, playing ground, sanitary and safety facilities. On the top of this MOE (2003: 31) in Bizuneh (2006:26) states, in order to make the training program more effective and the training environment more conducive, the location, orientation and size of the school building should be

planned and standardized based on the types of training program. Similarly, the laboratories, libraries, workshops, classrooms, computers centers, demonstration classes and offices, site project places should be well established and equipped with appropriate materials.

It is true that no institute could continue to provide various training programs without having financial aid from else where. To put this idea more clear the World Bank (2002:118) viewed that, the funding of professional education and training at the stage of development in developing countries should be that the government has to provide the necessary training funds that can in turn fulfill infrastructures and teaching resources in the training institutions.

However in most developing countries including Ethiopia, the problems seem to still remain the same that of inadequate funding of these training institutions, inadequate facilities, supplies of equipment as well as shortage of well-qualified teachers for delivery of TVET program in accordance with their objectives (Mekonnen, 2004:44).

In view of this inadequate funding, MOE (2002:15) has added that the quality of training remained poor which has resulted in difficulty in obtaining appropriate and adequate equipment as well as facilities, sufficient number of qualified instructors, flexible and up-to-date occupational standards, adequate functional relationship between training centers and the real world of work, stakeholders participation in curriculum design and implementation and sufficient management system as well.

Recognizing this the Ethiopian government education and training policy emphasizes on the need for expanding the vocational technical training facilities through the provision of necessary funds, development of relevant curriculum,

improving the standards of trainers and the complementary role of the private sector(MOE,2002:16).

To sum up, it is not only the economic problem and low financial base, but also the lack of appropriate financial management of training institutions that result in poor performance of the training program. In order to avoid the problems related to mismanagement of financial resources, administrators of the training institution should be provided with the necessary courses of financial management. This may ultimately help the administrators and other personnel in the training institution to use their limited resources in their institutions more effectively and efficiently.

2.9.3. The Nature of curriculum/Characteristics of the innovation

The effective implementation of a curriculum can be examined in terms of its difficulty, skill required, extent of change in belief among agents, teaching strategies and use of materials. Since the success of the curriculum is highly determined by the degree to which it is workable plus the practice, more is expected from curriculum workers to facilitate the process of implementation and support the implementers in solving the problems they encounter. On this line Aggarwal (2004:168) has said that:

Curriculum change is a political process, a question of who gets what, when and how. Perhaps because of its political nature, the question of implementation has often been ignored by curriculum writers and left to the administrative and managements specialists- - -

Designing and implementing relevant curriculum in the educational system greatly evades some learning difficulties in different fields of study. It is undeniable that, the provision of a relevant curriculum to the life lived in the society inevitably leads to the transformation of the true purpose of different knowledge that could yield successful successive generations.

Educators strongly pointed out that the content of the courses must be completely relevant to the environment and the problem of the learner so that they can directly rejoin their community and contribute to its development rather than alienating themselves away from it. The curriculum content should also be appropriate for the learners' level of knowledge.

According to Smith (1990:59), more than any variable, the explicitness and complexity level of the curriculum affects the effectiveness of its implementation. Complexity of a curriculum refers to the degree of difficulty in learning new behaviors and roles covered by the curriculum. Explicitness refers to the extent of clarity and specificity in which expected behavioral and role change are stated in the curriculum.

Teachers would fail to extract the elements that constitute, if curriculum is not clear and explicit which result in low degree of implementation. Hence it is unquestionable that greater explicitness is required in terms of role and behavioral pattern of teachers to avoid vagueness of planned curricula, to guide teachers how new roles and behaviors could be established, and to alleviate the frustration and tension anxiety of teachers.

If the curriculum lacks clarity and specificity, it seems it would be difficult for teachers to teach what is entailed by the curriculum. Hence, both complexity and explicitness must be considered while a new curriculum designed. Therefore, in order to bring about effective implementation of the curriculum, change must be made in the behaviors of all affected parties. This means teachers, school principals, supervisors, etc, must be clear about the purpose, the nature, the real and potential benefits of the innovation. On this line Derebssa, (2004:240), underlined that for effective implementation of the curriculum, careful planning and development are essential, but they count for nothing unless teachers are

aware of the product and develop the skills to implement the curriculum in their classroom.

Thus, effective implementation of the curriculum requires time, personal interaction and contacts, in-service training and other forms of people based support. This implies that, beside others, there must be a conspicuous two- way communication between the planners and implementers that will help them to solve problems they may encounter in the implementation process, which again may help to improve the curriculum.

CHAPTER THREE

3. Research Design and Methodology

3.1. Research Methods

This study deals with the implementation of water technology curriculum in Oromia Regional State. To this end, a descriptive survey method was employed. This method is found appropriate, since it permits the researcher to gather several kinds of information related to the problem and to reach logical conclusions.

3.2 Sources of Data

The major data sources for the study are trainees' trainers' deans and vocational counselors. Those are used because they were the frontline program implementers and are able to share their experiences on the existing problems. The trainees were selected because they are the ones who are directly affected by the problems under the study.

3.3 Sampling Techniques

In this study, simple random sampling techniques stratified random sampling and purposive sampling techniques were used. There were 284 males and 61 females from 2nd year trainees and 260 males and 46 females from 3rd year trainees. So from the total of 544 male trainees, 110(20%) and from 107 female trainees 38 (20%) and 30(50%) of trainers were involved in this study. A random sampling technique was used to select the trainees, trainers, whereas purposive sampling technique was used to select deans and vocational counselors. Purposive sampling technique was employed because of its relative advantages to collect relevant and detailed information from respondents who can share their experiences and insight to the study due to their position and involvement in issuing instructions and facilitation of the training program implementation.

A stratified random sampling technique used to seek relevant and reliable information from trainers and trainees of different fields of study. This study is used because of its potential advantage to maintain the involvement of all occupations in the study. The trainers and trainees were selected from each stratum randomly.

Table I- The number of Respondents category and sample size in selected TVET institutions.

Sampled TVET	Department	Number of Trainees random			Sample size			Number of Trainers random			Sample size		
		M	F	T	M	F	T	M	F	T	M	F	T
Asella TVET	EMT	74	24	98	15	8	23	8	1	9	4	1	5
	RWSS	117	20	137	26	7	33	15	1	16	9	1	10
	SSID	151	25	176	33	9	42	13	-	13	6	-	6
Welliso TVET	EMT	45	9	54	6	2	8	5	-	5	2	-	2
	RWSS	81	12	93	14	4	14	9	-	9	3	-	3
	SSID	76	17	93	16	8	24	8	-	8	4	-	4
	Total	544	107	651	110	38	148	58	2	60	28	2	30

3.4. Instrument for data collection

To secure reliable and adequate information, three basic instruments were used. These are questionnaires, interviews and observations. The questionnaires contain mainly close-ended and open-ended items. Questionnaires were used because of their appropriateness to obtain relevant information opinions, and attitudes from large populations within short periods of time. In addition to supplement the study structured interview was employed to obtain factual information from administrative personnel's. Moreover, an observation was employed by the

researcher's to see the extent of facilities available in the TVET water technology campus.

3.5 Data Analysis

The data collected on the basis of the purpose of the study through the aforementioned instruments was tallied and organized properly. The data analysis involved the analysis of information gathered through questionnaire, interview and observation. In this case, frequency counts and percentage were employed to measure the magnitude of the respondent's opinion and assumption against each statement for the purpose of analysis of data.

Chapter Four

4. Presentation and Interpretation of Data

This section deals with the presentation and interpretation of data gathered from the different sources and followed by discussion on the findings. Out of the total number of questionnaire distributed among the two study groups 84% from the trainees and 87% from the trainers were filled in and returned. Moreover, two college deans, two academic and research deans and two vocational counselors from the two selected study area were interviewed.

4.1. Background of the Respondents

Table II Characteristics of the respondent

Characteristics		Trainees		Trainers		Deans		Vocational Counselors		Total	
		N	%	N	%	N	%	N	%	N	%
Sex	Male	104	84	24	92	4	100	2	100	134	86
	Female	20	16	2	8	-	-	-	-	22	14
	Total	124	100	26	100	4	100	2	100	156	100
Age	Below 20yrs	40	32	-	-	-	-	-	-	40	26
	21_29yrs	78	63	22	85	-	-	-	-	100	64
	30_39yrs	6	45	4	15	3	75	1	50	14	9
	Above 40yrs	-	-	-	-	1	25	1	50	2	1
	Total	124	100	26	100	4	100	2	100	156	100
Service year	1_5yrs	-	-	13	50	2	50	-	-	15	47
	6_10yrs	-	-	9	35	-	-	-	-	9	28
	11_15yrs	-	-	4	15	1	25	1	50	6	19
	16 and above	-	-	-	-	1	25	1	50	2	6
	Total	-	-	26	100	4	100	2	100	32	100
Qualification	BA/BED/BSC	-	-	26	100	2	50	2	100	30	94
	MA/MSc	-	-	-	-	2	50	-	-	2	6
	Total	-	-	26	100	4	100	2	100	32	100

A breakdown of the study population in terms of gender indicates that males constitute an overwhelming majority (86%); while females make up a small minority (14%). Female trainers accounted only 8% and there were no female deans in the sampled institutions. Similarly, females' proportion among the trainees is also significantly low. They accounted only 16 %. Thus, it is impossible to rightly deduce that there is gender balance both in representation and managerial area of the system.

As regards age, 85% of the trainers and 63% of the trainees falls within the age range 21 – 29 years. 5% of trainees, 15% of trainers and all administrators were above 30 years. Therefore, it is possible to conclude that TVET institutions management and water technology stream academic staff are in their active ages and hence can perform their duties and responsibilities well. Their widened exposure also helps to give more valuable information on TVET and enhances data's reliability.

With respect to academic qualification all trainers were first degree holders and above, 50% of deans were first degree and 50% of the rest deans were MA (Second degree) holders. The education and training policy suggested that trainers at college level ought to have a minimum of first degree. The implication, thus, is that those qualified trainers were competent enough to provide the required level of quality training to their trainees. It means that the core activity of technical and vocational education has been carried out by qualified staff.

Table II, further, depicts greater number of the trainers and deans 50% have work experience of less than five years and 35% of the trainers have work experience between 6 to 10 years. Half number of the deans 50% are reported to have served more than 10 years. Thus, more than 85% of trainers and above percent of the deans have served for a fresh work experience. Therefore, it can be deduced that the trainers in TVET water technology stream have no better teaching experience.

In teachers' education or trainers preparation the main aim is to educate trainers towards attaining high professional and work experience. As emphasized under the theoretical frame work, there would- be trainers are expected to be well grounded in technical skills, subject area knowledge and professional skills. Therefore, TVET trainers are expected not only to teach subject knowledge but also practical skills. The TVET college courses were help in addressing the education and training policy which stipulate 70% practice and 30% theoretical.

4.2.The Relevance of TVET Water Technology Curriculum

Table III: - Frequency and percentage distribution of trainees and trainers respondents with regards to relevance of Water Technology curriculum

No	Training provision /curriculum	Respondents	Respondents Rating										
			5		4		3		2		1		Total
			No	%	No	%	No	%	No	%	No	%	
1	Appropriateness of the contents to the Understanding level of trainees	Students	12	10	40	32	2	2	18	15	12	10	124
		Teachers	2	8	7	27	10	38	3	12	4	15	26
2	Emphasis of training to practice than theoretical teaching	Students	11	9	12	10	36	29	48	39	16	13	124
		Teachers	1	4	6	23	2	8	116	46	15	19	26
3	The extent of the curriculum flexible To accommodate the interest of trainees	Students	10	8	44	35	40	32	21	17	9	7	124
		Teachers	4	15	2	8	12	46	5	19	3	12	26
4	Clarity and simplicity of the language used in the modules	Students	17	14	49	40	39	31	8	6	9	7	124
		Teachers	4	15	7	27	8	31	4	15	3	12	26
5	Relevance of the contents to the daily Life or future life of trainees	Students	10	8	19	15	40	32	40	32	14	11	124
		Teachers	4	15	4	15	11	35	1	4	6	23	26
6	Relevance of curriculum to the World of work / future life of trainees	Students	60	48	40	32	9	7	1	2	3	2	124
		Teachers	10	38	4	15	10	38	2	8	-	-	26
7	Provision of training based on the time allotted in the current	Students	40	32	48	39	16	13	14	11	6	5	124
		Teachers	8	31	3	12	10	38	33	19	-	-	26
8	Adequacy of actual periods allotted to cover the contents	Students	28	23	42	34	31	25	12	10	11	9	124
		Teachers	2	8	8	31	7	27	4	15	5	19	26

Table III illustrates trainees' and trainers' view about the relevance of curriculum of Water Technology. In item 1, (23%) of trainees and 27% of trainers have reported appropriateness of the contents of water technology curriculum to the maturity level of trainees as good, while a few number of the trainee respondents (2%) and (38%) of the trainer respondents rated as fair. Only 13% trainer and 15% trainees' respondents indicated that as poor. This indicates that the content of the curriculum of Water Technology College goes with background knowledge of students so; students may acquire basic skill and knowledge from the contents.

In item two, both 39% of trainee and 46% of trainer respondents were ranked as poor. Based on this fact teaching in practice than theory, provision of training based by, using relevant curriculum was more of theoretical than practical. Concerning the adequacy of period allotted to cover the modules only 34% of trainee respondents and 31% of trainer respondents rated high while 27% of trainer respondents and 25% of trainee respondents said fair. This means the training skill and knowledge may face inconsistency.

The TVET system is expected to be dynamic, relevant and adaptable to the changing labour market. To be responsive to the needs of the different segments of the labour market and the societies under which it operates, the TVET program should be more flexible and provide relevant training (UNESCO, 1999:65). Based on this idea in table III, items 3, 5, 7, 8 are devoted to curriculum related factors.

In item 3, majority 35% of the trainees, and 46% of trainers disclosed that the existing water technology curriculum is highly accommodating trainees' interest. 32 % of trainees and 46 % of trainers confirmed the curriculum fairly accommodated the interest of trainees.

Concerning the clarity and simplicity of language of the contents and the modules 27% of the trainers and a few number of the trainees respondents (40%) believed

that the language used in modules was clear and simple, that is they rated as good, while 31% of the trainee respondent and (31%) of trainers reported as fair. Only 6% of trainees and 15% of trainers rated as poor. This implies that the language used in the modules is simple and clear. Thus, trainees can understand easily the contents of their modules.

Regarding the relevance of the contents of water technology curriculum to the daily life of the trainees, 15% of trainee respondents and 15% of the trainer respondents reported as good, while almost one-fourth 32% of student respondents have shown that as fair. Only 32% of the trainee respondents have shown that as poor. This indicates that the contents of the curriculum would give the learner the opportunities and initiatives to offer solutions both individual as well as the community's immediate problems.

Concerning the relevance of the contents to the world of work / future life of trainees, 48% of the trainee respondents and 38% of trainer respondents reported as very good, while 38% of the trainer respondents and 7% of trainees reported as fair. 8% of trainers and 2% trainees depicted that as poor. This shows that the contents would enable trainees to acquire essential life skills to work and live with the society.

Result of the adequacy of period allotted to cover the contents, a 2% of trainees and 31% of trainers rated as very high while 13% of trainees and 38% of trainer respondents said fair. This means trainees would not fully acquire the skill and knowledge contained in the modules because of the time constraint.

During observation and some trainers were suggested that, the water technology curriculum in those three departments SSID, RWSS and EMT were not organized properly. The contents of some of the courses are not logically designed, following the sequences of curricular organizing principles maintaining sequence and

continuity, balance scope and depth, and integration. That means the contents of the curricula lack coherence. It seems their concepts are taken from here and there. It lacks both sequence and continuity. Due to its lack of both sequence and continuity trainers are obliged to classify a single course / subject in to different duties.

As respondents reported, when the contents of some courses were designed, they were not designed in such a way that they will be appropriate for implementation. The professional competences of the designers of water technology curriculum are debatable by many trainers. Many trainers suspect that some of those experts who have participated in the designing process lack the right professional skills as well as subject matter backgrounds. They also assume that the whole process of the curriculum organization was conducted within a short period of time with out gathering / assessing relevant information from pertinent bodies.

To sum up, a few of the trainers as well as trainees indicate that the curriculum of Water Technology College is relevant and appropriate. But, it has problem of coverage. That means, the period allotted to cover each subject is not adequate.

4.3. The availability of instructional Materials in Teaching-Learning Process

No one can deny the function of instructional materials in enhancing the quality of education. Teaching without instructional materials is similar to planning swimming where a river is not available. Instructional materials have the following pedagogical uses:

1. Facilitate active learning
2. Encourage creative thinking
3. Effect student skill development
4. Overcome the limitations of time and space and others (Delors, 1998:37).

The teaching – learning activity could be effective and achieve its goal if it is supported by the appropriate teaching materials, especially in TVET like machines, hand tools, workshops, laboratories are very important. This is why educators strongly advise teachers to use the necessary teaching materials in their teaching – learning activity.

Table IV: -Respondents views regarding the availability of materials

No	Materials / Items	Respondents	Respondents Rating								
			Highly sufficient		Sufficient		Moderates sufficient		Not sufficient		Total
			No	%	No	%	No	%	No	%	No
1	How do you rate the availability of equipment in your field of training?	Students	6	5	4	3	54	43	80	65	124
		Teachers	2	8	6	23	3	12	15	58	26
2	How do you rate the availability of modules in your field of training?	Students	5	4	23	19	52	42	44	35	124
		Teachers	2	8	4	15	8	31	12	46	26
3	How do you rate the availability of relevant, reference books, in the library?	Students	14	11	21	17	51	41	38	31	124
		Teachers	4	15	2	8	10	38	8	31	26
4	The availability of raw materials needed for practical training	Students	9	7	13	10	32	26	70	56	124
		Teachers	1	8	2	8	8	31	15	53	26
5	The availability of, internet and computer service	Students	8	6	16	13	37	30	63	51	124
		Teachers	1	4	5	19	8	31	10	38	26
6	The availability of classrooms related to the number of trainees	Students	24	19	44	35	33	27	23	19	124
		Teachers	3	12	6	23	8	31	9	35	26
7	The availability of water and electric supply	Students	2	2	8	6	34	27	80	65	124
		Teachers	2	8	1	4	3	12	20	76	26
8	The availability of separate latrine for boys, girls and staffs	Students	2	2	4	3	53	43	65	52	124
		Teachers	3	12	5	19	8	31	8	31	26

As indicated in table IV, the respondents reported that, the adequacy and appropriateness of machines, tools and equipment, relevant books, training modules and training materials found out as very low in both the study areas.

Item 1, concerning the availability of training equipments 65% of the trainee respondents and 58% of the trainers' respondents reported as insufficient. Moreover, during the observation, in both TVET institutions in the field of water technology the insufficiency of materials was made to look into the major constraints that adversely affect the implementation of curriculum. Shortage of training raw materials drastically reduces the quality of training and obliged trainers to provide a theory dominated training. The deans of TVET College and vocational counselors also underlined the criticality of the problem and they stated that the problem emanates from inadequacy of training budget that allotted to the water technology campus from the Ministry of Water Resource.

Machines, laboratories, workshop equipments, tools, and similar items are by and large key components in any technical /vocational programme as they reflect the quality of the practical earth of the programme. Materials that established in the shops should be adapted from curriculum used in industries and real world of work. Respondents were asked to rate the degree of the problem in machines and other equipments that all respondents were affirmed as a serious problem. Interviewers also ascertained most equipment and machinery were obtained as donation and workshops are with out adequate supplies.

Inadequacy of physical facilities was also among the constraints that hampered the implementation of curriculum during teaching – learning process. Interviewees and observation also revealed that physical infrastructure of TVET institutions are far below what has been stipulated by the Ethiopian TVET strategy. In the table, 31% and 35% of respondents responded that, inadequacy of computers, reference

books, modules, magazines, journals, and other facilities are still insufficient and aggravate the problem.

Most factors discussed above are pertinent to shortages of resources in one way or another. Most of these constraints emanates from inadequacy of resources provision. It is worth to note here what Seyoum (1996:25) suggested, an educational reform that is bent to bring about improvement in an education system without adequate resource would be nothing but an exercise in futility.

The major problems that affect the implementation of curriculum were less attention paid to water technology campus at TVET institutions and at OTVETA level. Most number of respondents indicated this matter as a serious problem. Interviewees also confirmed that the existence of the problem stated that inspite of the demand for TVET steadily increasing at the grass root level, attention to water technology stream at OTVETA level decreased. The trainee and trainer respondents complained the regional TVET agency paid more attention to industrial programs than water technology streams. This means, water technology stream seems not to be treated equally with other TVET programs both by regional TVET agency and institutional administrators.

4.4. The availability of Administration service in curriculum implementation

Administration service has its own impact on the implementation of the curriculums. The strength of any educational system often is determined by the quality of administration and success is in most cases the reflection of administrations in the institution. No curriculum / any planning is effectively implemented without effective and successive management. It involves establishing and determining how to administer a policy that will be governing the

planned action. To ensure that the processes of planning and implementation are effective and meaningful; if it will be managed properly by right administration.

In any institution the role of management is vital both in accelerating and retarding organization's development. If principals at all level are professional and committed, the conducive teaching/ learning atmosphere will be created for teachers and quality of training will be fostered. Megerssa (2007:41) mentioned a number of initiatives on quality education and training had been failed due to the absence of whole hearted support from the management team.

Table V. Frequency and percentage Distribution of trainees and trainers respondents with regards to administration service

No	Activities	Respondent	Respondents Rating								
			Very High		High		Medium		Low		Total
			No	%	No	%	No	%	No	%	No
1	Providing strong leadership for the institution	Students	29	23	10	8	51	41	34	27	124
		Teachers	2	8	5	23	10	38	8	31	26
2	Effectively usage of resources / materials	Students	15	12	16	13	54	44	39	31	124
		Teachers	4	15	9	34	5	19	8	38	26
3	To promote quality of training, principals support	Students	7	7	12	10	21	17	84	68	124
		Teachers	-	-	1	4	10	38	15	58	26
4	Efficiently utilize instifution resources and the annual budget allocated	Students	-	-	9	7	41	33	64	52	124
		Teachers	2	8	6	23	6	23	12	46	26
5	Supporting trainers effort in the training process	Students	4	3	11	9	42	34	57	46	124
		Teachers	2	8	6	23	5	19	13	50	26
6	Conducting monitoring in training classes regularly	Students	8	6	20	16	59	48	37	30	124
		Teachers	4	15	4	15	7	27	11	42	26
7	Evaluation out of class activities regularly	Students	14	11	16	13	46	37	48	39	124
		Teachers	2	8	4	15	8	31	10	38	26
8	Conducting discussion on problems related to the training with trainees	Students	16	13	23	19	34	27	51	41	124
		Teachers	3	12	3	12	6	23	14	54	26

As indicated in the table V, 41% of trainees and 38% of trainers respondent, replied that providing strong leadership for the institution, it is medium. 68% of trainees and 58% of trainers responded on promoting the quality of training supported by administrators' as very low and also on supporting trainers' effort and conducting discussion on problems related to the training asserted the administrators' role was medium / moderate. This implies, the administration didn't give more attention for providing strong leadership and to promote the quality of training. In order to bring about effective curriculum implementation in the school, administrator should change their role from managerial to institutional.

In the above table, trainees and trainers were asked to rate; effective usage of resources /materials and efficiently utilization of the institution resources and the annual budget allocated, majority(60%) of trainees and a few less than half(46%) of trainers responded as low.

In the table above, 48% of trainee respondents and 27% of trainer respondent reported that conducting, monitoring and evaluating the training activities by administrators as medium. The TVET managers should be able to handle and retain those who joined the profession so as to alleviate the scarcity of training materials.

To sum up, Educational managers should give due attention to provide strong leadership, promote quality of training, effective utilization of resources and budget allocated, support trainers effort and conducting discussion on problem both with trainees and trainers. TVET is a flexible program that must go with change in the labor market and technological innovations. Therefore, continual follow up monitoring and evaluation, as well updating the training system is important matter.

4.5. Apprenticeship training programme

Apprenticeship training is a means through which trainees learn practical skills on the job under the tutelage of a master craftsman. It is a method through which trainees get on the job training in addition to the theoretical and basic practical skills. The trainees are acquainted with the relevant skills and attitudes, which enables them to integrate easily into the work environment (OEB; 2003:22).

Table VI. Percentage and frequency distribution of trainees’ respondents concerning apprenticeship training programme

No	Items	Yes		No		Total
		No	%	No	%	
1	Do you participate in the apprenticeship programme?	107	86	17	14	124
2	Does your institution assign a supervisor for the programme?	92	74	32	26	124
3	Does the government give attention to apprenticeship programme?	88	71	36	29	124
4	Do private organizations /companies give attention to apprenticeship training programme?	38	31	86	69	124
5	Do offices, organizations / companies have qualified and experienced supervisor to train trainees during apprenticeship training programme?	42	34	82	66	124
6	Are there adequate machines, manuals, hand tools and work shops in the apprenticeship training?	30	24	94	76	124
7	Is the apprenticeship training programme for practical skill training effective?	56	45	68	55	124

As stated in table VI above, 86% of the trainee respondents were participated in the apprenticeship training programme, whereas 14% of the trainees responded as not participated in the apprenticeship program. 74% of the trainees reported the institution didn't assigned a supervisor for the apprenticeship program. 71% of the trainees replied that the government gave attention to the apprenticeship training programme, while 31% of the trainee respondents responded that the private organizations did not gave attention to the skill training programme.

Concerning availability of qualified supervisors in government offices, private organizations 82% trainees said that as inadequate and 42% of trainees replied that the availability of experienced supervisors was moderately adequate. Therefore, in government offices and private organizations supervisors must have experiences and qualification in the field of practical training. However, poor supervision activities in one way or another profoundly affected the implementation of curriculum.

4.6. Trainers activity and subject matter knowledge

The major characteristic of technical and vocation education is its practical skills development components. Teaching practical skill is very different from teaching knowledge or theory because it requires some special considerations. TVET basically emphasizes practical training and imparting skills. Therefore, trainers must have experiences adequate practical skills and should provide trainees with occupational skills and competencies desired in the world of work. With this concept different questions were forwarded to respondents in table VII to examine trainers' status of technical skills.

Table VII. Percentage and frequency of distribution of trainees' respondent concerning teacher activity

No	Items	Respondents rating										Total I N
		5		4		3		2		1		
		N	%	N	%	N	%	N	%	N	%	
1	Training by relating theory and practice	20	16	42	34	28	23	24	19	10	8	124
2	Knowledge of the subject they are training	17	14	55	44	28	13	14	11	10	8	124
3	Coverage of content according to course outline	29	23	27	22	36	29	25	20	7	6	124
4	Appropriate use of available materials	-	-	14	11	26	21	54	44	30	24	124
5	Interest in helping trainers for academic success out of training of time	20	16	25	20	43	35	15	12	21	17	124
6	Evaluating Students of trainees academic achievement continuously	13	10	45	36	36	29	20	16	10	8	124
7	Providing guidance and counseling services	10	8	30	24	50	40	24	19	10	8	124
8	The interpersonal relationship of trainers with trainees	13	10	48	39	45	36	08	7	10	8	124
9	Trainer's effort and experience to do assignment, tutorial, project work, etc	39	31	41	33	20	16	19	15	5	5	124
10	Trainers ability in practical teaching /training	23	19	34	27	37	30	24	19	6	5	124

As the data revealed in the above table, (16%), (34%) and (23%) of the respondents replied very high, high and medium respectively for trainers ability of training by relating theory and practice. Similarly, trainers' knowledge of the subject they are training was rated very high by (14%) high by (44%) and medium by (31%) of the trainees' responded. A small number (29%) of the trainee respondents disclosed that the trainers covered the course content according to

course out line. Regarding trainers' ability to use of the available materials majority (44%) of the trainee respondents reported as low.

Concerning trainers' interest in helping trainees for academic success out of training time and evaluating trainees' performance continuously 35% and 20% of the trainee respondents were requested high and medium. In relation to trainers evaluation (36%) said high and (29%) responded low. Furthermore, (40%) and (24%) of trainees declared that assistance of trainers ability on providing guidance and counseling service as medium and high. This implies that trainers in both selected study area do not get adequate assistance and evaluation from trainers and their works are not evaluated regularly and properly.

All together, from the data provided by the study groups, one can understand that trainers have the ability in their trained field area/ subject area; however, in relating theory to practice, conducting continuous assessment and doing assignment, tutorial and project work is not sufficient. In this regard, during the observations time, more theory and e method of teaching was observed. For this reason, most trainers responded that, because of shortage of machines, a hand tool and work shops are hardly possible to enhance the training.

4.7. Trainers' professional and their field of specialization

No doubt, trainers are key actors and play a significant role in the education system. The ultimate repository and safeguard of the quality of work is the teaching staff of the school. The quality of both academic instruction and vocational training depends largely on our securing a few numbers of well educated, well equipped and contented teachers.

Vocational trainers play an indispensable role in improving the quality of the technicians and the training program. In so doing they contribute to quality of education, societal and economic development. The availability of skilled and productive manpower is a key matter for social and economic developments of any nation. No matter how vast its natural resources might be, a nation cannot achieve economic growth without trained and skilled man power. Of all the components that go to make an education system viable, functional, and productive nothing is as crucial as the provision and maintenance of qualified and satisfied teaching force.

Since teaching is helping students to learn, teaching is to be effective it demands trainers to have interest in the profession. In addition to the philosophical and theoretical understanding of the instructional strategies and ways to support students' learning, good teaching demands the trainer's enthusiasm and commitment to implement the curriculum effectively as suggested in the syllabus.

Table VIII. Trainers' professional and Training field area

No	Questions	Response			
		Yes		No	
		No	%	No	%
1	Are you happy in the teaching profession?	8	31	18	69
2	Have you got a chance to be oriented on the teaching method?	2	8	24	92
3	Do you have training in technical /vocational area?	24	92	2	8
4	Do you have any orientation on how teaching learning process going on?	2	8	24	92
5	Do trainees conduct to different fields of study base on their interest?	26	100	-	-
6	Are the majority of trainees interested in their field of study?	20	77	6	13
7	Do your teaching loads affect the effectiveness of your teaching learning activities?	11	42	15	58
8	Do you think that the existing number of students in each section has any negative in pact on your teaching	10	38	16	62
9	Are there sufficient modules, reference books, manuals etc, in your field area?	9	35	17	65
10	Are there adequate technicians / too/ men who render maintenance service in the field of your training?	-	-	26	100
11	Do you evaluate trainees' activities continuously?	19	73	7	27

Trainers have to be both knowledgeable in subject areas and skillful in wide range of teaching approaches and professional interests to cater for the divers leaning of every student. Having this in mind, item 1 of the above table VIII, 69% of trainers were replied negatively in their teaching profession.

Items 2 and 5, as it can be observed from the table VIII, 92% of trainers were reported badly as they have no orientation on teaching subject methodology. The more teachers with solid knowledge in the subject area bring quality of education and achievements in socio-economic development. Teachers must know not only the general principles and the methods of teaching but also the most effective methods of developing the skills that helps for the future employment.

UNESCO and ILO (1973:85) recommended pedagogical training for both theoretical and practical training in order that teachers are better to transmit skills and knowledge. This implies the negative attitudes of teachers towards their professional and lack of teaching method can affect the effective implementation of curriculum.

On the other hand, respondents that reacted negatively when asked the teaching loads, the existing number of trainees in each class for practical skills and adequate machines, reference books and lack of technicians/tools men in each department, were responded 58%, 62%, and 100% respectively. This shows practical skills are unconstraint.

Effective teaching requires individuals who are academically able; having command of the subject they are required to teach. The aim of teaching/learning is not basically the acquisition of knowledge alone. It awakens the curiosity, the stimulation of creativity, the development of proper interests' attitudes values and the building of essential skills such as independent learning (Aggarwal, 2004:434).

Chapter Five

5. Summery, Conclusions and recommendations

5.1. Summary

The principal aim in undertaking this study was to assess the current implementation of the curriculum of water technology in two selected middle-level TVET colleges of Oromia region. Concomitant with this, the following basic research question were formulated.

- 1. What are the factors that affect the implementation of middle level TVET water technology curriculum?*
- 2 Are adequate resources available for the implementation of the water technology curriculum in Oromia region?*
- 3. What type of training methods have been employed to implement the water technology curriculum?*

The study employed a descriptive survey method. To address the above research questions, the researcher reviewed relevant literature and prepared three sets of questionnaires, interviews and observation to collect data from the subjects that named by two TVET institutions Asella and Welliso. These questionnaires were designed for trainees and trainers. The questionnaires have seen by some senior post graduates and checked by my advisor were simplified and modified, irrelevant questions were omitted. The subjects of the study were 148 trainees, 30 trainers, two deans/vice deans and two vocational counselors. Questionnaires, interviews and observation checklists were used to collect data from the sources. The data obtained were analyzed and interpreted by applying frequency distribution and percentage.

Accordingly an attempt is made to provide summary of the major findings, which would answer the basic research questions.

1. A breakdown of the study population indicated that males constitute an overwhelming majority (86%) while females took a small minority (14%) in the water technology streams.
2. As regards to age compositions, 85% of the trainers and 63% of trainees falls within the age range 21-29years whereas the administrators were above 30 years.
3. The study revealed that the academic profile of TVET water technology trainers and deans were as per the requirements of the MOE, all the trainers in the TVET colleges were degree holders.
4. The study also indicated that more than 85% of trainers and 50% of principals have no better teaching /training work experience.
5. Further more, the study depicted that only a smaller number of trainees 40(32%) and 47(27%) of the trainers regarded, the content of the water technology curriculums as appropriate for the maturity level of trainees.
6. It was found out that the time allotted to cover the contents was regarded by a good majority of respondents (65%) as good.
7. The findings of the study disclosed that 31% of trainees & 31% of trainers reported clarity and simplicity of the language used in the modules as low.
8. The study also indicated that there are problems with regard to the logical sequence of the course contents.
9. The study revealed that 65% of trainees and 58% of trainers reported the availability of machines and equipment as insufficient.
10. The study also disclosed that 39% of trainees and 46% of trainers asserted the lack of raw materials needed for practical training led to the dominance of the theoretical aspect.

11. The study depicted that the effective utilization of resources in the TVET colleges was low
12. It was also found out that there was lack of evaluation and monitoring activities in both TVET colleges.
13. The study disclosed that 86% of the trainees regarded the availability of apprenticeship opportunities as very high.
14. It was also found out that 71% of the trainees regarded the attention given by the government to the apprenticeship program as good.
15. The study revealed that 69% of the respondents and the interview made with vocational counselors viewed that the provision of apprenticeship opportunities by the private sectors as low.
16. It was also found out that 44% of trainees reported lack of appropriate teaching materials to be used by the trainees during the apprenticeship.
17. The study also indicated that the poor utilization of continuous assessment & evaluation methods by trainers.

Finally, the following points can generalized the major findings of the study:

- a. Low supply of raw materials & inadequate training budget
- b. Trainers lack of industrial experience & their commitment
- c. Lack of proper management
- d. Lack of proper designing of the water technology curriculum
- e. Shortage of apprenticeship training site & training materials
- f. Unwillingness of private sectors to take apprentices for training.
- g. Lack of knowledge and skills of teaching methods on the part of the trainers.
- h. Less concern for water technology streams in TVET

5.2. Conclusions

Based on the research findings of this study values the following conclusions.

As one can understand from the findings, the contents of the Water Technology curriculum lack coherence, sequence, continuity this implies that professionals or curriculum experts were not actively engaged in the preparation of the curriculum. Thus it is possible to conclude that the lack of adequate facilities like machines, and equipment hampered the proper implementation of Water Technology curriculum.

Emphasis was given to examine the existence of instructional materials, however, as the study revealed that there are insufficient instructional materials found in both colleges. So the existence of inadequate instructional materials affected the implementations of Water Technology curriculum negatively.

The ineffective utilization of resources at both TVET colleges could lead to deterioration of quality of the training, and also the lack of trainers' competency in training/ teaching the subject area hampered the implementation of the curriculum of Water Technology.

5.3. RECOMMENDATIONS

Based on the findings and the conclusions drawn from the study the following recommendations were made by the researcher:

1. The MOE has developed a guideline for TVET colleges which claims that 70% of the training ought to be practical where as only 30% should be theoretical trainings. To realize this, it is very necessary that the sampled

TVET colleges must be equipped with adequate machines, hand-tools, and equipments.

2. Curriculum development is not a point in time event. It is instead a continuous process. Hence, OTEVT Agency must undertake curriculum revision by consulting the MOE.
3. The trainers at sampled TVET colleges must get updating training in the area of methods of teaching so as to promote the effective implementation of the water technology curriculum.
4. Better linkage must be established between OTVET and Companies so as to facilitate apprenticeship training.
5. The administrative staff of the TVET colleges should get short term training on how to utilize resources effectively.
6. More awareness raising activity should be carried out by Oromia TVET Agency to attract the community and other stakeholders towards the expansion of water technology in the country.

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Appendix A
ADDIS ABABAS UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND TEACHERS' Form 01
PROFESSIONAL DEVELOPMENT STUDIES

Questionnaire to be answered by Trainees

Directions: The purpose of this questionnaire is to examine "the implementation of the curriculum of water technology in two selected TVET colleges in Oromia Region". So as to forward some suggestion to improve the prevailing problems, your cooperation in relevant, feelings and suggestion are worthwhile for the study. Please be frank and respond to each item as accurately as possible. Your cooperation in relevant and can did information is highly important for the study.

Be sure that the information you provide will be kept confidential and used only for academic purpose.

Thank you!

Part One

1. Name of the TVET institution _____ Zone _____ woreda _____
Town _____
2. Sex: Male _____ Female _____. Age _____
3. Training program enrolled in 10+2 _____ 10+3 _____
4. Field of Training _____

Part Two

1. Questionnaire Guide lines

1. Before you join this institution have you any information about your field study?

A. Yes ☐

B. No ☐

C. Partially yes ☐

2. How did you choose to make your education in TVET institutions?

Because of A. Family influence ☐

B. Its opportunity to employment ☐

C. Better income from the field ☐

D. Its access to further education ☐

E. Lack of other alternatives ☐

F. Former graduate ☐

G. If any other specify _____

3. How did you choose your department/ field's of study?

A. Own choose ☐

B. With help of vocational counselo ☐

C. Friends convinced ☐

D. The orientation given by the ☐

department

E. The institution for cement

F. If other specify _____

4. Are you interested in your field of study?

A. yes ☐

B. No ☐

C. Not this much ☐

2. Items Regarding Curriculum

2.1 How do you rate the content of the curriculum of middle level TVET water Technology College? Show your response by making "√" mark on the column provided under the number of your choice.

The numbers represent 5 = very good, 4 = good, 3 = fair, 2 = poor, 1 = very poor

No	Training provision/curriculum	5	4	3	2	1
A	Appropriateness of the contents to the understanding level of trainees					
b	Adequacy of recognized curricula for training					
c	Emphasis of training to practice than theoretical teaching					
d	The extent of the curriculum flexible to accommodate the interest of trainees					
e	Clarity and simplicity of the language used in the modules					
f	Relevance of the contents to the daily life of trainers					
g	Relevance of curriculum to the world of work					
h	Relevance of the contents to the future life of the trainees					
i	Provision of training based on the time allotted in the curriculum					
j	Adequacy of actual periods allotted to cover the contents					

2.2 What are the major factors that hinder the implementation of curriculum in your institution? _____

2.3. Please suggest possible solutions to minimize the existing institutional factor affecting curriculum implementation _____

3. Items concerning teachers activate

3.1. In your field of study how do you evaluate most trainers on the basis of the activities given? Put “√” mark in the space provided 5=very high, 4= high, 3= medium, 2= low, 1= very low

No	Activities	5	4	3	2	1
a	Training by relating theory and practice					
b	Knowledge of the subject they are training					
c	Coverage of content according to course out line					
d	Appropriate use of available materials					
e	Interest in helping trainees for academic success out of training time					
f	Evaluating of trainee academic achievement continuously					
g	Providing guidance and counseling services					
h	The interpersonal relation ship of trainees					
i	Trainer's effort and experience to do assignment tutorial project work, etc.					
j	Trainers ability in practical teaching /training					

4. Items concerning the apprenticeship programme

4.1. In your field of study, how do you evaluate apprenticeship training programme? Show your response by making “√” mark on in the space provided

S. No	Items	yes	no
1	Do you participate in the apprenticeship programme?		
2	Does your institution assign supervisor for the programme?		
3	Does the government give attention to apprenticeship programme?		
4	Do private organization/company give to apprenticeship training programme		
5	Do Offices, Organizations/Company's have qualified and experienced supervisor to train trainees during apprentice ship training programme?		
6	Are there adequate machines, manuals, hand tools and workshops in the apprenticeship training?		
7	Is the apprenticeship training programme for practical skill training effective?		

5. Items Related to Material provision and facilities

Put a "√" mark in the space provided for the specified of choice

S. No	Materials	Highly availably	Available	Moderately available	Not available
1	How do you rate the availability of equipments in your field of training?				
2	How do you rate the availability of modules in your field of training?				
3	How do you rate the availability of relevant reference books in the library?				
4	The availability of raw materials needed for practical training.				
5	The availability internet service				
6	The availability of classrooms as compared to the number of trainees				
7	The availability of water and electric supply				
8	The availability of separate latrine for students and staff				

6. Items related to Administration service

In your opinion how do you evaluate your institutions principals according to the following activities?

Put a "√" mark for your choose.

s. No	Activates	Very high	High	medium	Law
a	Providing strong leadership for the institution				
b	Effectively usage of resources/materials				
c	Promote quality of training principals' support				
d	Efficiently utilize institution resources and the annual budget allocated				
e	Supporting trainers effort in the training process				
f	Conducting monitoring in training classes regularly				
g	Evaluating out of class activates regularly				
h	Conducting discussion on problems related to the training with trainees				

ADDIS ABABAS UNIVERSITY
SCHOO OF GRADUATESTUDIES
FACULTY OF EDUCATION

PROFESSIONAL DEVELOPMENT STUDIES

Directions: The purpose of this questionnaire is to examine” the implementation of the curriculum of water technology in two selected TVET colleges in Oromia Region”. So as to forward some suggestion to improve the prevailing problems, your experience, feelings and suggestion are worthwhile for the study. Please be frank and respond to each item as accurately as possible.

Thank you!

1. Name of the TVET institution _____ Zone _____ woreda _____ Town _____

2. Personal Data: 2.1. Sex: ☒ Male ☐ Female

2.2 The Age range a. 21 to 25 years ☐ d. 31 to 35 years ☐

b. 41 years and above ☐ **e. 36 to 40 years** ☐

3. Maternal status a. marrie☐ b. Singl☐ c. Divorced/Separat☐

d. Widowed ☐

4. Area of specialization **a. major** **b. minor**

4.1 Educational qualification **a. MA/MSC** ☐ **b. AB/BED/BSC** ☐

c) College Diploma ☐ b. certificated (12+TTI) ☐

e. If other, specify **5. Your work experience**

Part Two

1. Items Related to professional and training field area

The following questionnaires (a-l) are supposed to measure the professional qualification and training field area of water technology stream trainers. Please choose the answer from the alternatives in the table and make a tic “√” in the appropriate grid.

No	Questions	Response	
		Yes	No
a	Are you happy in the teaching profession?		
b	Have you got a chance to be oriented on the teaching method?		
c	Do you have training in technical /vocational area?		
d	Do you clearly know the objectives of TVET programme?		
e	Do you have any orientation on how teaching learning process going on?		
f	How do trainees conduct to different fields of study?		
g	Are the majority of trainees interested in their field of study?		
h	Do your teaching loads affect the effectiveness of your teaching learning activities?		
i	Do you think that the existing number of students in each section has any negative impact on your teaching?		
j	Are there sufficient modules, reference books, manuals etc, in you field area?		
k	Are there adequate technicians/ tool men who render maintenance service in the field of your training?		
l	Do you evaluate trainees' activities continuously?		

2. Item concerning the provision of learning materials

The next questions (1-7) are supplied to know the provision of materials resources and training facilities.

No	Items	Highly sufficient	Sufficient	Moderately Sufficient	Not sufficient
1	The availability/relevance of machines, hand tools, workshop for practical training				
2	Adequacy of modules, reference books in the field of training				
3	Availability of training materials, equipments raw materials provided for training				
4	Size of school compounds, training classrooms				
5	Library with required chairs, tables and shelves				
6	Adequacy of separate latrine for boys and girls				
7	Availability of computer centers, internet, demonstration classes and project sits				

3. Items Regarding Curriculum

3.1 How do you rate the content of the curriculum of middle level TVET water Technology College? Show your response by making a “√” mark on the column provided under the number of your choice

The numbers represent 5 =very good, 4= good, 3 = fair 2 = poor, 1= very poor.

No	Curriculum contents	5	4	3	2	1
a	Appropriateness of the contents to the understanding level of trainees					
b	Adequacy of recognized curricula for training					
c	Emphasis of training to practice than the theoretical teaching					
d	The extent of the curriculum flexible to accommodate the interest of trainees					
e	Clarity and simplicity of the language used in the modules					
f	Relevance of the contents to the daily life of trances					
g	Relevance of curriculum to the world of work					
h	Relevance of the contents to the future life of the trainees					
i	Provision of training based on the time allotted in the curriculum					
j	Adequacy of actual periods allotted to cover the contents					

3.2 What are the major factors that hinder the implementation water technology curriculum in your institution?_____

3.3 Please suggest possible solutions to minimize the existing factor affecting curriculum implementation

4. Items related to Administrative service

4.1 In your opinion how do you evaluate your institutions principals (management bodies) according to the following activities? Please put a "√" mark for your choose

No	Activities	Very high	High	Medium	Low
a	Providing strong leadership for the institution				
b	Effectively usage of resources/materials				
c	Promote quality of training principals' support				
d	Efficiently utilize institution resources and the annual budget allocated				
e	Supporting trainers effort in the training process				
f	Conducting monitoring in training classes regularly				
g	Evaluating out of class activities regularly				
h	Conducting discussion on problems related to the training with trainees				

Appendix C
ADDIS ABABAS UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND TEACHERS' Form 03
PROFESSIONAL DEVELOPMENT STUDIES

**Section One: - Interview to be answered by TVET Principal
(College Dean)**

Objective: - The purpose of this interview is to gather information and opinion regarding the implementation of the curriculum of water technology in two selected TVET colleges in Oromia Region

Thus, your frank and sincere responses to the items in the question help to meet the objective of the study. Be sure that all information you provide will be held confidential and used only for the academic purpose.

Thank you!

Part One

1. Name of the institution _____

2. Personal data: a) sex _____ b) Age _____

a. Divorced/Separated ☐

c. marital status a. married ☐

b. Single ☐

d. Widowed ☐

3. Area of specialization: Major _____

Minor _____

4. Work experience in the present post _____ year (s)

In other post _____ year(s)

As instructor /Trainer _____ year (s)

Part Two

Interview Guideline

- 1. Do you have any training in educational planning and management?**
- 2. What are the major objectives of your TVET institution?**
- 3. How many students are there in your institution?**
- 4. How many qualified trainers are there in your TVET institution?**
- 5. What are the major difficulties concerning availability and effective utilization of training facilities and material resources?**
- 6. How do you evaluate the provision of learning materials in your institution?**
- 7. What are the major problems rewarding availability and effective utilization of human resources?**
- 8. Are there any problems encountered regarding financial resource raising and utilization?**
- 9. How do monitor and evaluate your institution's performance regularly?**
- 10. Are academic research dean, Administrative and development dean, vocational counselor of your institutions plays a leader ship role effectively?**
- 11. Where the facilities and materials are in adequate, what mechanisms do you use to facilitate the instructional program?**
- 12. Please list some institutional factors that affect the implementation of curriculum.**

Thank you in advance for your cooperation!

Section Two: Interview to be answered by Academic and Research

Dean

1. Name of the institution _____ sex _____ age _____
2. Area of specialization: Major _____ minor _____
3. Your current position _____
4. Your work experience: In the present post _____ year's _____
In other post _____ Years _____
As instructor/ Trainer _____ years

Direction: The purpose of this interview is to gather information and opinion regarding “the curriculum implementation of water technology in two selected TVET college in Oromia region”. Thus, your frank and sincere responses to the items in the question help to meet the objective of the study. Be sure that the information you provide will be kept confidential and used only for the academic purpose.

Thank you!

Interview Guideline

1. Do you have any educational planning and management training?
2. What are the major objectives of your TVET institution?
3. How many students are there in your institution?
4. Do your institutions have adequate qualified trainees? You are there major taken to solve the existing problems?
5. Do the students are informed about TVET program be fore they placed to different fields of study?
6. What are the admission criteria in your TVET institution?
7. How do you evaluate the design of the modular texts of water technology with regard to:
 - a. Clarity, simplicity and feasibility of the courses objectives?
 - b. Relevance, clarity, comprehensiveness of contents?

- c. Over all organization of the course elements (objectives, contents, learning activities and assessment methods)?**
- 8. What are the major problems that hinder the implementation of water technology curriculum in terms of human resources, material resources and financial resources?**
 - 9. In your institution what are the admission criteria of students?**
 - 10. How do students streaming to various fields of study?**
 - 11. Does the library provide adequate service? Are there sufficient reference books in the library?**
 - 12. How do trainees-trainers and trainers inter personal relation ship?**
 - 13. To what extent the TVET curriculum flexible to accommodate the interest of trainer/trainees?**
 - 14. Do most trainers cover the syllabus during academic year/ if no, why**
 - 15. Do most trainers implement the 70% practical and 30% theoretical?**
 - 16. Did given any intra-staff contacts of training for trainers to facilitate the implementation of the curriculum? Of yes, what achievements have been made so far? If no, why?**
 - 17. Please list some institutional factors that affect the implementation of curriculum**

Thank you in advance for your cooperation!

Section 3: Interview to be answered by Vocational Counselor

Direction: The purpose of this interview is to gather information and opinion regarding “the curriculum implementation of water technology in two selected TVET college in Oromia region”. Thus, your frank and sincere responses to the items in the question help to meet the objective of the study. Be sure that the information you provide will be kept confidential and used only for the academic purpose.

Thank you!

Part One

1. Name of the institution _____ sex _____ age _____
2. Area of specialization: Major _____ minor _____
3. Your current position _____
4. Your work experience: In the present post _____ year (s) _____
In other post _____ Year(s) _____
As instructor/ Trainer _____ year(s)

Part Two

Interview Guideline

1. Do you have any training in educational planning and management?
2. What are the major objectives of TVET institution?
3. How many students are there in your institution?
4. How do students streaming to different fields of study?
5. Does your institution undertake any training need assessment and labour market survey?
6. How the apprenticeship training program in your institution?
7. Do the government offices give attention to apprenticeship training program?

Section Two: Interview to be answered by Academic and Research Dean

1. Name of the institution _____ sex _____ age _____
2. Area of specialization: Major _____ minor _____
3. Your current position _____
4. Your work experience: In the present post _____ year's _____
In other post _____ Years _____
As instructor/ Trainer _____ years

Direction: The purpose of this interview is to gather information and opinion regarding “the curriculum implementation of water technology in two selected TVET college in Oromia region”. Thus, your frank and sincere responses to the items in the question help to meet the objective of the study. Be sure that the information you provide will be kept confidential and used only for the academic purpose.

Thank you!

Interview Guideline

1. Do you have any educational planning and management training?
2. What are the major objectives of your TVET institution?
3. How many students are there in your institution?
4. Do your institutions have adequate qualified trainees? You are there major taken to solve the existing problems?
5. Do the students are informed about TVET program before they placed to different fields of study?
6. What are the admission criteria in your TVET institution?
7. How do you evaluate the design of the modular texts of water technology with regard to:
 - a. Clarity, simplicity and feasibility of the courses objectives?
 - b. Relevance, clarity, comprehensiveness of contents?

Section 3: Interview to be answered by Vocational Counselor

Direction: The purpose of this interview is to gather in formation and opinion regarding “the curriculum implementation of water technology in two selected TVET college in Oromia region”. Thus, your frank and sincere responses to the items in the question help to meet the objective of the study. Be sure that the information you provide will be kept confidential and used only for the academic purpose.

Thank you!

Part One

1. Name of the institution _____ sex _____ age _____
2. Area of specialization: Major _____ minor _____
3. Your current position _____
4. Your work experience: In the present post _____ year (s) _____
In other post _____ Year(s) _____
As instructor/ Trainer _____ year(s)

Part Two

Interview Guideline

1. Do you have any training in educational planning and management?
2. What are the major objectives of TVET institution?
3. How many students are there in your institution?
4. How do students screaming to different fields of study?
5. Does your institution under taken any training need assessment and labour market survey?
6. How the apprenticeship training program in your institution?

7. Do the government offices gives attention to apprenticeship training program?
8. Do the government offices have qualified and experienced supervisor to train the apprenticeship program?
9. Are there adequate machines, workshop, hand tools, etc in your institution and government's office for apprenticeship training
10. Do private organization/ Individuals Company give attention to apprenticeship program?
11. Do the private organization / Individuals Company have qualified and experienced supervisor to train the apprenticeship training?
12. Are there adequate machines hand tools, workshops, etc .in privet organization and Individual's company's?
13. Does employment /self employment available immediately after graduation for trainees? If no, what do you think the solution is?
14. What are the major problems that hinder the apprentice ship training of program?
15. Kindly suggest possible solutions to alleviate the existing problems?

Thank you in advance for your cooperation!

Appendix D

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM AND TEACHERS'

Form 04

PROFESSIONAL DEVELOPMENT STUDIES

Observation Check List

Direction: The purpose of this checklist is together facts about the relevance of staffing, equipment, facilities, services, the training process etc. through observation at the sites.

Part One

1. Name of the TVET institute _____
2. Geographical setting zone _____ woreda _____ Town _____
3. Years of establishment as TVET institute _____
4. Number of classrooms _____
5. Staff population: Academic staff/ male _____ Female _____ Total _____
6. Availability fields Administrative. Start male _____ Female _____ Total _____

7. Number of training staff for each field of study including their educational qualification

No	Fields of specialization	M	F	T	Educational Qualification			
					Diploma	Degree	Mater	Others
1	Electrical engineering							
2	Mechanical engineering							
3	Geology							
4	Irrigation and Drainage							
5	Water supply and sanitation							
6	English							
7	Mathematics							
8	Physics							
9	Chemistry							
10	IT/ Computers							
11	Hydraulics civic & ethical							
12	Civic & Ethical Education							
13	Business/ Entrepreneurship							

Part Two

A. Rating Scale / form

S. No	Instructional Considerations	Frequency		
		Frequently	Rarely	Not at all
1	How often the teacher attempts to use different instructional methods and techniques in lesson presentation			
2	How often the teacher encourage students during group work/ discussion			
3	How often the teacher try to guide students in participation/ discussion			
4	How often the teachers write important ideas and concepts on the black board?			
5	How often the teacher encourages students to ask questions which are not clear to them?			
6	How does the teacher is question, to check students understanding			
7	How often the teacher relates the lesson to students' real life in the future			

B) Class room observation checklist

S. No	Implementations (Lesson presentation) Variables	Yes	No
1	Did the teacher write the lesson topic before starting presentation?		
2	Did the teacher introduce the objective of the topic?		
3	Did the teacher try to connect the lesson with the previous one before starting the new lesson?		
4	Did the teacher attempts to use different instructional methods		
5	Did he give equal attention for all corners in the classroom		
6	Did he divide the class in to groups and encourage students to work in groups?		
7	Did the teacher available to provide immediate help to students during group work in the class?		
8	How did the teacher encourage students to ask unclear ideas and concepts?		
9	Did the teacher summarize important concepts of the lesson?		
10	Did the teacher continuously correct and approve students work?		