Addis Ababa University

School of Graduate Studies

Evaluation of the Curriculum of Construction Equipment Maintenance Training in Alemgena Machine Based Technology Training Center

By

Gizaw Yadete

June, 2016

Addis Ababa, Ethiopia

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A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirement for the Degree of Master of Arts in Curriculum and Instruction

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List of Acronyms

AMBTTC- Alemgena Machine Based Technology Training Center

EMTT-Equipment Maintenance Training Team

EOS-Ethiopian Occupational Standards

ERA-Ethiopian Road Authority

MCM- Mechanized Construction Method

MoE-Ministry of Education

NQF -National Qualification Framework

RRA-Rural Roads Authorities

TVET- Technical and Vocational Education and Training

USAID- United State Agency for International Development

Abstract

The purpose of this study was to evaluate the curriculum of construction equipment maintenance at Alemgena Machine Based Technology Training Center. A descriptive quantitative and qualitative research design was adopted. Data obtained through questionnaire; interview, and document analysis. Purposive sampling method was applied to Equipment Maintenance Training Team Leader and Training Manager. Sample trainees and trainers were selected first using stratified sampling to be able to include trainees and trainer participants from the departments available. 88.88% current trainees, 80% recent graduate trainees and 88.23% trainers completed, returned, and used for the study. For the Equipment Maintenance training Team Leader and training manager interview was used to collect the data. Curriculum material observation and analysis were also used. The major findings of the study indicated that, the curriculum is designed in the context of TVET colleges, it is beyond the capacity of the training center due to the shortage time; the module contents couldn't be covered, inadequacy of equipments and machines for practical training, most of the instructional approaches have been using lecture and discussion for skill training. Finally, the study recommended that need assessment by the training center trainers to adjust the current curriculum with the objective of the training center maintenance training objectives and needs to equip with training resources.

CHAPTER ONE

1. Introduction

1.1. Background of the study

Training is an educational activity that has a specific duration. The main goal of training is to improve the knowledge and skills of the participants by giving series of courses of study through a specific curriculum. Monahan (2012, p.362) states that training can cover a specific range of course of the study to reach its goals. A training program has a goal to improve knowledge and skills on the participants' expertise in order to keep them motivated and bring the improvement to their institution by implementing the new knowledge in their job (Monahan, 2012). Therefore, conducting a training program is important for an institution or department to improve its quality by updating its employees' knowledge and skills. A training program is an essential effort to increase the productivity, motivate and inspire the employees by giving them important knowledge and skills that they need to perform their jobs in the most effective way (Anonymous, 1998 in McClelland, 2002, p. 87). It is also an important way to cope with the rapid change of technology and the diversity of the participants' work (Hamdani, 2012, p.178).

A training program is considered effective if it can improve the participants' knowledge and skills after they follow the program. According to Black & Mendenhall (1990), a training program is effective when it is able to develop participants' specific skills and enhance their job performance. Similarly, Noe (1986) also states that an effective training enables the participants to improve their knowledge and to raise their potential outcome (promotion, raises, etc.) after they follow the program. Its effectiveness depends on the work of the organization as a whole that contributes the supporting atmosphere for the program (Kontoghiorghes, 2001). The effectiveness of a training program also depends on many aspects that influence each other during their implementation. Those aspects are curriculum implemented training methods, skills or task characteristic trained, and the choice of training evaluation, which are related to the effectiveness of training programs (Arthur Jr., Winston Jr., Edens, & Bell, 2003).One way to measure the effectiveness of a training program is by conducting a curriculum evaluation. Through a curriculum evaluation, the administrator of a training program can decide whether they want to continue the program or reject it (Lewy, 1973, p.97).

In other words, the administrator of the training program can use the curriculum evaluation results to assess whether a training program is effective or not. It is because the curriculum evaluation helps the administrator of the training program to identify the strength of the program that should be maintained or even improved, and the weakness of the program that should be minimized. Thus, conducting a systematic curriculum evaluation is considered as a crucial step that can give a substantial influence on the overall effectiveness of the training program (Goldstein & Ford, 2002).

In 1951 E.C, when the Imperial highway authority nowadays known as Ethiopia Roads Authority was established the total Road network was 6400 km. This network was built mainly during Italian invasion. However, soon after the creation of the Imperial Highway Authority as a chartered organization, it become evident that the local labor market could not be considered an adequate source of skilled man power required to conduct a modern, mechanized, road-building program. This realization led to the establishment of a training scheme designed to upgrade the skill levels of employees already engaged in road building and maintenance activities. Therefore, the Imperial highway authority established Alemgena Training and Testing Center (ATTC) which was established in 1956 E.C by ERA in cooperation with USAIDand it is located in Alemgena town, 20 kilometers west of Addis Ababa on the Addis Ababa-Jimma Road MeseretMelese, (2003,p.2). At present the name has been changed to Alemgena Machine Based Technology Training Center (AMBTTC).

AMBTTC is the sole government training center byconductingmechanized construction training in the country. It provides training in construction equipment maintenance, construction equipment operation, road construction and maintenance supervision. AMBTTC provides in-house training for ERA, Rural Roads Authorities (RRA), Municipalities, and Private contractors by its own traditional training curriculum. At this time the training has been endorsed for all associated organization both from domestic and neighbor foreign countries.

The Ethiopian Ministry of Education (MoE, 2005) states that the strategic thinking behind the expansion of the TVET and sub-sector training is to meet the middle-level human power demand of the industry, service sector and commercial agriculture, which have become very essential to the overall development of the country. It is an instrument for producing technicians equipped with practical knowledge. The reformed Ethiopian TVET-System is an outcome-based system.

It utilizes the needs of the labor market and occupational requirements from the world of work as the benchmark and standard for TVET delivery. The requirements from the world of work are analyzed and documented taking into account international benchmarking as Ethiopian Occupational Standards (EOS).Curricula help to facilitate the learning process in a way, that learners acquire the set of occupational competencies (skills, knowledge and attitude) required at the working place and defined in the Ethiopian Occupational Standards (EOS).

Accordingly, the current written and documented curriculum of AMBTTC was designed and developed by a group of experts from different Regional TVET-Authorities and experts from construction organization stakeholders such as Ethiopian Roads Authority based on the Ethiopian Occupational Standard Road Construction Equipment servicing identified by MoE. It has the character of a model curriculum and is an example on how to transform the occupational requirements as defined in the respective Ethiopian Occupational Standard into an adequate curriculum. The curriculum development process was actively supported and facilitated by the Ministry of Education in line with one of its mandates to provide technical support to the regions and by the TVET-Reform Component of the Engineering Capacity Building Program.

Hence, this study evaluated the curriculum objectives of Road Construction Equipment Maintenance Training Program administered at Alemgena Machine-Based Technology Training Center (AMBTTC) in line with the training program objectives of the center. Under the provision of course materials include: equipment mechanic training courses; equipment electric training courses; machining training courses, welding training courses, and automotive body repair training courses. An evaluation was conducted assessment of the curriculum objective in accordance with the objectives of the training center and the needs of the stakeholders, the module contents in line with the program objectives of the center, the most likely instructional approaches suggested in the curriculum to facilitate the achievement of the program objectives of the center and the resource (time, material and human) appropriate in line with the program objectives of the center.

1.2. Statement of the problem

The main purpose of the study was to investigate and analyze the objectives of the current construction equipment maintenance curriculum. The main objective of AMBTTC is to provide short term training for workers on jobs to fill skill gap. Earlier the center has not well organized, revised and documented formal curriculum. But the current curriculum was developed by a group of experts from different Regional TVET Authorities based on the Ethiopian Occupational Standard Road Construction Equipment Servicing, Moe (2009.

As training standpoint, what instructional role do trainers currently play in the overall curriculum and how effective are trainers in fulfilling that role. What skills, knowledge and abilities should trainees possess at the end of their training? During the design of occupational standards and the development of model curricula, employers contribute by formulating outcomes. Educators have to translate these needs into model curricula, recommending training and assessment methods conducive to reaching the defined outcomes.

Some evaluation researchers (Clarke, 1994) believe that evaluation activities should be framed so that they are primarily concerned with an examination of curriculum wide instructional issues, such as content sequencing, lesson design, practice, and testing. This is critical to the evaluation effort because it is essential to first measure the quality of instruction and then use the evaluation data to help identify the optimum instructional strategies. The selected instructional strategies, in turn, drive the selection of which delivery technologies should be included in the curriculum.

Lack of access to employee-relevant training in modern and informal sector of the economy prevents most of the existing potential in the production and service sectors. To solve this problem, it is necessary to make training system demand-led and employee focus (GTZ, 2005). Therefore, training is designed to develop skills, abilities, understandings, attitudes, work habits and appreciation encompassing knowledge and information needed by workers to enter and make a progress in employment on a useful and productive basis. It is an integral part of the total training program and contributes towards the development of good citizens

The model curriculum has been practicing since their introduction in 2009 largely because a major change to it has not been revised. Need assessment, enveloping and revising curriculum and training materials and their practice with dynamic technology is very essential.

Note that the study was conducted to insure that the evaluation thereby avoiding premature or preconceived notions about any potential recommendations. This approach was intended to promote a curriculum evaluation study that was designed to derive data that provides information about the curriculumof the training center objectives and the needs of the stakeholders, the current module contents in line with the program objectives of the center, the instructional approaches suggested in the curriculum to facilitate the achievement of the program objectives of the center and the resource (time, material and human) appropriate in line with the program objectives of the center.

As the researcher observed the training curriculum objective; the attachment period has been introduced to formal TVET. But its implementation has faced a number of problems; mainly because of the objective of the center don't agree with the curriculum objective, shortage of time, shortage of material supply for training of competency requirement in some sections/shops.

To this end the researcher tried to answer the following research questions:

1. Is the curriculum in accordance with the training objectives of the center and the needs of the stakeholders?
2. Are the current module contents in line with the program objectives of the center?
3. Which instructional approaches suggested in the curriculum is most likely to facilitate the achievement of the program objectives of the center?
4. Are the resources (time, material and human) appropriate and in line with the program objectives of the center?

1.3. Objectives of the study

1.3.1. General objective

The main objective of the study was to evaluate the objectives of the construction Equipment Maintenance training curriculum at Alemgena Machine Based Technology Training Center.

1.3.2. Specific objectives

1. to evaluatecurriculum objectives are or not in accordance with the objectives of the training center and the needs of the stakeholders;
2. to examine the module contents' appropriateness to the training objectives of the center;
3. to examine the effectiveness of the suggested instructional approaches to facilitate program goals/objectives; and
4. to assess the appropriateness of resource (time, material and human) in line with the program objectives of the center

1.4. Significance of the study

Nowadays, a noticeable problem in employees' training is the training quality and inappropriateness of the training curriculum, especially its inability to meet the objectives and to improve employees' skills do not go with the dynamic technology. One of the ways to improve this problem is the provision of an effective training program with appropriate written curriculum in line with the needs of the stakeholders. So, it is crucial to evaluate the training curriculum. In view of this, the researcher believes that the findings of the study have the following advantages:

1. It may inform managements of training team about the training objectives/gaps in providing demand driven from the training need identification.
2. It may help trainers to be aware of their institutional status and initiate them to contribute what is expected from them.
3. It may also help that it would initiate other stakeholders and responsible bodies to take part in the improvement of the training in line with the objectives of the training and their needs.
4. It may also serve as a document for further study.

1.5. Delimitations of the Study

The scope of the study was delimited to single organization, namely Alemgena Machine-based Technology Training Center in equipment maintenance training program. Besides, the study focused on the evaluation of construction equipment maintenance curriculum. Therefore the study did not explore the other aspects of the activities of the training center.

1.6. Limitation of the study

When the researcher conducts this study, there were difficulties in establishing sampling population because of unproportioned entry of trainees at each training shops. Hence, the data lack pertinence to the comparative sources.

Beside the difficulty of reaching recent graduate trainees and the lack compiled document at institutional level were particularly the main challenges that encounter the study in obtaining sufficient information as easily as needed andthe scarcity of reference materials and research papers relevant to construction equipment maintenance curriculum. However, it was attempted to make the study as complete as possible.

1.7. Operational Definition of key terms

Automotive Body shop: A training section which provides training on body repair and painting for different body parts of the equipment.

Construction Equipment- Equipment/Machines used for construction works; trucks, excavators, loaders, dozer, etc.

Curriculum: A program developed by a group of experts from different Regional TVET-Authorities and actively supported and facilitated by the Ministry of Education (MOE) based on the Ethiopian Occupational Standard for Road construction equipment maintenance.

Electric training shop: A training section which provide maintenance training on the electrical system of the Automotive/construction equipment.

Equipment Maintenance Training Team: A team comprises of five training shops; Mechanic, Electric, Machine, Welding, and Automotive body.

Machine training shop: A training section which provides maintenance training on the machining and fabrication works for different parts of the equipment.

Maintenance: is repairing or restoring of a piece of equipment, machine, or systems to the specified operable condition to achieve its maximum useful life.

Mechanic training shop: A training section whichprovidemaintenancetrainingon the mechanical, hydraulic, and pneumatic system of the construction equipment.

Training facilities: Training equipment available for both theoretical and practical demonstrations in training center to ensure the quality of training offered; such as training manuals, workshops, machineries and others.

Training Manager- the executive of the Alemgena Machine Based Technology Training center.

Training Module: Training materials prepared by senior trainers which is used as text book for trainees

Welding training shop: A training section which provides maintenance training on welding and welding technology for different parts of the equipment.

1.8. Organization of the Study

The study is organized in to five chapters. The first chapter focuses on introduction, the second chapter reviewed related literature, the third chapter discussed research design and methodology and the fourth chapter presented, analyzed and interpreted the data. Finally the fifth chapter winds up with summary, conclusions and recommendations.

CHAPTER TWO

2. Review of Related Literature

Introduction

This chapter gives a review about some relevant literatures for the study. This review discussed the curriculum definition, especially in a training program. Curriculum evaluation that can lead into an effective training program also discussed then, module development for technical training and learning theories. The last discussion under this chapter is the theoretical framework of CIPP model in curriculum evaluation.

2.1. Curriculum

Definition

Curriculum is a systematic group of courses or sequence of subjects required for graduation or certification in a major field of study (Oliva, 1988, p.6) in other words, curriculum can be defined as the total experience learning. From this view point, curriculum is not only the content selected and delivered, but also the planned and unplanned activities in which individuals' participate as learners.

Curriculum is defined as the sum of all experiences, which are to be provided in an educational institution. According to Wheeler (1967) curriculum means the planned experiences offered to the learners under the guidance of the school. Curriculum has been defined by Tanner (1975) as the planned guided learning experience and intended learning out-comes formulated through a systematic reconstruction of knowledge and experiences under the support of the school for the learner's continuous and willful growth in academic, personal & social competence.

The curriculum has some definitions according to its usage in the training program. Some authors define curriculum as an implemented system to describe the content of a course in the learning process in the classroom, which also provides a measurement of the participants' knowledge (Sconce and Howard, 1994. It is often used to indicate a program, whether for a subject, grade, the entire subjects, or even the whole range of a program cycle (Lewy, 1977). According to Leathwood and Phillips (2000), curriculum aims on the outcome oriented approach that emphasizes the participants' skill and capabilities, which will lead them to become capable graduates and to be fully prepared for their future career.

2.2. Training and Training Curriculum

Training

Training is the process of acquiring specific skills to perform a job better (Jucious, 1963). It helps people to become qualified and proficient in doing some jobs. Usually an organization facilitates the employees' learning through training so that their modified behavior contributes to the attainment of the organization's goals and objectives. Van Dersal (1962) defined training as the process of teaching, informing, or educating people so that they may become as well qualified as possible to do their job, and they become qualified to perform in positions of greater difficulty and responsibility.

Flippo (1961) differentiated between educations and training, locating these at the two ends of a continuum of personnel development ranging from a general education to specific training. While training is concerned with those activities which are designed to improve human performance on the job that employees are at present doing or are being hired to do, education is concerned with increasing general knowledge and understanding of the total environment. Education is the development of the human mind, and it increases the power of observation, analysis, integration, understanding, decision making, and adjustment to new situations.

Training may broadly be categorized into two types: pre-service training and in-service training. Pre-service training is more academic in nature and is offered by formal institutions following definite curricula and syllabuses for a certain duration to offer a formal degree or diploma. In-service training, on the other hand, is offered by the organization from time to time for the development of skills and knowledge of the workers. In-service training is a process of staff development for the purpose of improving the performance of an incumbent holding a position with assigned job responsibilities. It promotes the professional growth of individuals. "It is a program designed to strengthen the competencies of extension workers while they are on the job (Malone, 1984, p. 209). In-service training is a problem-centered, learner-oriented, and time-bound series of activities which provide the opportunity to develop a sense of purpose, broaden perception of the custom, and increase capacity to gain knowledge and mastery of techniques.

In-service training may broadly be categorized into five different types: (1) induction or orientation training, (2) foundation training, (3) on-the-job training, (4) refresher or maintenance training, and (5) career development training.

Induction or Orientation Training: Induction training is given immediately after employment to introduce the new extension staff members to their positions. It begins on the first day the new employee is on the job (Rogers & Olmsted, 1957). This type of training is aimed at acquainting the new employee with the organization and its personnel. Induction training for all new personnel should develop an attitude of personal dedication to the service of people and the organization.

Foundation Training: Foundation training is in-service training which is also appropriate for newly recruited personnel. Besides technical competence and routine instruction about the organization, every staff member needs some professional knowledge about various rules and regulations of the government, financial transactions, administrative capability, communication skills, leadership ability, coordination and cooperation among institutions and their linkage mechanism, report writing, and so on. Foundation training is made available to employees to strengthen the foundation of their service career. This training is usually provided at an early stage of service life (Malone, 1984, p. 213).

Maintenance or Refresher Training: This training is offered to update and maintain the specialized subject-matter knowledge of the workers. Refresher training keeps the workers updated and enables them to add to the knowledge and skills they have already. Maintenance or refresher training usually deals with new information and new methods, as well as review of older materials. This type of training is needed both to keep employees at the peak of their possible production and to prevent them from getting into a rut (Van Dorsal, 1962).

On-the-Job Training: This is a regularly scheduled training, such as fortnightly training under the training and visit (T&V) system of extension, and is provided by the superior officer or the subject-matter specialists to the subordinate field staff. This training is generally problem oriented or technology oriented and may include formal presentations, informal discussion, and opportunities to try out new skills and knowledge in the field. The superior officer, administrator, or subject-matter specialist of each extension department must play a role in providing on-the-job training to the staff while conducting day-to-day normal activities.

Career or Development Training: This type of in-service training is designed to upgrade the knowledge, skills, and ability of employees to help them assume greater responsibility in higher positions. The training is arranged departmentally for successful extension workers, at all levels, for their own continuing education and professional development (Malone, 1984).

Training curriculum

Training curriculum is a total package of learning activities designed to achieve the objectives of the training program (Judith, 1994).The objective, or desired end, is that trainees will acquire the specific knowledge and skills (competencies) they need to do their jobs. There are three primary components to be examined when evaluating any training curriculum. They are:

1. the content or information to be transmitted;
2. the organization of the curriculum which includes structure, format, and sequencing; and
3. the training approaches used training resources;

Even though there are other components for evaluating the training curriculum, the researcher focused on four major components as stated in specific objectives of the research.

2.3. Training curriculum development process

Curriculum development is central to the teaching and learning process, and includes all the planning and guiding of learning by training or teaching organization, whether it is carried on in groups or individually, inside or outside a classroom, in an institutional setting or in a village or field (Rogers and Taylor, 1998). Curriculum Development is the most important part in a training programme after a need for training has been identified. The curriculum specifies what will be taught and how it will be taught.

Construction Equipment Sector is one of the relatively lesser known but significant sectors that support almost all construction activities. However, notwithstanding its importance and size, it has traditionally not been accorded the attention it deserves as a separate sector in itself. The level of inefficiency in “Construction Equipment Sector” activities in the country has been very high across all modes. The required pace of efficiency and quality improvement will demand rapid development of capabilities of service providers. And with these “Construction Equipment Sector” activities being a service-oriented sector, skill development will emerge as a key capability. This lack of focus on developing manpower and skills for the sector has resulted in a significant gap in the numbers and quality of manpower in the “Construction Equipment Sector.

This gap, unless addressed urgently, it is likely to be a key obstruction in the growth of the sector in Ethiopia and in consequence, could impact growth in construction sectors as well. This underscores the six need identifying areas where such as manpower and skill gaps are critical, and developing focused action plans to improve the situation.

There are five general of curriculum development process:

Needs analysis: once training needs have been identified and training activities have been decided as part of the solution, a needs analysis should be done to determine knowledge, skills, and attitude requirements and performance deficiencies. The needs analysis procedure involves breaking down the "training problem" into its basic parts in different successive phases to identify and understand the important components in each phase. Ultimately it leads to identifying and understanding the training content. The training needs analysis process can be divided into three distinct analytical phases: job analysis, task analysis, and knowledge and skill-gap analysis.

Job analysis: Job analysis is a method of determining major areas of tasks where training may be needed. It involves the breakdown of a job into its component events or parts. This analysis allows a trainer to better understand what an employee does in an organization. Job analysis involves the "task identification" of a particular job (Wentling, 1992). The techniques used in task identification include job questionnaire, interview, participant observation, work sampling, job audit, and small-group discussion.

Task analysis: The output of the job analysis is a list of broad job tasks, based on importance, learning difficulty, and frequency of doing the task. Each task is a complex set of procedures in itself, and therefore it needs further analysis to find out which specific segment of the task is critical in designing a training program. To do this, it is necessary to follow a method called task analysis, which is similar to job analysis. Task analysis procedures include preparing a blank task analysis worksheet, writing down the name of the job at the top of each sheet, and then making copies. Each of these forms will be used for breaking down and analyzing each of the most important job tasks. Therefore, it is necessary to write one important task identified for training on each of the task analysis. This is followed by the steps used for job analysis to find out the frequency, importance, and learning difficulty for each step of the tasks. Then the score for each component part is put in the "total score" column, and the results are discussed with concerned personnel in the organization. The job analysis and task analysis processes are similar to each

other, so the model for both worksheets is the same. The important difference between these two steps of analysis is that "the job analysis helps us identify major blocks of content to include in training; the task analysis helps us understand what comprises an individual block" (Wentling, 1992). Both are very important to the curriculum development process. What needs to be taught and what steps are involved in the process are completed by these analyses and comprise the major steps in curriculum development.

Knowledge and skill-gap analysis: The knowledge or skill-gap analysis is a process of determining the training needs of individual employees in relation to the important tasks-steps or components of tasks identified for training. The skill-gap analysis determines how skilled or proficient individual employees are on these tasks-steps or components, how much individuals differ from desired performance, and whether or not they need training. It would be a waste of resources and frustrating to the trainer and trainees to design and deliver training on topics and skills where the trainees are already able and proficient. A priority list of the tasks identified for training according to the total score in the job analysis is made. Then, the steps or components that were identified on each task analysis worksheet are listed on the skill-gap analysis worksheet. After this, a review is done to ponder whether the gap can be decreased or removed through training or whether training is the most appropriate method. There may be some steps-components for which measures other than training are more appropriate. At this stage, key personnel such as subject-matter specialists, supervisors, and extension-training experts should discuss the findings before finalizing the curriculum. This helps to identify different perspectives and to avoid unnoticed mistakes or biases in curriculum development. The training needs analyses provide many things to a trainer (Wentling, 1992). The analyses determine the training contents and how deficient the trainees are in these contents, and the sequence of tasks provides the sequence of training activity.

Selecting a Training Method:

A training programme has a better chance of success when its training methods are carefully selected. A training method is a strategy or tactic that a trainer uses to deliver the content so that the trainees achieve the objective (Wentling, 1992). Selecting an appropriate training method is perhaps the most important step in training activity once the training contents are identified. There are many training methods, but not all of these are equally suitable for all topics and in all situations. To achieve the training objective, a trainer should select the most appropriate training

method for the content to involve the trainees in the learning process. Four major factors are considered when selecting a training method: the learning objective, the content, the trainees, and the practical requirements (Wentling, 1992).

A variety of training methods are available to a trainer. The most commonly used methods include:

Instructor presentation: The trainer orally presents new information to the trainees, usually through lecture. Instructor presentation may include classroom lecture, seminar, workshop, and the like.

Group discussion: The trainer leads the group of trainees in discussing a topic.

Demonstration: The trainer shows the correct steps for completing a task, or shows an example of a correctly completed task.

Assigned reading: The trainer gives the trainees reading assignments that provide new information.

Exercise: The trainer assigns problems to be solved either on paper or in real situations related to the topic of the training activity.

Case study: The trainer gives the trainees information about a situation and directs them to come to a decision or solve a problem concerning the situation.

Role play: Trainees act out a real-life situation in an instructional setting.

Field visit and study tour: Trainees are given the opportunity to observe and interact with the problem being solved or skill being learned.

2.4. Curriculum evaluation

Definition

Evaluation can be defined (Worthen& Sanders, 1987, p.215) as an activity that involves the formal determination of the quality, effectiveness, or value of a program, product, project, process, objective or curriculum. An evaluation makes use of a systematic process of inquiry that includes developing the criteria or standards for evaluation, the collection of relevant data and then making judgments about the object of the evaluation by applying those previously developed standards in order to determine quality.

Evaluation is a word used in a variety of ways sometimes with rough and overlapping meanings (Lawton, 1973). It is much wider than that of measurement. It is more fundamentally concerned with deciding on the value or worth wholeness of a learning process as well as the effectiveness with which it is being carried out. Curriculum evaluation refers to the process of studying the merit or worth of some aspect, or the whole of curriculum. Depending on the way in which the term curriculum is defined, the focus or objects of curriculum evaluation could include Curriculum design, Learning environment, Instruction Process, Resources and Materials used in instructional process

It is also essential to find out about the adequacy as well as the provision of the required teaching resources such as teaching aids, laboratories, library books and instruments (Wiles & Bondi, 1989) Curriculum evaluation is clearly a process by which we attempt to gauge the value and effectiveness of any piece of educational activity which could be a rational project, or a piece of work under taken by or with pupils.

In order to investigate the effectiveness of the objectives of curriculum of construction equipment maintenance training, this study conducts an evaluation toward the existing curriculum. A curriculum evaluation can be used to maintain or even improve the quality of the training, and to detect the lack in the training that is needed to be improved. According to Lewy (1977), a curriculum evaluation helps the program administrator to maintain or reject a program, makes some specific modifications needed, and helps to explain the best condition to implement the program. Further, Lewy (1977) agree that a curriculum evaluation is essential to maintain a program to prepare competent and high-quality practitioners. Therefore, curriculum evaluation can be used to control the quality of the training program by maintaining its effectiveness. In a broader scope, curriculum evaluation is conducted to improve the quality of education through the information collected during the evaluation implementation. In other words, the art of curriculum evaluation is to collect and spread the information that can be used to improve the quality of educational practice Lewy (1977).

The word ‘evaluation’ is always widely applied to many different activities, and people are willing to conduct evaluation when they need to show that they have completed something (Steinmetz, 1983). Actually, there are many definitions of educational evaluation. For instance, Stufflebeam and Webster (1983) defined that educational evaluation as “designed and conducted to assist some audience to judge and improve the worth of some educational objectives” (p.69).

Steinmetz (1983) demonstrated that evaluation gives suggestions for making judgment of worth in education. Cronbach (1983) illustrated that educational evaluation is the "collection and use of information to make decisions about educational programme" (p.156).

Although different people give different definitions to educational evaluation, they have the same focusing idea, which can be concluded by Stufflebeam (2003), as he stated, "evaluation's most important purpose is not to prove but to improve education" (p.73). The objectives for evaluation can be derived from any educational levels; for example, there may be a set of instructional materials used nationally, the teaching activities of a single school or the educational experiences of a single pupil (Cronbach,

1983).

2.4.1. Purpose of curriculum evaluation

It becomes essential that substandard training goals, materials and methods of instruction are not retained but up-dated in consonance with the advances in social cultural & scientific field. It is also important to ascertain how different educational institutions and situations interpret a given or prescribed curriculum. Hence, arises the need for curriculum evaluation

Curriculum evaluation monitors and reports on the quality of education. Cronbach (1963) distinguishes three types of decisions for which evaluation is used.

1. *Course Improvement*: deciding what instructional material and methods are satisfactory and where changes are needed.

2. *Decisions about individuals*: Identifying the needs of the pupil for the sale of planning of instruction and grouping, acquainting the pupil with his own deficiencies.

3. *Administrative regulations*: Judging how good the school system is, how good individual teachers are. The goal of evaluation must be to answer questions of selection, adoption, support and worth of educational materials and activities. It helps in identifying the necessary improvements to be made in content, teaching methods, learning experiences, educational facilities, staff-selection and development of educational objectives. It also serves the need of the policy makers, administrators and other members of the society for the information about the educational system

According to Brinkerhoff (1988), a good training curriculum evaluation should be able to prove that the program:

1. is aimed at important and worthwhile organizational benefits;
2. operates smoothly and effectively and is enjoyed by participants;
3. achieves important skills, knowledge and attitude objectives;
4. uses the best available and most cost-effective designs;
5. is used effectively on the job; and
6. provides valuable and cost-effective organizational benefits

2.4.2. Levels of evaluation:

The evaluation can be undertaken at two levels. According to Scrivens (1967)

1. *Formative*: during the developmental phase
2. *Summative*: after a curriculum has been developed and implemented.

In the developmental phase, the exercise of formative evaluation serves as a feed-back and influence the shape of the curriculum through successive revisions. Summative evaluation is concerned with the assessment of the emergent curriculum as it is offered to the school system. Tyler (1949) visualized curriculum evaluation as a process of determining to what extent the educational objectives are actually being realized by the program of curriculum &instruction. Two basic approaches to evaluation have been identified; *scientific* and the *humanistic* (Cronbach, 1982). In the scientific approach, decision about the educational program is made on the basis of efforts scores of students, which are employed to compare student's achievements. The decision about the program is made on the basis of this comparison. In the humanistic approach, the evaluator uses data obtained from thick descriptions of actual events. Data is also obtained from interviews with the participants in the curriculum program and is utilized for the purposes of evaluation. T*herefore the humanistic approach evaluation model appears to be an appropriate choice.*

There are four primary elements to be examined when evaluating any training curriculum. Those are: textbooks (modules), course of the study, classroom practices, and supporting facilities. Hoover (1999) states that curriculum consists of plan books, courses of the study, and textbooks. Further, he also states that curriculum intends to have an outcome that matched between what should be learned and what the students really learn. A good curriculum should support and facilitate the participants' effort to achieve similar results as the intended goals of the training

program. Altrichter (2005) agrees that curriculum should provide manuals (textbooks), training strategies' recommendation and working material for learners. Manuals are also considered as the key component in a training program (Posner, 2004). Therefore, manuals become an important part in curriculum because it functions as a day-to-day guide during the learning process to ensure curriculum effectiveness. Lewy (1977) emphasizes the importance of the manuals by stating that manuals are part of the curriculum that can be evaluated to maintain the effectiveness of a training program. The importance of the manuals is usually considered based on its content and compatibility in its update with the recent development of the science. It may consist of some knowledge than can be used to improve the students' understanding of the recent science standard. It also may provide the basis of the content of the lesson and some practices in which the students take part in the learning process Lewy (1977), the references and reviews about the related topics, and provide an exclusive treatment to the internal validity in evaluating the training program (Sackett & Mullen, 1993). The quality of the printing in the manuals is also important to have a better understanding what is presented inside in order to upgrade the student's academic achievement (Sackett & Mullen, 1993). It is because the students will be able to study at ease and more comfortable when the manuals have a good printing quality.

The second element is the course of the study. The course of study is important because of its function as a guide to view a curriculum as a series of courses that the participants must go through, which can ensure that they are not overlapping each other (Posner, 2004). Bokonjic, (2009) defines course of the study as a subset of a program of study that should be designed through a very specific institutional procedure to ensure its effectiveness. Course of the study is also known as the essence of the curriculum, which should encourage and develop the critical thinking skills and problem-solving abilities of the training participants (Posner, 2004). It enriches the participants' knowledge and skills by having several tests of learning, which results in the enhanced experience in the related subjects. An effective course of the study will include support from the teachers and peers, which eventually will give a useful hint for the participants to improve their job (Bokonjic, 2009). Posner, 2004) also states that through a well-managed course of the study, the learners can examine how the training programs reflect the needs and condition in the reality and, conversely, sometimes helps them to get a better job. Therefore, designing an efficient, effective and un-overlapping course of the study in a training program is crucial to create an effective curriculum.

The third element is the classroom practices. Providing suitable classroom practices during the learning process could help the participants to develop a better exploration and conceptualization about the course of studies (Langrange, 2005). Therefore, classroom practices indeed influence the improvement of students' achievement. Including in the classroom practices are learning activities in the classroom and the equality between the burden of study hours and the subject credits.

Bokonjic, (2009) emphasizes the importance of the group work on learning activity to encourage the participants' knowledge improvement and personal development. While Langrange, (2005) states that classroom practices in problem-solving activities that involve the simulation and group work, which enables the participants to move from the abstract concepts into concrete ones. Together with appropriate manuals and effective course of study, suitable classroom practices are able to improve the participants' knowledge and skills in a training program.

The last element in the curriculum is the supporting facilities in a training program. In a wider range, the curriculum involves infrastructure and learning resources, student activities, and a supporting system around it Altrichter (2005). These all support the learning process in a program to achieve a better student outcome. In a learning process, training facilities can give a direct effect on the students' achievement. According to Langrange (2005), classroom situation and training facilities have an essential role in improving the students' achievement. Altrichter (2005) states; that poor training facilities trigger some difficulties for trainers in delivering the adequate education to the participants, which will influence the improvement of the participants' knowledge and skills. In fact conducive classroom condition helps the participants to have a better performance and a better learning outcome Langrange (2005). The flexibility of the supporting facilities to accommodate changing learning patterns and methods has a significant relationship with the student achievement. Thus, good training facilities will support an effective curriculum implementation in a training program. To reach an effective training program, the administrator of a training program should implement all of the curriculum elements, since they influence each other.

In general, curriculum is divided into three types that can bring influences on the participants' achievement. Those types are intended curriculum, implemented curriculum, and attained curriculum. The first type, the intended curriculum, is the reflection of the institution's preference for teaching and learning. The intended curriculum is also known as the goal of learning, and it is

usually written on a document and has an official status (Johansson, 2005). The intended curriculum describes what learners are expected to know and able to do, and under what condition these things will occur (Cuban 1992). Based on its function, the intended curriculum is placed on the educational level system, in which it "reflects societal visions, educational planning, and official or political sanctioning for educational objectives" (Johansson, 2005, p. 120) and intended to "directly influence teacher training and certification, school course offerings, instructional resources, and systems of accountability".

The second type is the implemented curriculum. This type of curriculum is also recognized as "curriculum in action" (Johansson, 2005), since it is what is taught in the classroom that consists of teachers' intention and objectives, and classroom activities (Johansson, 2005). This curriculum is the implementation of the intended curriculum in the classroom that is strongly affected by textbook and classroom practices (Cuban, 1992). Since the emphasis on curriculum implementation in the classroom will be in the context, needs, perceptions, and reactions of users, especially trainer.

The last type is the attained curriculum. This curriculum type is what the students actually learn as the result of the learning process in the classroom (Cuban, 1992). The result of this curriculum is the skills, knowledge, and dispositions that learners gain after they follow the program and the learning outcome for the trainers. Therefore, assessment becomes a key in understanding the attained curriculum (Kissane, 2000), since it is strongly related to the test and the participants' perspective about the curriculum. The attained curriculum is influenced by the implemented curriculum in the sense of the curriculum materials those are taught by the trainers during the learning process in the classroom (Kissane, 2000).

2.4.3. Models of curriculum evaluation

How should we drive about evaluating curriculum? Several experts have proposed different models describing how and what should be involved in evaluating a curriculum. Models are useful because they help us to define the parameters of an evaluation, what concepts to study and the procedures to be used to extract important data (Ornstein, A. and Hunkins, 1998). Numerous evaluation models have been proposed but three models are discussed in this study. These are CIPP Model (Context, Input, Process, and Product Model), Eisner’s Connoisseurship Model and Stake’s Countenance Model.

Context, Input, Process, Product Model (CIPP Model)

Daniel L. Stufflebeam (1971), who chaired the Phi Delta Kappa National Study Committee on Evaluation, introduced a widely cited model of evaluation known as the CIPP (context, input, process and product) model. The approach when applied to education aims to determine if a particular educational effort has resulted in a positive change in school, college, university or training organisation.

A major aspect of the Stufflebeam's model is centred on decision making or an act of making up one's mind about the programme introduced. For evaluations to be done correctly and aid in the decision making process, curriculum evaluators have to:

1. First outline what is to be evaluated and determine what information that has to be collected
2. Second is to obtain or collect the information using selected techniques and methods
3. Third is to provide or make available the information (in the form of tables, graphs) to interested parties. To decide whether to maintain, modify or eliminate the new curriculum or programme, information is obtained by conducting the following 4 types of evaluation: context, input, process and product.

Context Evaluation (What needs to be done and in what context)

This is the most basic kind of evaluation with the purpose of providing a rationale for the objectives. The evaluator defines the environment in which the curriculum is implemented which could be a classroom, school or training department. The evaluator determines needs that were not met and reasons why the needs are not being met. Also identified are the shortcomings and problems in the organisation under. Goals and objectives are specified on the basis of context evaluation. In other words, the evaluator determines the background in which the innovations are being implemented.

Input Evaluation (How should it be done)

The purpose of which is to provide information for determining how to utilise resources to achieve objectives of the curriculum. The resources of the school and various designs for carrying out the curriculum are considered.

Process Evaluation (Is it being done) is the provision of periodic feedback while the curriculum is being implemented.

Product Evaluation: Did it succeed or outcomes of the initiative. Data is collected to determine whether the curriculum managed to accomplish it set out achieve. Product evaluation involves measuring the achievement of objectives, interpreting the data and providing with information that will enable them to decide whether to continue, terminate or modify the new curriculum. Based on these findings the decision may be made to implement the programme in school, college, university or training organisation.

Eisner's Connoisseurship Model

Elliot Eisner, a well-known art educator argued that learning was too complex to be broken down to a list of objectives and measured quantitatively to determine whether it has taken place. He argued that the teaching of small manageable pieces of information prohibits students from putting the pieces back together and applying them to new situations. As long as we evaluate students based on the small bits of information students will only learn small bits of information. Eisner contends that evaluation has and will always drive the curriculum. If we want students to be able to solve problems and think critically then we must evaluate problem solving and critical thinking, skills which cannot be learned by rote practice. So, to evaluate a programme we must make an attempt to capture the richness and complexity of classroom events.

He proposed the Connoisseurship Model in which he claimed that a knowledgeable evaluator can determine whether a curriculum programme has been successful, using a combination of skills and experience. The word 'connoisseurship' comes from the Latin word cognoscere, meaning to know. For example, to be a connoisseur of food, paintings or films, you must have knowledge about and experience with different types of food, paintings or films before you are able to criticise. To be a food critic, you must be a connoisseur of different kinds of foods. To be a criticizer, you must be aware and appreciate the understated differences in the phenomenon you are examining. In other words, the curriculum evaluator must seek to be an educational critic. When employing the procedure of educational criticism the following questions may be asked:

1. What has happened in the classrooms as a result of implementation of the new curriculum?
2. What are some of the events that took place? (e.g. more students are participating in field work, more students are asking questions in class, even academically weak students are talking in group activities)
3. How did students and teachers organise themselves in these events?

4. What were the reactions of participants in these events? (e.g. students enjoyed working collaboratively in projects)
5. How can the experiences of learners be made more effective as suggested by students, teachers and administrators? (eg. more resources are needed for fieldwork, more computers are needed to integrate the internet in teaching and learning).

You will notice that these questions places more emphasis on the process of learning and the quality of experiences by those involved in the implementation of the curriculum; namely, students, teachers and administrators. According to the Connoisseurship Model, evaluators provide a description and interpretation of the curriculum plan implemented:

1. **Description**: The evaluator records the actions, the features of the environment and experiences of students, teachers and administrators. People who read the evaluation report will be able to visualise what the place looks like and the processes taking place. The aim here is to help the reader "see" the school or classroom and get a feel of what the curriculum evaluator or critic is attempting to understand and help others understand.
2. **Interpretation**: The evaluator explains the meaning of events reported by putting it in its context. For example, why academically weak students were motivated to ask questions? Why reading comprehension skills improved; why enthusiasm for doing science experiments increased and so forth.

To be able to describe and interpret the implementation of a curriculum the evaluator has to collect data and the following are examples of activities an evaluator may engage in:

1. The evaluator observes what is going on the classroom and records teachers and students in action using videotapes, audiotapes and photographs.
2. The evaluator keeps notes of what is done, what is said and more importantly what is not said. The evaluator should strive to describe the quality of the curriculum in action (Ornstein and Hunkins, 1998).
3. The evaluator interview students, teachers and administrators about the quality of the curriculum
4. The evaluator would analysis student's work

Over the time that Eisner has been writing there have been significant shifts in the context in which schools have to operate. While there have been other voices calling for changes in the culture of schooling (notably Howard Gardner in this arena), the impact of globalization, growing centralization in many schooling systems, reaction against more process-oriented forms of pedagogy, and a growing instrumentalism education have served to make Eisner's message both more pertinent to schools, and more difficult to respond to.

Stake's Countenance Model

The model proposed by Robert Stake (1967) suggests three phases of curriculum evaluation: the *antecedent phase*, *the transaction phase* and the *outcome phase*. The antecedent phase includes conditions existing prior to instruction. The transaction phase constitutes the process of instruction while the outcome phase relates to the effects of the programme. Stake emphasises two operations; descriptions and judgements. Descriptions are divided according to whether they refer to what was intended or what actually was observed. Judgements are separated according to whether they refer to standards used in arriving at the judgements or to the actual judgements.

2.5. Research related to curriculum evaluation

Research into training and curriculum evaluation (House, 1983; Phillips, 1991) has led to a number of theoretical approaches that can be divided into two broad categories. The first category includes those approaches that tend to favor a more utilitarian orientation that seeks to measure program effectiveness through an evaluation process aimed at establishing whether program goals and objectives have been attained. The second category includes approaches that rely on a more subjective approach that seeks to first reveal the concerns of all involved parties in an effort to inductively gather information concerning program outcomes. Examples of the former include both objective-oriented approaches (Metfessel& Michael, 1967) and the Discrepancy Evaluation Model (Provus, 1972), management-oriented approaches like the Kirkpatrick model (Kirkpatrick, 1976) and the CIPP Model (Stufflebeam&Shinkfield, 1985). Examples of more subjective approaches include Goal-Free Evaluation (Scriven, 1972) and participant-oriented approaches (Guba & Lincoln, 1981) which are almost exclusively driven by the stakeholders.

After a careful review of a number of evaluation approaches, it is apparent that managementorientedapproaches are most appropriate, particularly since the overarching goal for this evaluation is to provide both the Training Systems Program Manager for construction equipment Maintenance Training and decision-makers at AMMBTC with information regarding the efficacy of current instructional strategies and delivery technologies. The two management-oriented approaches, the Kirkpatrick model and Stufflebeam and Shinkfield's Context, Input, Process, and Product (CIPP) evaluation model, are designed to accomplish similar outcomes. However, according to Phillips (1991), the Kirkpatrick model is most often utilized by internal evaluators to measure the impact of a specific treatment on students. On the other hand, the CIPP model is designed to be used by external evaluators to collect the type of data about program-wide effectiveness that can assist managers in making judgments about program worth. Therefore, the CIPP evaluation model appears to be an appropriate choice.

2.6. Module development for technical training

According to Lanigan, M. (1999), there are three steps you should take before composing your training module. These steps are similar to designing any other performance improvement intervention.

Firstacomplete of front-end Analysis before writing a training module; you should have completed some type of front-end analysis, including task analysis. By doing so, you will have created, at the very least, a task listing of terminal and enabling objectives for the cognitive and behavioral tasks you plan to teach within the training module. You should also have a list of performance objectives that manifested from the task listing. The task listing and performance objectives will guide the outline of your training module. The outline should follow the task listing in the sense that all pre-requisite skills should be presented before more advanced skills.

Second step is dividing the content of your training into chapters;after outlining the content domain of your training, divide the content of your training into modules or chapters. Each module will then be set-up as a structured lesson.

Finally selecting a style of manual and prepares a style sheet to ensure consistency; a style sheet helps the writer ensure that the training manual looks consistent. For example, if the main headings are Arial, 14 point font and the sub-headings are Arial 12 point font, then all main and sub-headings should follow suit. The manual would look less professional if some of the

headings were Arial 14 while others were Times New Roman 12, or if the sub-headings were listed in various font sizes from 10 to 18. Besides listing heading sizes, the style sheet notes the rules the writers and editors will follow. For example, if there is special punctuation used or unusual terminology, then the style sheet would note the guidelines to follow for these cases.

Creating the Training module

According to Lanigan, M. (1999), there are three steps to develop your training module.

First write the draft of the training modulewhen writing your draft manual and implement

A break apart material into shorter, logical, sections and connect sections with transitions.

Trainees will be overwhelmed by huge amounts of text group together. To reduce their anxiety and engage them in your training materials, create shorter paragraphs. Place the paragraphs in logical order. As you present your information, you want to chunk your ideas into units or what would be in writing, a paragraph. A paragraph typically possesses four elements.

- A main idea.
- An explanation of the main idea, i.e., the presenter's rationale.
- Examples and/or non-examples to illustrate the explanation.
- A completion of the idea and transition into the next topic.

Make sure the writing is easy to read, avoid jargon when possible unless you have defined those unusual terms before-hand, use the active voice and be consistent in tone and style of writing. Leave white spaces between chunks of ideas and other logical groupings. White space makes the material look less intimidating, use images to enhance the writing; you know the saying and use bullets to offset text which helps the readers see important information.

Edit the draft moduleto make sure the contents are accurate, clear, and comprehensive. After editing your modulea number of times, next test the materials on people who are like your trainees. Complete usability tests to make sure the training moduleis fully functional.

Write the introductory materials for the training module such as the title page, publisher and copyright page, things to note page, and table of contents, state the title, sub-title if the module as one, and author's name and finalize the training module by adding the back contents

Write the back contents for your module. The contents in the back of the moduleinclude: Appendix; References; and Catalogue.

In general create a visually attractivemodule as follows.

- Lay the pages out in a manner that attracts the reader to the module.
- Select font styles and sizes that are easy to read.
- Use chapter and/or module dividers, especially in a color that offsets the pages.
- Provide practices and feedback throughout. A quality training modulealways provides the trainees with a number of exercises and/or practices of the materials. Along with practice is feedback. The trainees need communication mechanisms that tell them how well they are doing.

2.7. Instructional theories and training

Instructional/Learning theories are the basic materials which are usually applied in all educational and training activities. The more one understands instructional theories, the better he or she will be able to make decisions and apply them to achieving the objectives. The behaviorists, the cognitivists, and the humanists emphasize different aspects of the teaching-learning process in their approaches. While the behaviorists stress external conditions (environment) resulting in observations and measurable changes in behavior, the cognitivists are more concerned with how the mind works (mental processes such as coding, categorizing, and representing information in memory). The humanists, on the other hand, emphasize the affective aspects (e.g., emotions, attitudes) of human behavior that influence learning (IRRI, 1990). In extension systems, effective training must be able to take care of all the theories of learning in order to change the action, belief, and knowledge components of a trainee simultaneously. Andragogy (a theory of adult learning) is usually used rather than pedagogy (a theory of child learning) in extension training.

2.7.1. Instructional approaches

There are three approaches to training: (1) the traditional approach, (2) the experiential approach, and (3) the performance-based approach (Rama, Etling, & Bowen, 1993). In the traditional approach, the training staff designs the objectives, contents, teaching techniques, assignments, lesson plans, motivation, tests, and evaluation. The focus in this model is intervention by the training staff. In the experiential approach, the trainer incorporates experiences where in the learner becomes active and influences the training process. Unlike the academic approach inherent in the traditional model, experiential training emphasizes real or simulated situations in

which the trainees will eventually operate. In this model, the objectives and other elements of training are jointly determined by the trainers and trainees. Trainers primarily serve as facilitators, catalysts, or resource persons. In the performance-based approach to training, goals are measured through attainment of a given level of proficiency instead of passing grades of the trainees. Emphasis is given to acquiring specific observable skills for a task. This performance-based teacher education (PBTE) model, developed by Elam (1971), is mostly task or skill centered and is also applicable to non-formal educational organizations such as extension.

2.8. Theoretical framework CIPP model

There was an increased amount of curriculum evaluation studies using the CIPP Evaluation Model as the conceptual framework. The CIPP (context-input-process-product) model's main strengths were its ongoing and comprehensive nature for educational evaluation as well as capturing of the program context (Herod, 2000). The focus of this evaluation model was in particular focusing on the project's long-term effects and sustainable development (Stufflebeam, 2003), which meets the situations and the aim of the present study.

Furthermore according to Daniel L. Stufflebeam, the CIPP evaluation model allows the evaluator to conduct fourdifferent types of evaluation activities. **Context** evaluation considers questions regarding the setting and goals for the instructional program. It is particularly concerned with setting program goals that meet learner needs. **Input** evaluation looks at system resources in order to make judgments about how instructional approaches should be structured in terms of their content, budgets and schedules. **Process** evaluation makes judgments about how well an instructional program has been implemented. Finally, in the **Product** evaluation phase, the evaluator is interested in how well the outcomes of the instruction have met the program goals and the stakeholder needs. During this phase, the evaluator is also often interested in collecting data about any unintended outcomes. Ultimately, the evaluation report is used to supply decision makers with information about whether to continue, modify, or terminate all or part of an educational or training program.

One of the additional strengths of the CIPP evaluation model is that it can be utilized for both formative and summative evaluation. Therefore the program goals and objectives have already been established, only the Input, Process, and Product component of the CIPP model was utilized. The focusing principles of the CIPP model can help to maintain and improve the quality of particular institutional operations, such as the key focusing aspects of the new curriculum: curriculum design, teaching strategies and learning assessment in the present study.

The main advantage of this evaluation model was equipped with mixed approaches of quantitative and qualitative instruments (Stufflebeam, 1983).

CHAPTER THREE

3. Research Design and Methodology

3.1. Design of the Study

The purpose of the study was to evaluate the curriculum objectives of Alemgena Machine Based Technology training center Equipment Maintenance Training. In this study, a descriptive survey research method was employed to answer the "what" research question about the variables that provide an objective, reliable, and scientifically valid description about the variables in their original state (Vaus, 2005; Mitchell &Jolley, 2010). It was also assumed that this method was economical since it enables to describe the prevailing situations both quantitatively as well as qualitatively (Mixed method). As of Creswell, (2012:22) mixed methods design is that the combination of both forms of data provides a better understanding of a research problem than either quantitative or qualitative data.It enables to describe the prevailing situations both quantitatively as well as qualitatively which eventually help draw valid general conclusion. Therefore the research simply described and evaluated construction equipments training curriculum as it was without any effort to change the variable condition.

3.2. Sources of data

In order to attain the objective of the study the researcher used primary and secondary data sources. The primary data were trainees, trainers, Equipment Maintenance Training Team Leader & a training manager. In view of supporting the information that was gathered through primary sources, secondary data related to curriculum objectives was collected from curriculum materials and related documents.

3.3. The population, the sample and sampling techniques

Alemgena Machine Based Technology training center structured by Training manager at the top comprised of three teams namely equipment maintenance training team, Engineering and equipment operation training team, and administration and finance team. As the study focused on the equipment maintenance training team and this team comprised 33.3% of the total size of the training center teams and consequently, felt well representative. The sample size stood on the proportion of the target population in the training center (see table1). The Trainer & Trainees were selected using simple random sampling technique as highlighted by (Gay; 2006). A

Training manager and an equipment maintenance training team leader likewise selected for an interview.

There, 66.7% of 60 trainees of 2016 were selected and 75% of 20 trainers using the simple random sampling technique. In simple random sampling every member of the population has an equal and independent chance of being selected for sample. From 1000 recent graduated trainees of 2010-2015, 2% were chosen using snow ball sampling techniques since they were out of institutions and difficult to locate them.

Population, Population sample and Sample techniques included in the study were described as follows:

Table 1: Population, Population sample and Sample techniques

No	Respondents	Population	Sample Size	Sample Techniques
1	Trainers	20	15(75%)	simple random
2	Current Trainees	60	40(66.7%)	simple random
3	Previous trainees(2010-2015)	1000	20(2%)	Snowball
4	Team Leader	1	1(100%)	Purposive
5	Training Manager	1	1(100%)	Purposive
	Total	1082	77	

3.4. Data gathering tools and procedures

The desired information for the study conducted through different instruments. Marshall and Rossman, (1999) in Best and Kahn (2003) pointed out those three techniques were critical instruments for collecting qualitative data: observation, document analysis (review) and in-depth interviewing. To get sufficient information from a large number of respondents in a relatively short time and with minimum cost questionnaires is suitable for collecting quantitative data. Accordingly, three kinds of data were used as data gathering instruments; questionnaires, interview and document analysis were employed to gather detailed information about the case under study.

Questionnaire

One can involve large numbers of people by using a questionnaire (Hult, 1986:37) Questionnaire was used as the basic tool in this study to obtain information from the trainers and trainees with the assumption that it was enabled to get sufficient information from a large number of respondents in a relatively short time and with minimum cost. Even though the number of participants for this study was not large in number, the researcher designed this instrument due tolack of time. In order to extract respondents views on training need and relevance of curriculum with the training objectives, quality of training modules, status of training provision and instructional approaches, trainees benefits from the training both close and open ended question items were steered.

Interview

The purpose of interviewing is to find out what is in or on someone else's mind. That was, the interviewer collects the data from the interviewee, who provides the data (Johnsen and Christensen, 2008:203). They further explained that, interviews permit researchers to obtain important data they cannot acquire from other tools. In addition to this, interviews can provide information that is inaccessible through observation. Hence, the interview questions were prepared and used to obtain information about the Curriculum objectives of equipment maintenance training to acquire more in-depth information that may not be easily obtain through a questionnaire. Equipment Maintenance Training Team Leader & a training manager were participants for this tool.

Document Analysis

According to Best and Kahn (2003) and Merriam (1988) document analysis is one of the most important means to collect data in qualitative case study. Therefore, to find out further information about time allotment and suggested training methods; documents analysis was used.

Procedures of item development

The purpose, objectives and research questions of the research are examined. Determining who the participants, their background, are especially their educational/readability levels, access, and the process used to select the respondents. Next to generate items/questions for the questionnaire, a link among the objectives of the study and their translation into content is established. For example, the researcher indicated what the questionnaire is measuring, that is, knowledge, attitudes, perceptions, opinions, and other variables. Afterward items/questions writing, selection of appropriate scales of measurement (Likert scale (strongly agree to strongly disagree), questionnaire layout, format, question ordering and proposed data analysis was designed because understanding the relationship between the level of measurement and the appropriateness of data analysis is important. Draft questionnaire was ready for establishing validity. Validity is the amount of systematic or built-in error in measurement (Norland, 1990). Approval from the advisor and the questionnaire was ready to pilot test.

Procedures of Data Collection

To answer the research questions raised, the researcher was gone through series of data gathering procedures. Accordingly, first of all, the intended questionnaires, interview, document analysis were prepared. The researcher made clear the objective of the study to all respondents to avoid unnecessary confusions and enhance the reliability of the study before getting the questionnaires filled and the interviewee responded. To get high rate of return in the desired time, the questionnaires were distributed with some extra questionnaires. To make the questionnaires understandable for trainees it was translated from English language to Amharic.

Next, the informants of the study were identified and interview questions were presented for equipment's maintenance training team leader and training manager of the training center. The responses were received in face-to face communication and put on paper verbally while the informants gave answers orally. Furthermore, documents of curriculum materials were observed.

3.5. Pilot test

The purpose of this pilot test was to alter the instrument accordingly if there was any defect and secure the validity and reliability. A pilot test was conducted at AMBTTC by three lead trainers and three senior trainers each from electrical training section, Machining training section and welding technology training section prior to the utilization of the prepared instruments for final data gathering especially for questionnaire and three unclear items were made clear. In order to

check the face and content validities the instruments were submitted to and commented by my advisor. Based on comments eight lengthy items were shortened and 4 items were modified.

3.6. Data Analysis techniques

To make the collected data ready for analysis, the questionnaire was checked for completeness. The data were also classified and registered carefully. The gathered data was arranged and organized in tables. Both quantitative and qualitative techniques were used to analyze and interpret the obtained data. However, quantitative data analysis method was employed as the major technique since the data were gathered mainly by using questionnaires. And then data entry and analysis was done using Statistical Package of the Social Sciences (SPSS version 20). Simple descriptive statistics in the form of frequency counts and percentage distributions were utilized for analyzing quantitative data. In addition, the data obtained from open ended questions and interviews were analyzed; a summary of the overall responses made to similar issues as well. Furthermore, a scales measurement of the Likert scale (Strongly agree, Agree, Undecided, Disagree, Strongly disagree) were used in order to measure the frequency of responses. To increase the reliability of the data analysis and minimize the distortion of the picture, the percentage of similar categories were added and interpreted accordingly ('agree + strongly agree' in one category and 'disagree +strongly disagree' in another category).

3.7. Ethical Consideration

Since the aim of the study was for the improvement of the issue under the study, it has all process accomplished at the participants voluntarily permission without harming and threatening their personal and institutional wellbeing. Thus, all communication with center and participants undertake with open and honest way (in an overt research way) in considering the research ethical codes issues like explained everything that may the informants ask about the research, to fit the interviewee's schedule not to my own, anonymity (not the use of any names and address in the final report), respected their right not to cooperate for the interview fully in answering the questions, and confidentiality (not disclose directly any information to the third party).

CHAPTER FOUR

4. Data Presentation, Analysis and Interpretation

This chapter deals with the presentation, analysis, and interpretation of the data. After providing the background information of the sample population, this chapter proceeds to presentation of respondents' responses to the questionnaire and interviews and document analysis as well. It also includes the personal reflections of the researcher.

A total of 87 copies of questionnaires were distributed to 45 current trainees, 25 recent graduate trainees and 17 trainers. Out of those questionnaires distributed, 40 (88.88%) of current trainees, 20 (80 %) recent graduate trainees and 15(88.23%) of trainers were filled correctly and returned. Thus, the total return rate of the questionnaires was 86.2% of the sample population.

The analysis of quantitative data was computed by Statistical Package for the Social Sciences (SPSS). The percentage was widely used for analysis. The data gathered through interview and document analysis were analyzed qualitatively to support the quantitative data. The analyzed data were compiled and organized in a way that suit interpretation of the results in addressing the research questions. In this way 15 tables were constructed in categorizing the objectives of the study in groups, which in details deal with the responses of evaluating the curriculum objective in accordance with the objective of training center and the needs of the stakeholders, the current module contents in line with the program objectives of the training center, the most likely instructional approaches suggested in the curriculum to facilitate the achievement of the program objectives of the training center and the resource (time, material and human) appropriate in line with the program objectives of the training center.

4.1. Demographic Characteristics of Respondents

Understanding about the overview of the respondents characteristics was important for further analysis of their responses. Demographic data were any data that provide an understanding of population size, distribution, and composition Ellis,(1991). Hence, attempts were made to describe the background of the respondents which directly or indirectly related to the objectives of the study. Accordingly, the characteristics of respondents including sex, age, trainers' qualifications and trainees' level of education were separately treated.

Table 2: Back ground information of current trainees

No.	Item	Respondents	
		Trainees	
		No.	%
1	Sex		
	Female	9	22.5
	Male	31	77.5
	Total	40	100
2	Age		
	19-24	8	20
	25-30	18	45
	>30	14	35
	Total	40	100
3	Area of training		
	Auto mechanic	15	37.5
	Auto electricity	9	22.5
	Machine	6	15
	Welding	5	12.5
	Auto body	5	12.5
	Total	40	100
4	Education Level		
	<10th	3	7.5
	10+1	6	15
	10+2	8	20
	10+3	10	25
	10+4(Diploma)	13	32.5
	1st Degree and above	0	0
	Total	40	100

As indicated in the Table 2 above with regard to sex proportion, males trainees currently on training were dominant than females, comprising 31 (77.5 %) of the total number of the

respondents. This discloses that the participation of females in equipment maintenance work was less than men.

Age wise the same table shows that the majority of respondents(45%) were under the age group of 25–30, implying that they were between young adult in desirable productive capacity and can handle the training and cope up to maintain the construction equipment which is changing promptly with new technology. Since those aged above 30 was adult (35%) and they had maintenance experiences the training enables them to fill their skill gap and increase their productivity on the maintenance work.

Area of training the respondents were also depicted in the Table. Accordingly, five areas of trainings were involved in the given responses. Thus, among all auto mechanic (37.5%) and auto electricity (22.5%) covers a large number of respondents in spite of their actual differences. This result shows that large needs are seen at the auto mechanic and auto electricity training area.

Regarding educational level, considerable proportion 13 (32.5 %), 10 (25%) and 8(20%) were respectively diploma (10+4), 10+3 and 10+2 but small number of 10+1 and below 10^{th} grade with the absence of 1^{st} degree and above. This result implied that the proportion of trainees engaged in the construction equipment maintenance were males,fall in the age of adultery and TVET graduates from 10+1 to diploma level program.

Table 3: Back ground information of recent graduate trainees

No.	Item	Respondents	
		Trainees	
		No.	%
1	Sex		
	Female	2	10
	Male	18	90
	Total	20	100
2	Age		
	19-24	4	20
	25-30	10	50
	>30	6	30
	Total	20	100
3	Area of training		
	Auto mechanic	12	60
	Auto electricity	3	15
	Machine	1	5
	Welding	2	10
	Auto body	2	10
	Total	20	100
4	Education Level		
	<10th	1	5
	10+1	2	10
	10+2	0	0
	10+3	4	20
	10+4(Diploma)	11	55
	1st Degree and above	2	10
	Total	20	100

As Table 3 indicates the sex proportion shows that most of the respondents are males (90%). Only 10% of recent female graduate trainees currently on maintenance work were responded. Age wise the same Table shows that the majority of respondents(50%) was under the age group of 25–30, implying that they were between young adult and can handle the training and cop up to maintain the construction equipment and in desirable productive capacity. Since those aged above 30 was adult (30%) and they had maintenance experiences the training enables them to fill their skill and increase their productivity on the maintenance work.

Area of training the respondents were also depicted in the Table. Accordingly, five areas of trainings were involved in the given responses. Thus, among all auto mechanic (60%) and auto electricity (15%) covers a large number of respondents in spite of their actual differences.

Regarding educational level, considerable proportion 11 (55 %), 4(20%) and 2(10%) were respectively diploma (10+4), 10+3 and 10+1 but small number of below 10^{th} grade with the 10% of 1^{st} degree. This result implies that the proportion of trainees engaged in the construction equipment maintenance were TVET graduates at diploma level program only 10 % were university graduates at 1^{st} degree level. Onlysmall number of female participants engaged in construction equipment maintenance. Half of the participants were between the ages of 25-30.This study showed that most of the participants of the program participated on auto mechanic training.

Table 4: Back ground information of Trainers' Respondents

No.	Item	Respondents	
		No.	%
1	Sex		
	Female	0	0
	Male	15	100
	Total	15	100
2	Age		
	26-34	4	26.7
	35-40	2	13.3
	>40	9	60
	Total	15	100
3	Area of specialization		
	Auto mechanic	4	26.7
	Auto electricity	3	20
	Machine	3	20
	Welding	3	20
	Auto body	2	13.3
	Total	15	100
4	Education Level		
	Diploma	12	80
	1st Degree	3	20
	MSc/MA	0	0
	Total	15	100

In the first item, among the 15 trainers 15(100%) were males and no were females. This shows that all of the construction equipment maintenance trainers are men. In Ethiopia, It has been believed that maintenance works are accomplished by males and the research also discloses this believes. This study shows that majority of trainers (60%) were in the age of above 40 and they are experienced in the construction equipments maintenance training. Among the 15 trainers respondents, 4(26.7%) were from auto mechanic, 3(20%) were from auto electricity, 3(20%)

were from machine, 3(20%) were from welding and 2(13.3%) were from auto body. Related to the trainer's respondent's qualification 12(80%) were first diploma holders and 3(20 %) were first degree but no second degree holders. This research finding showed that even if the curriculum suggests that trainers have to have first degree and above for the implementation of the curriculum, most the trainers are at diploma level and felt in the adult ages.

4.2. Curriculum objectives in accordance with the objectives of the training center and the needs of the stakeholders?

A curriculum objective is designed as a response to training needs, and the degree of precision of articulating the training objectives is directly related to achieving the desired training outcomes. Additionally, training objectives can be derived from a knowledge/skill gap identified in a front-end needs analysis. Consequently, the goal of creating training objectives is to provide a means of clarifying the purpose of instruction to ensure the training/education is successful and the objectives are achieved (Dick, Carey, & Carey, 2005).

Table 5: Responses by current trainees about curriculum objectives

No	Item	Trainees' responses(no.=40)					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	The suitability of designed training objectives with the needs of the trainees.	8 (20%)	31 (77.5%)	1 (2.5%)	0 (0%)	0 (0%)	40 (100%)
2	The modernity of training program to local productivity(support of equipment maintenance)	6 (15%)	30 (75%)	3 (7.5%)	1 (2.5%)	0 (0%)	40 (100%)
3	The training is designed by emphasizing much content into a short training time rather than specific skill/knowledge	5 (12.5%)	27 (67.5%)	2 (5%)	6 (15%)	0 (0%)	40 (100%)
4	The designed curriculum objectives are measurable in the context of training center.	3 (7.5%)	5 (12.5%)	27 (67.5%)	5 (12.5 %)	0 (0%)	40 (100%)
5	The training objective have to be revised and improved	7 (17.5%)	30 (75%)	3 (7.5%)	0 (0%)	0 (0%)	40 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 5 was organized with the intention to know the responsivenessof trainees' currently on training about curriculum objectives in accordance with the objectivesof the training center and stakeholdersneeds. In item1 of table 5 about the suitability of designed training objectives with the needs of the trainees; majority of trainees 39(97.5%) (SA+A) agreed to the suitability of designed training objectives with the needs of the trainees. On the other hand, none of the trainees disagreed with the idea and only 1(2.5%) undecided.

Similarly, in item 2 of table 5, most of the trainees 36(90%) agreed (SA+A) with the idea of the modernity of training program to local productivity (support of equipment maintenance). But, 1 (2.5%) disagreed (D+SD) and 3 (7.5%) undecided. concerning to item 3 of table 5 most of trainees 32 (80%) (SA+A) also agreed with the idea that training curriculum is designed by emphasizing much contents of skill/knowledge for a short term training and 6(15%) (D+SD) disagreed and only 2 (5%) undecided. In item 4 of table 5 the trainees were asked to state their degree of agreement to the idea that the designed curriculum objectives are measurable in the context of training center. Hence, only 8 (20%) of trainees reported that they agreed (SA+A) with the idea. On the other hand, 5(12.5%) of trainees indicated that they disagreed (D+SD) with the idea. The majority of trainees 27(67.5%) were undecided. The responsiveness of trainees in item5 of table 5, about whether the training objective have to be revised and improved or not, the result shows that 95 %(SA+A) of trainees agreed the idea that the training objective has to be revised and improved. None of the trainees disagree on the idea and only 7.5% undecided.

Thus, it is likely to conclude that the training curriculum is designed with the suitability of it to the needs of the trainees and support of modern equipment maintenance. But they agreed on too much contents of the curriculumtrying to implement in short term training. According to Dick, Carey, & Carey, (2005 p.69) the process of identification of the curriculum objective should be in cooperation with range of stakeholders. The result also shows that the curriculum objectives have to be revised and improved especially the training duration in accordance with objectivesofthe training center.

Table 6:Responses by recent graduate trainees currently about curriculum objectives

No	Item	Trainees' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	The suitability of designed training objectives with the needs of the trainees.	7 (35%)	10 (50%)	2 (10%)	0 (0%)	1 (5%)	20 (100%)
2	The modernity of training program to local productivity(support of productivity)	4 (20%)	11 (55%)	2 (10%)	2 (10%)	1 (5%)	20 (100%)
3	The training is designed by emphasizing much content into a short training time rather than specific skill/knowledge	5 (25%)	9 (45%)	4 (20%)	2 (10%)	0 (0%)	20 (100%)
4	The designed curriculum objectives are measurable in the context of training center.	4 (20%)	7 (35%)	6 (30%)	2 (10%)	1 (5%)	20 (100%)
5	The training objective have to be revised and improved	7 (35%)	11 (55%)	2 (10%)	0 (0%)	0 (0%)	20 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 6 was organized with the intention to know the responsiveness of recently graduated trainees' on training about curriculum objectives in accordance with the training objectives of the center and their needs. In item1 of table 6 about the suitability of designed training objectives with the needs of the trainees, majority of trainees 85% (SA+A) agreed to the suitability of designed training objectives with the needs of the trainees. On the other hand only 5% trainees disagreed with the idea and only 10% were undecided. Similarly, in item 2 of table 6, most of the trainees 75% agreed (SA+A) with the idea of the modernity of training program to local productivity (support of equipment maintenance). But, 15% disagreed (D+SD) and 10% undecided. Concerning to item 3 of table 6 most of trainees 70% (SA+A) also agreed with the idea that training curriculum is designed by emphasizing much contents skill/knowledge for a short term training and 10% (D+SD) disagreed and 20% undecided. In item 4 of table 6 the

trainees were asked to state their degree of agreement to the idea that the designed curriculum objectives are measurable in the context of training center. Hence, 55% of trainees reported that they agreed (SA+A) with the idea. On the other hand, 15% of trainees indicated that they disagreed (D+SD) with the idea. The majority of trainees 30% were undecided. The responsiveness of trainees in item5 of table 6, about whether the training objective have to be revised and improved or not, the result shows that 90 %(SA+A) of trainees accepts the idea that the training objective has to be revised and improved. None of the trainees disagree on the idea and only 10% undecided. Tyson and York (1996) put their stand saying special attention should be paid, in setting the training objectives, to stress on preparing invaluable objectives that are fully responsive to the gaps identified in training need assessment. In addition, Dessler, (1991) states that defining the program objective is the first thing a trainer should decide on.

This implies that training curriculum is designed with the suitability tothe needs of the trainees to maintain modern construction equipments; but the curriculums areemphasizing many contents into short term training. The result also shows that the curriculum objective principally have to be revised and improved in accordance with theobjectives of training center.

Table 7: Trainers' responses about curriculum objectives

No	Item	Trainers' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N(%)
1	The curriculum objective actually meets the stated training objectives of the center and the needs of the stakeholders	1 (6.7%)	8 (53.3%)	4 (26.7%)	2 (13.3%)	0 (0%)	15 (100%)
2	The curriculum objective is technically current.	0 (0%)	11 (73.3%)	1 (6.7%)	2 (13.3%)	1 (6.7%)	15 (100%)
3	The curriculum is designed with a framework that emphasizes too much content into a fixed training schedule, rather than putting trainees master skills or knowledge	5 (33.3%)	7 (46.7%)	1 (6.7%)	2 (13.3%)	0 (0%)	15 (100%)
4	The designed curriculum objectives are measurable in the context of training center.	1 (6.67%)	1 (6.67%)	1 (6.67%)	6 (40%)	6 (40%)	15 (100%)
5	The curriculum objective needs to be modified	4 (26.7%)	8 (53.3%)	2 (13.3%)	1 (6.7%)	0 (0%)	15 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 7 was organized with the intention to know the responsiveness of trainers on training about curriculum objectives in accordance with the training objectives of the center and their needs. In item1 of table 7 about the suitability of designed training objectives with the needs of the trainees, majority of trainers 60% (SA+A) agreed to the suitability of designed training objectives with the needs of the trainees. On the other hand only 13.3% (D+SD) trainers disagreed with the idea and 26.7% were undecided. Similarly, in item 2 of table 7, most of the trainees 73.3% (SA+A) agreed with the idea of the modernity of training program to local

productivity (support of equipment maintenance). But, 20 %(D+SD) disagreed and 6.7% undecided. Concerning to item 3 of table 7 most of trainers 80% (SA+A) agreed with the idea that training curriculum is designed by emphasizing much content rather than specific skill/knowledge for a short term training and 13.3% (D+SD) disagreed and 6.7% undecided. In item 4 of table 6 the trainers were asked to state their degree of agreement to the idea that the designed curriculum objectives are measurable in the context of training center. Hence, only 13.3% of trainers reported that they agreed (SA+A) with the idea. On the other hand, 80% of trainers were disagreed (D+SD) with the idea. Only 6.67% were undecided. The responsiveness of trainers in item5 of table 7, about whether the training objective have to be revised and improved or not, the result shows that 80 %(SA+A) of trainees accepts the idea that the training objective has to be revised and improved. Only 6.67% of the trainers disagree on the idea and only 13.3% undecided.

Thus, it is likely to conclude that training curriculum is designed with the suitability of designed with the needs of the trainees and support of modern equipment maintenance but they did not agreed on massive curriculum contents for a short training and not measurable in the context of training center. The result also shows that the curriculum objective has to be revised and improved in accordance with the training center objectives.

Additionally, some trainers also described in the open ended part of the questioner as follow:

Even though the objective of the designed curriculum is interesting and technically current, but it is beyond the capacity of the training center to attain the objectives especially the shortage of training length. Some trainers commented also the curriculum have to be revised to the context of the training center.

4.3. Alignment of module contents with the program objectives of the center

The module contents help the trainees to build a foundation of knowledge, skills, and habits of mind or modes of thinking that facilitate the integration of content (or curriculum), assessment, and delivery (or instruction or pedagogy) for course, or program design. Rather than threatening each of these areas separately, the learners consider all three together in systematic way and learning objectives (Pellegrino, 2006).

Table 8:Responses by current trainees about module contents

No	Item	Trainees' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	All training objectives are modulated and included in training modules.	7 (17.5%)	27 (67.5%)	5 (12.5%)	1 (2.5%)	0 (0%)	40 (100%)
2	Modules are up-to-date and appropriate for the objective of the training center.	4 (10%)	23 (57.5%)	7 (17.5%)	6 (15%)	0 (0%)	40 (100%)
3	The modules contain competencies (knowledge, skill, abilities) to be demonstrated by the trainees	8 (20%)	30 (75%)	2 (5%)	0 (0%)	0 (0%)	40 (100%)
4	The suitability between scope of training modules and the length of time given for training.	0 (0%)	0 (0%)	7 (17.5%)	25 (62.5%)	8 (20%)	40 (100%)
5	Unnecessary repetitive contents exist in the modules	5 (12.5%)	22 (55%)	4 (10%)	8 (20%)	1 (2.5%)	40 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 8 was organized with the intention to know the responsiveness trainees' currently on training about alignment of module contents with the program objectives of the center. In item 1 of table 8weather all the training objectives are modulated and included in training modules or not. The majority of trainees 85% (SA+A) agreed to the association of module contents with the program (curriculum) objective. Only 2.5% of trainees disagreed with the idea and only 12.5% were undecided. Similarly, in item 2 of table 8, most of the trainees 67.5% (SA+A) agreed with the idea of modules are up-to-date. But, 15 %(D+SD) disagreed and 17.5% undecided. Concerning to item 3 of table 8 most of trainees 95% (SA+A) also agreed with the idea thatthemodules contain competencies (knowledge, skill, abilities) to be demonstrated by the

trainees and none of the trainees disagreed and only 5% undecided. The responsiveness of trainees in item 4 of table 8 about the fitness between scope of training modules and the length of time given for training, the result shows that no one of the trainees agreedonthe idea. Most of the trainees 85 %(SD+D) disagree on the idea and only 17.5% undecided. In item 5 of table 8 the trainees were asked to state their degree of agreement to the idea that weather unnecessary repetitive contents exist in the modules or not. Hence, only 67.5 %(SA+A) of trainees reported that they agreed with the idea. On the other hand, 22.5% of trainees indicated that they disagreed (D+SD) with the idea and about 10% of trainees undecided. Mary L. Lanigan Ph.D. (2010, *p.8*) stated that edit the draft module to make sure the contents are accurate, clear, and comprehensive. After editing your module a number of times, next test the materials on people who are like your trainees. Complete usability tests to make sure the training module is fully functional. Thus, it is likely to conclude that training module contents were appropriate with the curriculum objective, up-to-date and also include competencies (knowledge, skill, abilities) to be demonstrated by the trainees. The big problem and almost all the trainees disagree on it is that the suitability of module volume and its contents with the time given for short term training.

As the researcher observed and analysis also the modules are prepared well and will assist them as a workshop maintenance manual at their work place. The problem is because of the contents and volumes of the modules are not proportional to the length of training, it is difficult to cover the contents during this short term training.

Table 9: Responses by recent graduate trainees about module contents

No	Item	Trainees' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	All training objectives are modulated and included in training modules.	3 (15%)	12 (60%)	1 (5%)	1 (5%)	3 (15%)	20 (100%)
2	Modules are up-to-date and appropriate for the training objectives of the center.	2 (10%)	7 (35%)	3 (15%)	6 (30%)	2 (10%)	20 (100%)
3	The modules contain competencies (knowledge, skill, abilities) to be demonstrated by the trainees	3 (15%)	10 (50%)	3 (15%)	4 (20%)	0 (0%)	20 (100%)
4	The suitability between scope of training modules and the length of time given for training.	1 (5%)	4 (20%)	2 (10%)	11 (55%)	2 (10%)	20 (100%)
5	Unnecessary repetitive contents exist in the modules	4 (20%)	7 (35%)	3 (15%)	3 (15%)	3 (15%)	20 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 9 was organized with the intention to know the responsiveness of recent graduate trainees about alignment of module contents with the program objectives of the center. In item 1 of table 9weather all the training objectives are modulated and included in training modules or not. The majority of recent graduate trainees 75% (SA+A) agreed to the association of module contents with the program. About 20% of recent graduate trainees disagreed with the idea and 5% were undecided. Similarly, in item 2 of table 9, 45% (SA+A) agreed with the idea of modules are up-to-date and appropriate for the objectives of the training center. But, 40 %(D+SD) disagreed and 15% undecided. Concerning to item 3 of table 9 most of recent graduate trainees 65% (SA+A) also agreed with the idea thatthe modules contain competencies (knowledge, skill, abilities) to be demonstrated by the recent graduate trainees and 20% of the recent graduate trainees disagreed and only 15% undecided. The responsiveness of recent graduate trainees in item 4 of table 9 about the fittingness between scope of training modules and the length of time given for training, the result shows that only 25% of recent graduate trainees agree to the idea. Most of the trainees

65 %(SD+D) disagree on the idea and only 10% undecided. In item 5 of table 9 the recent graduate trainees were asked to state their degree of agreement to the idea that weather unnecessary repetitive contents exist in the modules or not. Hence, only 55 %(SA+A) of recent graduate trainees reported that they agreed with the idea. On the other hand, 30% (D+SD) of recent graduate trainees disagreed with the idea. About 15% of recent graduate trainees were undecided.

Thus, it is likely to conclude that training module contents were appropriate with the curriculum objective, some what it was up-to-date and also include competencies (knowledge, skill, abilities) to be demonstrated by the recent graduate trainees. The big problem and most of the trainees disagree on it is that the suitability of module volume and its contents with the time given for short term training.

Additionally, some respondents of recent graduate trainees about alignment of module contents with the program objectives of the center also express in the open ended part of the questioner as follow:

The modules are prepared well and will assist them as a reference. The problem is the volume of the module is beyond the short term training. Rosen (2000), editor and publisher of the training modules and Internet Training Newsletter, cites an overall trainingmodule required for trainees to learn content have to be comparative with the time allocated with the training program.

Table 10: Trainers' responses about module contents

No	Item	Trainers' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	All curriculum objective contents are included in the training modules	0 (0%)	10 (66.7%)	3 (20%)	2 (13.3%)	0 (0%)	15 (100%)
2	The modules are appropriate and up to date with the program objectives of the center.	0 (0%)	9 (60%)	1 (6.7%)	5 (33.3%)	0 (0%)	15 (100%)
3	The modules contain competencies (knowledge, skill, abilities) to be demonstrated by the trainees that are derived from curriculum objectives	1 (6.7%)	8 (53.3%)	5 (33.3%)	1 (6.7%)	0 (0%)	15 (100%)
4	The appropriateness between training duration and the scope of module to cover the program objectives.	1 (6.7%)	2 (13.3%)	1 (6.7%)	8 (53.3%)	3 (20%)	15 (100%)
5	Any unnecessary redundancies contents exist in the modules	1 (6.7%)	10 (66.7%)	1 (6.7%)	3 (20%)	0 (0%)	15 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 10 was organized with the intention to know the responsiveness of trainers about alignment of module contents with the program objectives of the center. In item 1 of table 10 weather all the training objectives are modulated and included in training modules or not. The majority of trainers66.7% (SA+A) agreed to the association of module contents with the program. About 13.3% of trainersdisagreed with the idea and 20% were undecided. Similarly, in item 2 of table 10, 60% (SA+A) agreed with the idea of modules are up-to-date and appropriate for the objectives of the training center. But, 33.3 %(D+SD) disagreed and 6.7% undecided.

Concerning to item 3 of table 10 most of trainers60% (SA+A) also agreed with the idea thatthe modules contain competencies (knowledge, skill, abilities) to be demonstrated by the trainers and 6.7% of the trainers disagreed and 33.3% undecided. The responsiveness of trainersin item 4 of table 10 about the fittingness between scope of training modules and the length of time given for training, the result shows that only 20% of trainersagree to the idea. Most of the trainers73.3 %(SD+D) disagree on the idea and only 6.7% undecided. In item 5 of table 10 the trainerswere asked to state their degree of agreement to the idea that weather unnecessary repetitive contents exist in the modules or not. Hence, 73.3 %(SA+A) of trainersagreed with the idea. On the other hand 20% (D+SD) of trainersindicated that they disagreed with the idea. About 6.7% of trainers were undecided.

Thus, it is likely to conclude that training module contents were appropriate with the curriculum objective, some what it was up-to-date and also include competencies (knowledge, skill, abilities) to be demonstrated by the trainers but the vast problem and most of the trainersdisagree on it is that the suitability of module volume and its contents with the time given for short term training and unnecessary repetitive contents that are needs to revise was exist.

As the researcher observed the curriculum material and prepared training modules, the scheduled training duration and the time set on the curriculum is very unfriendly. The observation shows that the training time is very short to complete the courses. Brandon Hall, also cites an overall training module required for a trainees to learn content have to be comparative with the time allocated with the training program (Rosen, 2000)

4.4. Suggested instructional approaches most likely to achieve the training objective

Active learning instructional approaches can be created and used to engage trainees in thinking critically or creatively, speaking with a partner, in a small group, or with the entire class, expressing ideas through writing, exploring personal attitudes and values, giving and receiving feedback, and reflecting upon the learning process(Bonwell&Eison 1991).Active learning instructional strategies include a wide range of activities that share the common element of involving trainees in doing things and thinking about the things they are doing (Bonwell&Eison 1991).

Table 11: Responses by current trainees about the instructional approaches

No	Item	Trainees' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	Trainees are allowed to share their ideas and knowledge (discusses) with other participants during the training process	7 (17.5%)	29 (72.5%)	2 (5%)	2 (5%)	0 (0%)	40 (100%)
2	Trainees are given enough lab time(simulation and actual exercise) for practice	2 (5%)	7 (17.5%)	7 (17.5%)	22 (55%)	2 (5%)	40 (100%)
3	More instructional time is given for lecture.	3 (7.5%)	18 (45%)	16 (40%)	3 (7.5%)	0 (0%)	40 (100%)
4	Some instructional approaches directed by instructors are not appropriate for the training objectives.	0 (0%)	11 (27.5%)	22 (55%)	4 (10%)	3 (7.5%)	40 (100%)
5	Instructional approaches are related to workplace requirements and job market needs	3 (7.5%)	17 (42.5%)	13 (32.5%)	7 (17.5%)	0 (0%)	40 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 11 was organized with the intention to know the responsiveness of trainees' currently on training about the suggested instructional approaches in the curriculum most likely to achieve the training objective. In item 1 of table 11 they were asked whether the trainees are allowed to share their ideas and knowledge (discusses) with other participants during the training or not. The majority of trainees 90 %(SA+A) agreed to they shared their ideas and knowledge (discusses) with other participants during the training. Only 5 %(D+SD) of trainees disagreed with the idea and only 5% were undecided. Similarly, in item 2 of table 11, trainees asked as they were given

enough lab time (simulation and actual exercise) for practice. Only fewer number trainees 22.5% (SA+A) agreed with the idea. Most trainees, about 60 %(D+SD) disagreed and 17.5% undecided. Concerning to item 3 of table 11 more than half of trainees 52.5% (SA+A) agreed with the idea that more instructional time is given for lecture and only 7.5 %(D+SD) trainees' were disagreed and only 40% undecided. The responsiveness of trainees in item 4 of table 11 about the appropriateness of instructional approaches with the training objectives, the result shows that about quarter of the trainees 27.5% (SA+A) agreed with the idea. Only 17.5% were disagreed and more than half of the trainees 55 % were undecided on the idea. In item 5 of table 11 the trainees were asked to state their degree of agreement to the idea that the appropriateness of instructional approaches according to the job market needs or not. Hence, half of 50 %(SA+A) of trainees reported that they agreed with the idea. On the other hand, 17.5 %(D+SD) of trainees pointed out that they disagreed with the idea. About 32.5% of trainees were undecided. Thus, it is likely to conclude that instructional approaches most likely to achieve the training objective was trainees are allowed to share their ideas and knowledge (discusses) with other participants during the training session. Trainees were not allowed or no enough lab time for practice. Therefore trainers use lecture and discussion approaches rather than demonstration approaches during the training session.

Additionally, some respondents of trainees currently on training about the suggested instructional approaches most likely to achieve the training objective also state in the open ended part of the questioner as follow:

Due to lack of sufficient and new equipment and machines for practical training, most of the instruction is theoretical. They suggested that the training center have to equipwith facilities for practical training.

As stated in World Bank (2001), one of the most important features of training is towards the world of work and the emphasis of the curriculum on the acquisition of practical skills. Hence, assessing the delivery of practical training is important to judge the standard of training provided in the institutions under the study.

Table 12: Responses by recent graduate trainees about the instructional approaches

No	Item	Trainees' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	Trainees are allowed to share their ideas and knowledge (discusses) with other participants during the training process	6 (30%)	11 (55%)	0 (0%)	2 (10%)	1 (5%)	20 (100%)
2	Trainees are given enough lab time(simulation and actual exercise) for practice	4 (20%)	3 (15%)	3 (15%)	9 (45%)	1 (5%)	20 (100%)
3	More instructional time is given for lecture.	4 (20%)	8 (40%)	6 (30%)	2 (10%)	0 (0%)	20 (100%)
4	Some instructional approaches directed by instructors are not appropriate for the training objectives.	5 (25%)	3 (15%)	8 (40%)	3 (15%)	1 (5%)	20 (100%)
5	Instructional approaches are related to workplace requirements and job market needs	2 (10%)	10 (50%)	7 (35%)	1 (5%)	0 (0%)	20 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 12 was organized with the intention to know the responsiveness ofrecent graduate trainees about the suggested instructional approaches in the curriculum most likely to achieve the training objective. In item 1 of table 12 they were asked whether they were allowed to share their ideas and knowledge (discusses) with other participants during the training or not. The majority of recent graduate trainees 85 %(SA+A) agreed they shared their ideas and knowledge (discusses) with other participants during the training. Only 15 %(D+SD) of recent graduate trainees disagreed with the idea. Similarly, in item 2 of table 12, recent graduate trainees asked as they were given enough lab time (simulation and actual exercise) for practice. Only fewer number recent them 35% (SA+A) agreed with the idea. About half of them 50 %(D+SD) were disagreed and 15% undecided. Concerning to item 3 of table 12 more than half of recent graduate trainees

60% (SA+A) agreed with the idea thatmore instructional time is given for lecture and only 10 %(D+SD) recent them were disagreed and only 30% undecided. The responsiveness of recent graduate trainees in item 4 of table 12 about the appropriateness of instructional approaches with the training objectives, the result shows that less than half of the recent graduate trainees agrees 40% (SA+A) with the idea. Only 20% were disagreed and 40 % were undecided on the idea. In item 5 of table 12 the trainees were asked to state their degree of agreement to the idea that weather the requirements of instructional approaches for the job market needs or not. Hence 60 %(SA+A) of recent graduate trainees reported that they agreed with the idea. On the other hand only 5% of recent graduate trainees pointed out that they disagreed (D+SD) with the idea. About 35% of recent graduate trainees were undecided.

As the researcher observed and analyzed, the suggested instructional approaches most likely to achieve the training objective are lecture, discussion, simulation and practicing on real machines and equipments, more time was gave for practicing. Therefore this is what expected from technical training especially equipments maintenance training.

The studies published by Noe (2008), agreed that no one method is capable of achieving all training goals. Instead, this author encouraged training professionals to examine the objectives of the program and the needs of the audience in order to determine which training methods are likely to be most effective. Kazanas & Rothwell (1998, p.4), many times instructors/trainers first think that instructor-led training is the most effective way to deliver instruction; however, this is just one method to deliver training.

Therefore, it is likely to conclude that even though no one instructional approaches is capable of achieving all training goals, the most likely to achieve the training objective was trainees are allowed to share their ideas and knowledge (discusses) with other participants during the training session. Trainees were not allowed for more practical session or no enough lab time for practice. Therefore trainers use lecture and discussion approaches rather than demonstration approaches especially the time for practical session during the training session.

Table 13: Trainers' responses about the instructional approaches

No	Item	Trainers' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	I invited participants to share their ideas and knowledge (discuss)with other participants during the learning process	6 (40%)	8 (53.3%)	0 (0%)	1 (6.7%)	0 (0%)	15 (100%)
2	Adequate time is given for lab(simulation and actual practice for practice	3 (20%)	3 (20%)	4 (26.7%)	5 (33.3%)	0 (0%)	15 (100%)
3	More instruction approach is given for lecture method because of insufficient equipment for practical session.	1 (6.7%)	7 (46.7%)	4 (26.7%)	2 (13.3%)	1 (6.7%)	15 (100%)
4	some instructional approaches suggested do not go with the training objectives and need to be revised	1 (6.7%)	3 (20%)	2 (13.3%)	1 (6.7%)	8 (53.3%)	15 (100%)
5	Instructional approach is related to workplace requirements and job market needs	1 (6.7%)	8 (53.3%)	3 (20%)	2 (13.3%)	1 (6.7%)	15 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 13 was organized with the intention to know the responsiveness of trainers currently on training about the suggested instructional approaches in the curriculum most likely to achieve the training objective. In item 1 of table 13 they were asked whether the trainers allowed the trainees to share their ideas and knowledge (discusses) with other participants during the training or not. The majority of trainers93.3 %(SA+A) agreed to they shared their ideas and knowledge (discusses) with other participants during the training. Only 6.7 %(D+SD) of trainersdisagreed

with the idea and none of the trainers were under the undecided category. Similarly, in item 2 of table 13, trainerswere asked trainees given enough lab time (simulation and actual exercise) for practice. Less than half of the sample number respondent trainers' 40% (SA+A) agreed with the idea. Most respondents trainers, about 60 %(D+SD) disagreed and none were undecided. Concerning to item 3 of table 13 more than half of trainers53.3% (SA+A) agreed with the idea thatmore instructional time is given for lecture and only 20 %(D+SD) trainerswere disagreed and 26.7% undecided. The responsiveness of trainersin item 4 of table 13 about the appropriateness of instructional approaches with the training objectives, the result shows that about quarter of the sample trainersagreed 26.7% (SA+A) with the idea. More than half of the trainers 60% were disagreed and 13.3% were undecided on the idea. In item 5 of table 13 the trainers' were asked to state their degree of agreement to the idea that weather the instructional approaches are appropriate for the job market needs or not. Hence, half of 60 %(SA+A) of trainersreported that they agreed with the idea. On the other hand, 20% (D+SD) of trainers disagreed with the idea. About 20% of trainerswere undecided.

Additionally, some respondents of trainers about the suggested instructional approaches most likely to achieve the training objective also state in the open ended part of the questioner as follow:

Due to shortage of equipments and machines for practical training, most of the instructional method they used is lecture and discussion in the class. They also suggested that the training center have been fulfilled with facilities for practical training. As Olaitan,(1996) also remarked that the condition under which vocational and technical education is taught is poor, most training institutions lack equipment for training, lack workshops and workshop facilities, have ill-equipped laboratories and libraries.

The researcher concluded that an instructional approach most likely to achieve the training objective was traineesare allowed to share their ideas and knowledge (discusses) with other participants during the training session. No enough lab time for practice was given because of insufficient equipment for practical session trainers use lecture and discussion approaches rather than demonstration approaches during the practical session.

4.5. Appropriateness of the resources (time, material and human) in line with the program objectives of the center

Training resources are any people, equipment and material needed to execute the training project. Meaning, the trainer, money, time, facilities and other materials are among others that can be regarded as training resources Hakha, (2008 p.62). The training programs can be successful if and only if it furnished with these necessary inputs. Analysis under the topic training program resource (trainer's knowledge of contents, time and other related materials) preparation was evaluated, analyzed and deduced as follows.

Table 14: Responses by current trainees about resources

No	Item	Trainees responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	The adequacy of time given for the training program.	1 (2.5%)	0 (0%)	2 (5%)	21 (52.5%)	16 (40%)	40 (100%)
2	The balance between theory (classroom) and practice (lab/shop) for the training program.	0 (0%)	6 (15%)	12 (30%)	19 (47.5%)	3 (7.5%)	40 (100%)
3	The accessibility of tools, equipment and/or supplies for practical training.	1 (2.5%)	0 (0%)	5 (12.5%)	27 (67.5%)	7 (17.5%)	40 (100%)
4	New technological facilities (Computer assisted diagnostic system, etc.) are equipped properly.	3 (7.5%)	2 (5%)	11 (27.5%)	3 (7.5%)	21 (52.5%)	40 (100%)
5	The adequacy and capacity of trainers to deliver training.	4 (10%)	29 (72.5%)	5 (12.5%)	0 (0%)	0 (0%)	40 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 14 was organized with the intention to know the responsiveness of trainees currently on training about the appropriateness of the resources (time, material and human) in line with the

program objectives of the center. In item 1 of table 14 the trainees are requested to answer about the adequacy of time given for the program of training center. Only 2.5 %(SA+A) of trainees agreed with the adequacy of time given for the program for the outcome curriculum objectives at the training center, 92.5 %(D+SD) of trainees disagree and only 5% were undecided. Similarly, the degree of agreement in item 2 of table 14, weather the time allocated for theoretical and practical session in the curriculum was appropriate with the training center program or not. Only fewer number of trainees 15% (SA+A) agreed with the idea. Most trainees, about 55 %(D+SD) disagreed and 30% undecided. Concerning to item 3 of table 14 only 2.5% (SA+A) of trainees agreed with the availability of tools, equipment and/or supplies for practical training however;the majority of trainees 85 %(D+SD) were disagree and only 12.5% undecided. The responsiveness of current trainees in item 4 of table 14 weather the training center is equipped with new technological facilities like computer assisted diagnostic system, etc. or not for the attainment of the construction equipments maintenance training, the result shows that 12.5% (SA+A) agrees with the idea. More than half of 60 %(D+SD) was disagreed and 27.5 % of respondents were undecided on the idea that the center has equipped with machines and equipments like electronically controlled systems. In item 5 of table 14 the current trainees were asked to state their degree of agreement on the adequacy and capacity of trainers to deliver the training. Hence, most of the respondents 82 %(SA+A) of trainees reported that they agreed with the adequacy and competence of trainers and none of the current trainees disagreed (D+SD) with the idea however 12.5% of trainees were undecided.

This implied that even though the training center had adequate and capable of trainers to deliver training, lack of time to complete the contents because of the curriculum is designed for regular TVET training program and also not enough and new tools, equipment and/or supplies for practical training for most up-to-dated construction equipments maintenance, it is difficult to fully implement the curriculum. Because of these trainers spend more time for theoretical instruction rather than practical exercise. This is in-line with the findings of Ekah (1998 p.56) who asserted that mostinsufficient resourcesfor technical training center like consumable items and working tools and equipments affects the training quality. Hakha, (2008 p.62) in support of this finding also noted that tools and machines for practical exercises are not available in most technical training centers there by rendering the available tools in effective for practical purposes.

As some respondents of trainees currently on training stated in the open ended part of the questionabout the suggested instructional approaches most likely to achieve the training objective connectswith the problem of shortage time, materials, demonstration equipments and machines.

Table 15: Responses by recent graduate trainees about resources

No	Item	Trainees' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	The adequacy of time given for the training program.	2 (10%)	3 (15%)	0 (0%)	11 (55%)	4 (20%)	20 (100%)
2	The balance between theory (classroom) and practice (lab/shop) for the training program.	1 (5%)	4 (20%)	1 (5%)	7 (35%)	7 (35%)	20 (100%)
3	The accessibility of tools, equipment and/or supplies for practical training.	3 (15%)	5 (25%)	2 (10%)	8 (40%)	2 (10%)	20 (100%)
4	New technological facilities (Computer assisted diagnostic system, etc.) are equipped properly.	3 (15%)	2 (10%)	4 (20%)	5 (25%)	6 (30%)	20 (100%)
5	The adequacy and capacity of trainers to deliver training.	0 (0%)	14 (70%)	2 (10%)	3 (15%)	1 (5%)	20 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 15 was organized with the intention to know the responsiveness ofrecent graduate trainees about the appropriateness of the resources (time, material and human) in line with the program objectives of the center. In item 1 of table 15 the trainees are requested to answer about the adequacy of time given for the training program. Only 25 %(SA+A) of trainees agreed with the adequacy of time given for the program for the outcome curriculum objectives at the training center. About 75 %(D+SD) of recent graduate trainees disagree. Similarly, the degree of agreement in item 2 of table 15, weather the time allocated for theoretical and practical session in the curriculum was appropriate with the training center program or not. Only fewer number trainees 25% (SA+A) agreed with the idea. Most trainees, about 70 %(D+SD) disagreed and 5%

undecided. Concerning to item 3 of table 15 only 35% (SA+A) of trainees agreed with the availability of tools, equipment and/or supplies for practical training however half of recent graduate trainees 50 %(D+SD) were disagree and only 10% undecided. The responsiveness of trainees in item 4 of table 15 weather the training center is equipped with new technological facilities like computer assisted diagnostic system, etc or not for the attainment of the construction equipments maintenance training, the result shows that 25% (SA+A) agrees with the idea. More than half of 55 %(D+SD) was disagreed and 20 % of respondents were undecided on the idea. In item 5 of table 15 the recent graduate trainees asked to state their degree of agreement on the adequacy and capacity of trainers to deliver the training. Hence, most of the respondents 70 %(SA+A) of trainees reported that they agreed with the adequacy and competence of trainers. On the other hand, 20 %(D+SD) of trainees disagreed with the idea. About 10% of trainees were undecided. Kazanas and Rothwell (1998, p. 13) identified that trainers are theresources and should be equipped with all the necessary equipment, tools, and other resources to make the training efficient and effective.

For those grounds the researcher likely to conclude that even though the training center had adequate and capable of trainers to deliver training, lack of time to curriculum contents because of the curriculum is designed in the context of regular TVET training program and also not enough and new tools, equipment and/or supplies for practical training for most modern construction equipments maintenance, it is difficult to fully implement the curriculum. Because of these trainers spend more time for theoretical instruction rather than practical exercise.

Table 16: Trainers responses about resources

No	Item	Trainees' responses					
		SA N (%)	A N (%)	UD N (%)	D N (%)	SD N (%)	Total N (%)
1	The adequacy of time allocated for each course in line with the program objectives of the center.	1 (6.7%)	2 (13.3%)	3 (20%)	9 (60%)	0 (0%)	15 (100%)
2	The balance between theory (classroom) and practice (lab/shop) within the program	1 (6.7%)	3 (20%)	4 (26.7%)	7 (46.7%)	0 (0%)	15 (100%)
3	The tools, equipment and/or supplies listed for practical components of the curriculum are satisfactory for program objectives of the center.	0 (0%)	3 (20%)	4 (26.7%)	6 (40%)	2 (13.3%)	15 (100%)
4	The training center is equipped with appropriate new technologies (e.g. Computer assisted diagnostic system, etc)	0 (0%)	2 (13.3%)	2 (13.3%)	8 (53.3%)	3 (20%)	15 (100%)
5	The adequacy and capability of trainers of the center in line with the curriculum objectives.	1 (6.7%)	8 (53.3%)	2 (13.3%)	4 (26.7%)	0 (0%)	15 (100%)

SA- strongly agree, A-Agree, UD- undecided, D- Disagree SD- strongly agree, N= number of respondents

Table 16 was organized with the intention to know the responsiveness of trainers about the appropriateness of the resources (time, material and human) in line with the program objectives of the center. In item 1 of table 16 the trainers are requested to answer about the adequacy of time given for the training program for the outcome curriculum objectives at the training center. Only 20 %(SA+A) of trainers agreed with the adequacy of training center resources for the outcome training curriculum program. About 60 %(D+SD) of trainers disagree and only 20%

were undecided. Similarly, the degree of agreement in item 2 of table 16, weather the time allocated for theoretical and practical session in the curriculum was appropriate with the training center program or not. Only fewer number trainers 26.7% (SA+A) agreed with the idea. The majority respondent trainers 46 %(D+SD) disagreed and 26.7% undecided. Concerning to item 3 of table 16 only 20% (SA+A) of trainers agreed with the availability of tools, equipment and/or supplies for practical training however majority of trainers 53.3 %(D+SD) were disagree and only 26.7% undecided. The responsiveness of trainers in item 4 of table 16 weather the training center is equipped with new technological facilities like computer assisted diagnostic system, etc or not for the attainment of the construction equipments maintenance training, the result shows that 13.3% (SA+A) agrees with the idea. About 73.4 %(D+SD) of respondents were disagreed and 13.3 % of respondents were undecided on the idea. In item 5 of table 16 the trainees were asked to state their degree of agreement on the adequacy and capacity of trainers to deliver the training. Hence, most of the respondents 70 %(SA+A) of trainers reported that they agreed with the adequacy and competence of trainers. On the other hand, 26.7 trainers disagreed (D+SD) with the idea. About 13.3 % of trainers were undecided.

This implied that even though the training center had sufficient and skillful trainers to deliver training, lack of time to complete the contents of the designed curriculum because of it is designed for regular TVET training program and also scarcity of new tools, equipment and/or supplies for practical training for most recent construction equipments maintenance, it is difficult to fully implement the curriculum. Because of these trainers spend more time for theoretical instruction rather than practical training.

Additionally, some respondents of trainers about the appropriateness of the resources also state in the open ended part of the questioner as follow:

There are problems of shortage of materials, demonstration equipments and machines. They also confirmed that facilities in the training center are not sufficient and out dated to convey new technology skill of maintenance for trainees.

4.6. Interview data analysis

The interview question forwarded for the training manager and equipment maintenance training team leader about the need assessment. Both interviewees were responded that need assessment was conducted in the recent time by the training directorate director expertise. These expertises haven't the technical knowledge and the need did not bring much result. At this time the training directorate director delegated the center so that the trainers conduct the need assessment and positive result will be expected.

This implies that, there is a lack of training center to conduct need assessment in and around their localities and gather information which serve as inputs for the development of new or revised curriculum which AU, (2007) state as the institutional responsibility.

Curriculum objectives can be derived from a knowledge/skill gap identified in a front-end needs analysis. Consequently, the goal of creating curriculum objectives is to provide a means of clarifying the purpose of instruction to ensure the training is successful and the objectives are achieved. Clearly identifying curriculum objectives improves the communication between the trainers and the trainees for a given course so the trainees know precisely what is expected of him/her (Dick, Carey, & Carey, 2005).

The equipment maintenance training team leader said that to solve the problem for temporary and to identify the trainees need, pre-tests have been given to identify their skill gap and collect feedback after training. This has been helping them as a temporary need assessment and try to regulate the training accordingly. Educational and Training Policy of Ethiopia (April, 1994 p.12) identified that; the preparation of curriculum will be based on the stated objectives of education and needs of the stakeholder (learners), ensuring that the re1evant standard and the expected profile of students are achieved.

The interview question also forwarded for the training manager and equipment maintenance training team leader about the training provision (about the trainers skill, training aids and facilities, etc.) for effective training. Both interviewees stated that the training aids such as machines, models, shop equipments are somewhat old but trainers have many year experiences and they had both technical and pedagogical training locally and at abroad.

4.7. Document analysis

Even though the equipment maintenance and garage team had been conducting need assessment before ten years on their previous training objective. As the curriculum material and prepared training modules indicated, the planned training duration and the time set on the curriculum is not balanced. The analysis shows that the training time is very short to complete the courses which are designed for the TVET training program.

With regard to the sequence of learning contents in the modules, it was discovered that several modules on individual subject matter, over loaded with plain contents. There were no clear objectives listed, devised, methods suggested, teaching aids and evaluation mechanisms and the modules lack trainer's guides for both theoretical and practical training sessions

CHAPTER FIVE

5. Summary, Conclusions and Recommendations

5.1. Summary of the Major Findings

The overall objective of this study is to evaluate the curriculum of construction equipment maintenance training at Alemgena Machine Based Technology Training Center. Alemgena Machine Based Technology is the government training Center of Ethiopian Roads Authority. This training center is chosen because it is the only government training program in Ethiopia that has been delivering knowledge and skills on job training for workers on mechanized construction Equipments Maintenance training. To this end, the basic questions addressing issues were related to the curriculum objective in accordance with the training objectives of the training center and the needs of the stakeholders, the module contents in line with the program objectives of the training center, the most likely instructional approaches suggested in the curriculum to facilitate the achievement of the program objectives of the curriculum and the resource (time, material and human) appropriate in line with the program objectives of the training center.

Accordingly, this study came up with the following major findings. Most of trainees currently on training and recent graduate trainees as well as most of the trainers agreed to the idea that curriculum objectives can meet the training objectives of the center and the needs of the stakeholders. Besides, most of the respondents agreed to the idea that configuration of module contents with the program objectives of the center; however about 75% ofthe respondentsdisagree on the appropriateness between training duration and the scope of module to cover the program objectives. As regards to the idea that the suggested instructional approaches in the curriculum are most likely to achieve the training objective as respondents agreed on it. Contrarily most respondents disagree on enough lab time (simulation and actual exercise) for practical training and also disagree on the appropriateness of the training center resources (time, material and human) in line with the construction equipment maintenancecurriculum. Though most of the trainers are under qualification as specified on the curriculum document, the respondents agree on the sufficiency and competence of trainers.

The illustrationof the studyfrom the interviewee respondentshow that there was a problem on training needs assessment and modifying the curriculum accordingly. The interviewees also thought that the equipment and training machines are outdated and not match with the designed curriculum to achieve the objective.

As the researcher observed and analyzed the curriculum material and prepared training modules, the scheduled training duration and the time set on the curriculum is very outlying. With the scheduled training time it is difficult to cover the contents.

5.2. Conclusions

Knowledge, skills and attitude are essential for employee for efficiently performing the operations in any activity. These are the most significant asset in an organization's human resources in achieving competitive advantage. Training helps employees to get a clear view of their job. Training refers to the acquisitions of knowledge and skills and help employees better understand the information they are given. Effective training program is considered a success of achieving organizational objectives.

Based on the results the following conclusions were drawn in relation to the research objective stated:

The curriculum objectives and content analysis suggest that, except for the omission of some minor content, most of the training tracks expose trainees to all of the technical information. But with the current status it is difficult to complete the contents and modules in the short term training program. Because of shortage of resources for practical training, instructors spend most of the instruction time on lecture and discussion with less time for demonstration on real training. Even though trainers developed knowledge and skills to deliver training from their experiences, most of them are below the qualification, about 80% of the trainers are at diploma level. The designed curriculum document recommend first degree and above qualification to implement the curriculum.

5.3.Recommendations.

From the results and the discussion of this study, there are several issues that can be addressed to improve the objectives of the current curriculum of construction equipment maintenance training program at Alemgena Machine Based Technology Training Center. These recommendations are made based on the participants reaction for the fourresearch questions; curriculum objective in accordance with the training objectives of the center and the needs of the stakeholders, the module contents in line with the program objectives of the center, the most likely instructional approaches suggested in the curriculum to facilitate the achievement of the program objectives of the center and the resource (time, material and human) appropriate in line with the program objectives of the center and interview results and document analysis as well. Even though the general evaluation result showed positive reactions about the curriculum, the researcherrecommends as follows:

1. Conducting proper needs assessment is the groundwork for provision of need-based training by keeping the relevance of training to stakeholders (trainees) demand which eventually enhance the successfulness of the trainees in the world of work and fill their skill gap. Hence, Education and Training Policy of Ethiopia formulated in 1994 emphasized that the education and training programs needs to be as relevant as possible to the needs of the society and maintain a certain level of standards.

   Therefore, the training center has to assignindividuals who conduct proper needs assessment.
2. To provide the standardized training, the requirement of competent and qualified trainers is unquestionable. But, as disclosed in the study, even though trainers have experiences especially for skill training, large numbers of trainers were at diploma level. So, in order to ensure the competence needed, the training center, in consultation with the concerned party need to hire the qualified trainers or upgrade and capacitate the trainers through in-service training to first and second degree to cope up with the frequent change in occupational standards.
3. The availability of training aids and facility is the key component for maintaining the status of training held safe. Regarding this, the study identified the serious shortage of machines, shop equipments, computer-based maintenance training, etc. Therefore, the center have to consider quality indicators in defining physical and human resource assets. The institutions need to strive to maintain their quality standard go with dynamic change of technology.

4. A training programme has a better chance for success when its training approaches are carefully selected. A training approach is a strategy or tactic that a trainer uses to deliver the content so that the trainees achieve the objective (Wentling, 1992). Selecting an appropriate training approach is perhaps the most important step in training activity once the training contents are identified. There are many training approaches, but not all of these are equally suitable for all topics and in all situations. To achieve the training objective, trainers have to select the most appropriate training approach for the content to involve the trainees in the training process. Four major factors are considered when selecting a training method: the learning objective, the content, the trainees, and the practical requirements (Wentling, 1992).
5. Upgrading the training center to college level could solve the problem of time constraint for the full implementation of curriculum. Regarding this, the study identified the serious shortage of time for training as set by the training center.
6. The researcher also tried to observe and analyze the curriculum documents. The designed curriculum contents are very attractive butit is designed in the context of national TVET program.Therefore the training center has to revise and modify the curriculum and curriculum materials specifically to the training center and needs of the stakeholders (trainees).

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Appendices

Appendices –A: Questionnaire for current trainees (English and Amharic)

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Questionnaire

1. Questionnaires to be filled by trainees currently on training.

Dear respondent trainees:

The purpose of this questionnaire is to evaluate the objective of Road construction equipment maintenance training curriculum administered at Alemgena Machine Based Technology Training Center (AMBTTC) in Equipment Maintenance Training Team. You have been selected to fill this questionnaire. The information that you provide will be used only for the research purpose and it would be keep confidential. Your cooperation in filling the questionnaire contributes a lot to make the study more meaning full and complete, so please try to answer all the questions.

I thank you very much in advance for your cooperation!

General Instructions:

1. Please don't write your name.
2. For alternative answers, select according to specific instruction

Part 1: Back ground of the Respondent:

Instruction: Please, thick in the box by using **(✓)** mark.

1. Sex: Female ☐ Male ☐
2. Age: below 18☐ 19-24 ☐ 25-30 ☐ above 30☐
3. Area of training: Auto mechanic☐ Auto electricity☐ Machine☐ welding☐ auto body☐
4. Education Level: Below 10^{th}☐ 10+1☐ 10+2☐ 10+3☐ Diploma☐

Part 2:

Please read each question very carefully. Make sure you understand what is being asked. Please indicate your response by putting (✓) mark against each item in the given rating scales.

5= Strongly Agree 4= Agree 3=Undecided 2=Disagree 1=Strongly Disagree

No	1. Curriculum objectives in accordance with the training objectives of the center and the needs of the stakeholders	Scale of Position				
		5	**4**	**3**	**2**	**1**
1	The suitability of designed training objectives with the needs of the trainees.					
2	The modernity of training program to local productivity(support of productivity)					
3	The training is designed by emphasizing much content into a short training time rather than specific skill/knowledge					
4	The designed curriculum objectives are measurable in the context of training center.					
5	The training objective have to be revised and improved					
2. **Alignment of module contents with the program objectives of the center**		**5**	**4**	**3**	**2**	**1**
1	All training objectives are modulated and included in training modules.					
2	Modules are up-to-date and appropriate for the training objectives of the center.					
3	The modules contain competencies (knowledge, skill, abilities) to be demonstrated by the trainees					
4	The suitability between scope of training modules and the length of time given for training.					
5	Unnecessary repetitive contents exist in the modules					

5= Strongly Agree 4= Agree 3=Undecided 2=Disagree 1=Strongly Disagree

No	3. The suggested instructional approaches most likely to achieve the training objective	Scale of Position				
		5	**4**	**3**	**2**	**1**
1	Trainees are allowed to share their ideas and knowledge (discusses) with other participants during the training process					
2	Trainees are given enough lab time(simulation and actual exercise) for practice					
3	More instructional time is given for lecture.					
4	Some instructional approaches directed by instructors are not appropriate for the training objectives.					
5	Instructional approaches are related to workplace requirements and job market needs					
4.	**Appropriateness of the resources (time, material and human) in line with the program objectives of the center**	**5**	**4**	**3**	**2**	**1**
1	The adequacy of time given for the training program.					
2	The balance between theory (classroom) and practice (lab/shop) for the training program.					
3	The accessibility of tools, equipment and/or supplies for practical training.					
4	New technological facilities (Computer assisted diagnostic system, etc.) are equipped properly.					
5	The adequacy and capacity of trainers to deliver training.					

Part 3:

Please, forward your general suggestion and comment on the area you think the training curriculum to be improved.

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Thank you so much for your cooperation!

አዲስ አበባ ዩኒቨርስቲ

ድህረ-ምረቃ ትምህርት ቤት

የስነ-ትምህርትና ስነ-ባህርይ ጥናት ኮሌጅ

የስርዓተ ትምህርት እና ማስተማር ትምህርት ክፍል

በስልጠና ላይ ባሉት ሰልጠኞች የሚሞላ መጠይቅ

የመጠይቁ ዓላማ

የዚህ መጠይቅ ዋና አላማ በአለምገና ማሸን ቤዝድ ቴክኖሎጂ ማሰልጠኛ ማዕከል ለመሳሪያዎች ጥገናስልጠና የተዘጋጀዉን ስርዓተ ስልጠና (Curriculum) መገምገም ይሆናል፡፡

መመሪያ፡

1. በመጠይቁ ላይ ስም መፃፍ አያስፈልግም
2. መጠይቆቹን ካነበቡ በኃላ በእያንዳንዱ ትዕዛዝ መሰረት ይምረጡ

ክፍልአንድ፡

እባከዎ በተቀመጠው ሳጥን ዉስጥ(✓) በመጠቀም ይመልሱ

1. ፆታ፡ ወንድ☐ ሴት☐
2. ዕድሜ፡ ከ18 በታች☐ በ19-24☐ በ25-30☐ ከ30 በላይ☐
3. የሚሠለጥኑበት ሙያ፡ አውቶ መካኒክ☐ አውቶ ኤሌክትርክ☐ ብየዳ☐ የአካልጥገና☐ ማሽንስት☐
4. የትምህርት ደረጃ፡ ከ10ኛበታች☐ 10+1☐ 10+2☐ 10+3☐ ዲፕሎማ☐ የመጀማሪያኛ ዲግረ☐

ክፍል ሁለት፡

እባክዎ ጥያቄዎችን ከነበቡት በኃላ ከቀረቡት አማራጮች ውስጥ የሚስማማዎትን አማራጭ ሥር(✓) ምልክት ያኑሩ፡፡

5=በጣም እስማማለሁ **4=እስማማለሁ** **3=አልወሰንኩም**

2=አልስማማም **1=በጣም አልስማማም**

	1. የተቀረፀው ስርአተ ስልጠና የማሰልጠኛው ዓላማ እንድሁም ከባለድርሻ/ ሰልጣኞች ፍላጎት ጋር አብሮ መሄዱን በተመለከተ	የምርጫደረጃ				
		5	4	3	2	1
1	የተዘጋጀው የስልጠና ይዘት ከፍላጎትዎ ጋር መሄዱ					
2	የስልጠናው ወቅታዊነት/ዘመናዊነት እና ለጥገና ሥራ ያለው ፋይዳ					
3	የስልጠናው አላማ በይዘቱ ሰፊ ከመሆን ለአጭር ጊዜ ስልጠና የሚሆን ክህሎት እና ጽንሰ ሀሳብ የተዘጋጀ አለመሆኑ					
4	የተዘጋጀው የስልጠና ዓላማ በስልጠና ማዕከሉ አሠራር መለካት የሚቻል መሆኑ					
5	የተዘጋጀው የስልጠና ዓላማ እና ይዘት መከለስ እና ማሻሻል ማስፈለጉ					
	2. የስልጠናው ሞጁል ይዘት የስልጠናውን ዓላማ ይዘት በሙሉ ያካተተ መሆኑን ለማረጋገጥ	5	4	3	2	1
1	ሞጁሎቹ ሁሉንም የሥልጠና ዓላማዎች እና ይዘቶችን ያካተቱ መሆናቸው					
2	ሞጁሎቹ ከስልጠናው ዓላማ ጋር የሚሄዱ እና ወቅታዊ(up-to-date) መሆናቸው					
3	የስልጠና ሞጁል ይዘት ሰልጣኞች ዕውቀታቸውን፤ክህሎታቸውን እና ተስጥኦቸውን እንድያንፀበርቁ የተመቻቸ መሆኑ					
4	የስልጠናው ሞጁሎች ይዘት/ስፋት ከስልጠናው ጊዜ/ቆይታ ጋር ስለመመጣጠኑ					
5	ከስልጠናው ዓላማ ጋር የማይሄዱ እና አላስፈላጊ ድግግሞሽ የሚታይባቸው ይዘቶች(contents) በሞጁሉ ውስጥ መኖራቸው					

5=በጣም እስማማለሁ **4=እስማማለሁ** **3=አልወሰንኩም**

2=አልስማማም **1=በጣም አልስማማም**

3.	**የቀረበው የስልጠና አሰጣጥ ዘዴ የስልጠናውን ዓላማ ለማሳካት**	የምርጫደረጃ				
		5	4	3	2	1
1	በስልጠና ወቅት ሰልጣኞች ተሰጥኦቸውን እና ዕውቀታቸውን እንድነጋሩ መደረጉ					
2	ለሰልጣኞች በቂ የተግባር ልምምድ ጊዜ እንድያገኙ መደረጉ					
3	አብዘኛው የስልጠና ጊዜ የሚሰጠው በንድፈ ሀሳብ(lecture) መሆኑ					
4	አንደንድ የስልጠና አሰጣጥ ዘዴዎች ከስልጠናው ዓላማ ጋር የማይሄዱ መሆናቸው					
5	የተቀመጡትየስልጠና ዘዴዎች የስልጠናውን ዓላማ ከግብ የሚያደረሱ እና የሰልጣኞችን ፍላጎት የሚያሟሉ መሆናቸው					
4.	**የስልጠናውን ዓላማ ከግብ ለማድረስ የተቀመጡት ቁሳቁሶች (ሰዓት፤የስልጠና ዕቃዎች፤የሰው ኃይል፤ወዘተ) መመጣጠንን በተመለከተ**	5	4	3	2	1
1	ስልጠናውን ለመጨረስ የተሰጠው ሰዓት በቂ መሆኑ					
2	ለንድፈ ሀሳብ እና ለተግባር የሚሰጠው የስልጠና ሰዓት በተቀመጠው የስልጠና ዓላማ ጋር መሄዱ					
3	የስልጠና ቁሳቁሶች ማለትም ቱለስ፤መሳሪያዎች እና ሌሎች ግብአቶች የተሟሉ መሆናቸው					
4	ወቅታዊ የሆኑ አዳዲስ ቴክኖሎጅዎች በስልጠናው ዓላማ(objective) ውስጥ መካተታቸው					
5	የስልጠናውን ዓላማ ከግብ ለማድረስ አሰልጣኞች በቁጥር እና በክህሎትም ብቁ መሆናቸው					

ከፍልሦስት፡

እባክዎትበአጠቃላይ በመሳሪያዎች ጥገና ስልጠና መረሃ ግብር ላይ መሻሻል አለበት የሚሉት ምክር እና አስተያየት ከለዎት ይግለፁት::

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ስለትብብርዎ በጣም አመሰግናለሁ!

Appendices-B: Questionnaire by Recent Graduate trainees (English and Amharic)

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Questionnaire

5. Questionnaires to be filled by the recent graduate trainees(2010-2015)

Dear participant trainee:

The purpose of this questionnaire is to evaluate the objective of Road construction equipment maintenance training curriculum administered at Alemgena Machine Based Technology Training Center (AMBTTC) in Equipment Maintenance Training Team.

I thank you very much in advance for your cooperation.

General Instructions:

1. Please don't write your name.
2. For alternative answers, select according to specific instruction
3. For any additional opinion or explanation write short answer in the space provided.

Part 1: Back ground of the Respondent:

Instruction: Please, thick in the box by using **(✓)** mark.

1. Sex: Female ☐ Male ☐

2. Age: below 18☐ 19-24 ☐ 25-30 ☐ above 30☐

3. Area of training: Auto mechanic☐ Auto electricity☐
   Machine☐ welding☐ auto body☐

4. Education Level: Below 10th☐ 10+1☐ 10+2☐ 10+3☐
   Diploma☐ 1st Degree and above☐

Part 2:

Please read each question very carefully. Make sure you understand what is being asked. Please indicate your response by putting (✓) mark against each item in the given rating scales.

5= Strongly Agree 4= Agree 3=Undecided 2=Disagree 1=Strongly Disagree

No	1. Curriculum objectives in accordance with the training objectives of the center and the needs of the stakeholders	Scale of Position				
		5	**4**	**3**	**2**	**1**
1	The consistency of session's design incorporated tasks, roles, and interactions with your need					
2	The modernity of training to local productivity(support of productivity)					
3	The training is designed by emphasizing much content into a short training time rather than specific skill/knowledge					
4	The designed curriculum objectives are measurable in the context of training center.					
5	The training objective have to be revised and improved					
2. **Alignment of module contents with the program objectives of the center**		**5**	**4**	**3**	**2**	**1**
1	All training objectives are modulated and included in training modules.					
2	Modules are up-to-date and appropriate for the training objectives					
3	The modules contain competencies (knowledge, skill, abilities) to be demonstrated by the trainees					
4	The suitability between size of training modules and the length of time given for training.					
5	Unnecessary repetitive contents exist in the modules					

5= Strongly Agree 4= Agree 3=Undecided 2=Disagree 1=Strongly Disagree

No	3. The suggested instructional approaches most likely to achieve the training objective	Scale of Position				
		5	4	3	2	1
1	The training approaches/methods are appropriate for trainees.					
2	Trainees are allowed to share their ideas and knowledge with other participants during the learning process					
3	Trainees are given enough lab time (simulation and actual practice) for practice.					
4	More instructional time is given for lecture.					
5	Some instructional approaches directed by instructors are not appropriate for the training objectives.					
4.	**Appropriateness of the resources (time, material and human) in line with the program objectives of the center**					
1	The adequacy of time given for the training program.					
2	The balance between theory (classroom) and practice (i.e., lab/shop/fieldwork) for the training program.					
3	The accessibility of tools, equipment and/or supplies for practical training.					
4	New technological facilities (Computer assisted diagnostic system, etc.) are equipped properly.					
5	The adequacy and capacity of trainers to deliver training.					

Part 3:

Please, forward your general suggestion and comment on the area you think the training curriculum to be improved.

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Thank you so much for your cooperation!

አዲስ አበባ ዩኒቨርስቲ

ድህረ-ምረቃ ትምህርት ቤት

የስነ-ትምህርትና ስነ-ባህርይ ጥናት ኮሌጅ

የስርዓተ ትምህርት እና ማስተማር ትምህርት ክፍል

በቅርብ ጊዜ በተመረቀው ሥራ ላይ ባሉት ሰልጠኞች የሚሞላ መጠይቅ

የመጠይቁ ዓላማ

የዚህ መጠይቅ ዋና አላማ በአለምገና ማሸን ቤዝድ ቴክኖሎጂ ማሰልጠኛ ማዕከል ለመሳሪያዎች ጥገናስልጠና የተዘጋጀዉን ስርዓተ ስልጠና (Curriculum) መገምገም ይሆናል፡፡

መመሪያ፡

3. በመጠይቁ ላይ ስም መፃፍ አያስፈልግም
4. መጠይቆቹን ካነበቡ በኃላ በእያንዳንዱ ትዕዛዝ መሰረት ይምረጡ

ክፍልአንድ፡

እባከዎ በተቀመጠው ሳጥን ዉስጥ(✓) በመጠቀም ይመልሱ

5. ፆታ፡ ወንድ☐ ሴት☐

6. ዕድሜ፡ ከ18 በታች☐ በ19-24☐ በ25-30☐ ከ30 በላይ☐

7. የሚሠለጥኑበት ሙያ፡ አውቶ መካኒክ☐ አውቶ ኤሌክትርክ☐

   ብየዳ☐ የአካልጥገና☐ ማሽንስት☐

8. የትምህርት ደረጃ፡ ከ10ኛበታች☐ 10+1☐ 10+2☐

   10+3☐ ዲፕሎማ☐ የመጀማሪያኛ ዲግረ☐

ክፍል ሁለት፡

እባክዎ ጥያቄዎችን ከነበቡት በኃላ ከቀረቡት አማራጮች ውስጥ የሚስማማዎትን አማራጭ ሥር(✓) ምልክት ያኑሩ፡፡

5=በጣም እስማማለሁ **4=እስማማለሁ** **3=አልወሰንኩም**

2=አልስማማም **1=በጣም አልስማማም**

	9. የተቀረፀው ስርአተ ስልጠና የማሰልጠኛው ዓላማ እንድሁም ከባለድርሻ/ ሰልጣኞች ፍላጎት ጋር አብሮ መሄዱን በተመለከተ	የምርጫደረጃ				
		5	4	3	2	1
1	የተዘጋጀው የስልጠና ይዘት ከፍላጎትዎ ጋር መሄዱ					
2	የስልጠናው ወቅታዊነት/ዘመናዊነት እና ለጥገና ሥራ ያለው ፋይዳ					
3	የስልጠናው አላማ በይዘቱ ሰፊ ከመሆን ለአጭር ጊዜ ስልጠና የሚሆን ክህሎት እና ጽንሰ ሀሳብ የተዘጋጀ አለመሆኑ					
4	የተዘጋጀው የስልጠና ዓላማ በስልጠና ማዕከሉ አሠራር መለካት የሚቻል መሆኑ					
5	የተዘጋጀው የስልጠና ዓላማ እና ይዘት መከለስ እና ማሻሻል ማስፈለጉ					
	10. የስልጠናው ሞጁል ይዘት የስልጠናውን ዓላማ ይዘት በሙሉ ያካተተ መሆኑን ለማረጋገጥ	5	4	3	2	1
1	ሞጁሎቹ ሁሉንም የሥልጠና ዓላማዎች እና ይዘቶችን ያካተቱ መሆናቸው					
2	ሞጁሎቹ ከስልጠናው ዓላማ ጋር የሚሄዱ እና ወቅታዊ(up-to-date) መሆናቸው					
3	የስልጠና ሞጁል ይዘት ሰልጣኞች ዕውቀታቸውን፤ክህሎታቸውን እና ተስጥኦቸውን እንድያንፀበርቁ የተመቻቸ መሆኑ					
4	የስልጠናው ሞጁሎች ይዘት/ስፋት ከስልጠናው ጊዜ/ቆይታ ጋር ስለመመጣጠኑ					
5	ከስልጠናው ዓላማ ጋር የማይሄዱ እና አላስፈላጊ ድግግሞሽ የሚታይባቸው ይዘቶች(contents) በሞጁሉ ውስጥ መኖራቸው					

5=በጣም እስማማለሁ **4=እስማማለሁ** **3=አልወሰንኩም**

2=አልስማማም **1=በጣም አልስማማም**

11.	**የቀረበው የስልጠና አሰጣጥ ዘዴ የስልጠናውን ዓላማ ለማሳካት**	የምርጫደረጃ				
		5	4	3	2	1
1	በስልጠና ወቅት ሰልጣኞች ተስጥኦቸውን እና ዕውቀታቸውን እንድነጋሩ መደረጉ					
2	ለሰልጣኞች በቂ የተግባር ልምምድ ጊዜ እንድያገኙ መደረጉ					
3	አብዘኛው የስልጠና ጊዜ የሚሰጠው በንድፈ ሀሳብ(lecture) መሆኑ					
4	አንደንድ የስልጠና አሰጣጥ ዘዴዎች ከስልጠናው ዓላማ ጋር የማይሄዱ መሆናቸው					
5	የተቀመጡትየስልጠና ዘዴዎች የስልጠናውን ዓላማ ከግብ የሚያደረሱ እና የሰልጣኞችን ፍላጎት የሚያሟሉ መሆናቸው					
12.	**የስልጠናውን ዓላማ ከግብ ለማድረስ የተቀመጡት ቁሳቁሶች (ሰዓት፤የስልጠና ዕቃዎች፤የሰው ኃይል፤ወዘተ) መመጣጠንን በተመለከተ**	5	4	3	2	1
1	ስልጠናውን ለመጨረስ የተሰጠው ሰዓት በቂ መሆኑ					
2	ለንድፈ ሀሳብ እና ለተግባር የሚሰጠው የስልጠና ሰዓት በተቀመጠው የስልጠና ዓላማ ጋር መሄዱ					
3	የስልጠና ቁሳቁሶች ማለትም ቱለስ፤መሳሪያዎች እና ሌሎች ግብአቶች የተሟሉ መሆናቸው					
4	ወቅታዊ የሆኑ አዳዲስ ቴክኖሎጅዎች በስልጠናው ዓላማ(objective) ውስጥ መካተታቸው					
5	የስልጠናውን ዓላማ ከግብ ለማድረስ አሰልጣኞች በቁጥር እና በክህሎትም ብቁ መሆናቸው					

ክፍልሦስት፡

እባክዎትበአጠቃላይ በመሳሪያዎች ጥገና ስልጠና መረሃ ግብር ላይ መሻሻል አለበት የሚሉት ምክር እና አስተያየት ከለዎት ይግለፁት::

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ስለትብብርዎ በጣም አመሰግናለሁ!

Appendices – C: Questionnaire for trainers

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Questionnaire

13. Questionnaires to be filled by trainers

Dear participant trainers:

The purpose of this questionnaire is to evaluate the objective of Road construction equipment maintenance training curriculum administered at Alemgena Machine Based Technology Training Center (AMBTTC) in Equipment Maintenance Training Team. You have been selected to fill this questionnaire. The information that you provide will be used only for the research purpose and it would be keep confidential. Your cooperation in filling the questionnaire contributes a lot to make the study more meaning full and complete, so please try to answer all the questions.

I thank you very much in advance for your cooperation!

General Instructions:

1. Please don't write your name.
2. For alternative answers, select according to specific instruction

Part 1: Back ground of the Respondent:

Instruction: Please, thick in the box by using **(✓)** mark.

1.	Sex:	Female ☐	Male ☐		
2.	Age:	below 25☐	26-34 ☐	35-40 ☐	above 40☐
3.	Area of training:	Auto mechanic☐ welding☐	Electricity☐ auto body☐	Machine☐	
4.	Education Level:	Diploma☐	1st Degree☐	MSc/BSc☐	

Part 2:

Please read each question very carefully. Make sure you understand what is being asked. Please indicate your response by putting (✓) mark against each item in the given rating scales.

5= Strongly Agree 4= Agree 3=Undecided 2=Disagree 1=Strongly Disagree

No	1. Curriculum objectives in accordance with the training objectives of the center and the needs of the stakeholders	Scale of Position				
		5	4	3	2	1
1	The curriculum objective actually meets the stated training objectives of the center and the needs of the stakeholders					
2	The curriculum objective is technically current.					
3	The curriculum is designed with a framework that emphasizes too much content into a fixed training schedule, rather than putting trainees master skills or knowledge					
4	The designed curriculum objectives are measurable in the context of training center.					
5	The curriculum objective need to be modified					
2.	**Alignment of module contents with the program objectives of the center**	**5**	**4**	**3**	**2**	**1**
1	All curriculum objective contents are included in the training modules					
2	The modules are appropriate and up to date with the program objectives of the center.					
3	The modules contain competencies (knowledge, skill, abilities) to be demonstrated by the trainees that are derived from curriculum objectives					
4	The appropriateness between training duration and the scope of module to cover the program objectives.					
5	Any unnecessary redundancies contents exist in the modules					

5= Strongly Agree 4= Agree 3=Undecided 2=Disagree 1=Strongly Disagree

No	3. The suggested instructional approaches most likely to achieve the training objective	Scale of Position				
		5	4	3	2	1
1	I invited participants to share their ideas and knowledge (discuss)with other participants during the learning process					
2	Adequate time is given for lab(simulation and actual practice for practice					
3	More instruction approach is given for lecture method because of insufficient equipment for practical session.					
4	some instructional approaches suggested do not go with the training objectives and need to be revised					
5	Instructional approach is related to workplace requirements and job market needs					
4.	**Appropriateness of the resources (time, material and human) in line with the program objectives of the center**	**5**	**4**	**3**	**2**	**1**
1	The adequacy of time allocated for each course in line with the program objectives of the center.					
2	The balance between theory (classroom) and practice (lab/shop) within the program					
3	The tools, equipment and/or supplies listed for practical components of the curriculum are satisfactory for program objectives of the center.					
4	The training center is equipped with appropriate new technologies (e.g. Computer assisted diagnostic system, etc)					
5	The adequacy and capability of trainers of the center in line with the curriculum objectives.					

Part 3:

Please, forward your general suggestion and comment on the area you think the training curriculum to be improved.

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Thank you so much for your cooperation!

Appendices – D: Interview guide forEquipment Maintenance Training Team Leader

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Interview guide for Equipment Maintenance Training Team Leader

General Directions:

The purpose of this questionnaire is to evaluate the objective of Road construction equipment maintenance trainingcurriculumadministered at Alemgena Machine Based Technology Training Center (AMBTTC) in Equipment Maintenance Training Team. Thus, your genuine cooperation in providing relevant and honest information is highly essential for the success of the study. Hence, please be honest and genuine when responding to each question.

Note:-It is possible to conduct the interview by language you can.

The information will be used for academic purpose only and responses will be kept confidential.

Part 1: Back ground of the Respondent:

1. Sex: Male☐ Female ☐

2. Age range : below 24☐ 25-30 ☐ 31and above ☐

3. Qualification: Diploma☐ 1st Degree ☐ 2nd Degree☐

Part two: Detail of the interview schedule

1. About offering need based and curriculum objectives of training
   - How training needs assessed and relevance of training to local need assured?
   - How do you observe the trainees interest in attending the program?
2. About the status of training provision?
   - How do you see the competence and adequacy of trainers in your institution?
   - How do you see the skill of trainers and their pedagogical/andragogy approaches?
   - How do you value your institution training facilities?
3. Please, forward your general suggestion and comment on the area you think to be improved especially appropriateness of the objectives of training curriculum (MOE) in line with the objectives of training center?

Thank you in advance for your co-operation!

Appendices – E: Interview guide fortraining manager

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES
DEPARTMENT OF CURRICULUM AND INSTRUCTION

Interview guide for training manager

General Directions:

The purpose of this questionnaire is to evaluate the objective of Road construction equipment maintenance trainingcurriculumadministered at Alemgena Machine Based Technology Training Center (AMBTTC) in Equipment Maintenance Training Team. Thus, your genuine cooperation in providing relevant and honest information is highly essential for the success of the study. Hence, please be honest and genuine when responding to each question.

Note:-It is possible to conduct the interview by language you can.

The information will be used for academic purpose only and responses will be kept confidential.

Part 1: Back ground of the Respondent:

1. Sex: Male☐ Female ☐

2. Age range : below 24☐ 25-30 ☐ 31and above ☐

3. Qualification: Diploma☐ 1st Degree ☐ 2nd Degree☐

Part two: Detail of the interview schedule

1. About offering need based and curriculum objectives of training
   - How training needs assessed and relevance of training to local need assured?
   - How do you observe the trainees interest in attending the program?
2. About the status of training provision?
   - How do you see the competence and adequacy of trainers in your institution?
   - How do you see the skill of trainers and their pedagogical/andragogy approaches?
   - How do you value your institution training facilities?
3. Please, forward your general suggestion and comment on the area you think to be improved especially appropriateness of the objectives of training curriculum (MOE) in line with the objectives of training center?

Thank you in advance for your co-operation!

Appendices – F Document analysis guide

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
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DEPARTMENT OF CURRICULUM AND INSTRUCTION

Document analysis guide

1. Document on training need identification

2. Curriculum document

3. Modules of the courses

Declaration

I hereby declare that this thesis is my original work and has not been presented for the fulfillment of degree in any other university and all that sources of material used for the thesis have been duly acknowledged.

Name _____

*Sign.*_____

Date _____

Confirmation by Advisor: *Name* _____

*Sign.*_____

Date _____