AN EVALUATION OF THE EFFECTIVENESS OF
TECHNICAL EDUCATION AND TECHNICAL
TRAINING PROGRAMMES IN KENYA

a case study of selected Technical
Training Institutions in Nairobi

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DECLARATION

The research project is my original work and has not been presented for a degree in any other University or any other award.

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This research project is dedicated to my parents Peter Atsetse and Agnes Amisi for having taught me the value of hard work.

To my dear wife Pauline and my children for your understanding during my long absence.
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ABSTRACT

One of the challenges facing Technical Vocational Education and Training (TVET) especially in public training institutions is the provision of adequate and relevant technical skills that are responsive to the labour market.

Just like other organizations that are concerned with the quality of their products and services, the purpose of the study was to evaluate the effectiveness of Technical Education and Technical Training Programmes in Kenya.

The study wanted to establish the state of the training infrastructure in the public technical institutions and the co-operation between the institutions and the industry. The study was also investigating whether there are any forms of industrial attachment and staff training and development programmes for technical teachers and the value the teachers attached to these programmes.

Five (5) Technical Training Institutions, thirty two (32) lecturers and twenty four (24) final year engineering students were selected for the study. Also targeted for the study were five (5) line managers in private industry.

The lecturers, students and line managers, were selected using stratified random sampling. The information from the technical teachers, students and line managers from the industry was obtained by use of a questionnaire and interview guide. The information received was analysed descriptively and simple descriptive statistics involving percentages were employed.

The data was then presented in a descriptive form.

The study revealed that the government together with the Technical Training Institutions had not provided adequate staff training and development courses to Technical Teachers as expected. Only 28% of the teachers had been sponsored for staff training and development courses while the majority who had not sought self sponsorship remained with their college grades with no value addition.

Over 70% of the teachers reported that the state of training tools and equipment was either deteriorating or constantly poor.

The study also revealed that industry participation in curriculum development meetings especially at K.I.E. and at college level was minimal. This led to a situation where most of the Technical Training Programmes did not benefit from the direct inputs of technical managers, engineers, technicians and other professionals.

The study revealed that only 42% of the trainees were attached to industries through their liaison officers and the rest were left to fend for themselves. 38% of those who got attachment places were not visited at all by their supervisors. This showed lack of seriousness in conducting industrial attachment programmes by training institutions.
The study concluded that, Technical Teachers need to attend regular in-service and staff development courses to be able to impart to trainees adequate and relevant technical skills. The study also concluded that obsolete and worn out tools and equipment in training institutions need to be replaced. It was also concluded that collaboration between training institutions and the industry needs to be strengthened.

The researcher suggests that T.I.V.E.T.A. should be made a body corporate to co-ordinate Technical Education and Training Programmes for all cadres of Technical Teachers and Technical Officers. T.I.V.E.T.A. should be mandated to operate so as to be in a position to co-ordinate, monitor and evaluate Technical Education and Technical Training Programmes being offered in both public and private technical training institutions.

Further research should be carried out to cover a wider area and a larger sample in order to determine to what extent the constraints facing technical teachers affect the quality of Technical Education and Training Programmes in Kenya. A study on needs analysis of Kenya technical trainees vis-a-vis industry needs should be carried out to establish what relevant technical skills should be imparted to trainees in training institutions.
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ACRONYMS AND ABBREVIATIONS

FKE.............................Federation of Kenya Employers.

GTZ.............................German Technical Co-operation.

K.I.E .........................Kenya Institute of Education.


K-REP..........................Kenya Rural Enterprise Programme.

KTTC............................Kenya Technical Teachers'College.

MOEST..........................Ministry of Education, Science and Technology.

TIQET...........................Totally Integrated Quality Education and Training.


T.V.E.T. ........................Technical Vocational Education and Training.


UNESCO .......................United Nations Educational Scientific and Cultural Organization.

UNEVOC .......................United Nations Education and Vocational Training Magazine
CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND TO THE STUDY

According to Cantor (1989), technical colleges in Japan are successful and produce well-trained graduates who are much sought after by industry. Cantor also noted that in Australia, Technical and further Education was offered in colleges that placed greater emphasis on their Vocational role presumably at the expense of their provision of liberal and general education. The success of those technical colleges was attributed to greater co-operation with the world of industry.

While in America, the institutions of Vocational Education and Training were able to respond quite quickly to the perceived needs of the labour market due to their sound training infrastructure, Cantor (1989).

In the United Kingdom, the production of skilled personnel at operative, craft and technician levels compared unfavourably with its competitors due to inadequate funding to training institutions. (Cantor 1989).

Amadou et al (1979) found out that a surplus of graduates unable to find employment rather than the shortage of skilled workers was the main worry facing most countries. This helped to explain the mis-match between training needs and the industry needs and the effect it had on Technical Vocational Education and Training.

Following the inception of the new structure of the education system in the country (eight years primary, four years secondary and four years university, 8-4-4), Technical and Vocational Education and Training had featured prominently (Mackay report 1981).
This had resulted in designing of Technical programmes whose main objective was to provide practical education and training skills which are responsive and relevant to Kenya's agricultural, industrial, commercial and economic needs.

The Directorate of Technical Education which was established in the late 1960s as a Technical Training Section under the Ministry of Education had grown to a full directorate and is the one currently co-ordinating and promoting Technical Vocational Education and Training in the four National Polytechnics, nineteen Technical Training Institutes, sixteen Institutes of Technology and one Technical Teachers Training College.

The major role of the Technical Training Institutions is to encourage self-employment while at the same time producing skilled artisans, technicians and technologists for both formal and informal sectors at the ratio of one technologist to five technicians to thirty craftsmen/artisans. (1:5:30)

While overseeing the implementation of the above Technical Vocational Education and Training Programs, the Directorate of Technical Education within its mandate is required to work in collaboration with other Ministries/departments, state corporations, industries and private entrepreneurs dealing with the promotion of human resource development in the country.

It was noted that over the years, Technical Training Institutions had continued to experience a number of challenges that resulted from poor training infrastructure, lack of appropriate training equipment and tools and failure to upgrade skills of training and Management staff. This scenario had a marked effect on the quality of Technical Education and Training Programs offered in these Institutions.
According to the report of Federation of Kenya Employers (August 1996) to the National Industrial Council: focusing on the industrial training needs assessment and institutional capacity and capability in Kenya, it was reported that the majority of Technical Training Institutions had not kept pace with the changing technology in industry and that the training equipment was in most cases obsolete and did not provide the type of skills required by new technologies in industry. This helped to explain why the line management in Technical Institutions need help and advice on the conduct of Technical Vocational and Education and Training programs through a systematic evaluation of the programs.

This study was geared towards making recommendations on how the challenges faced by technical teachers and the poor infrastructure in Technical Institutions could be addressed and thereby improve the quality of Technical Education and Training programs. In order to keep abreast with changes in the world of manufacturing and services as a result of innovations in the application of new technologies, the need to update training equipment and offer opportunities for training and development of Technical Teachers becomes a rule rather an exception. It is on this strength that this research was conceived.

1.2 STATEMENT OF THE RESEARCH PROBLEM

It was noted from the background of the study that there had been calls and recommendations to address challenges facing Technical Training Institutions in order to exploit their full potential and enable them to keep pace with changing technology in industry. (Mackay, 1981; Nyang’ute, 1996; Koech, 1999; TVET, 2003,).

It was also apparent from the background of the study that the state of training tools and
equipment in most Technical Institutions was wanting and hence did not provide the type of skills required by the new technologies in industry. Besides, Technical Teachers needed to participate in staff training and development programs regularly in order to keep a breast with the needs of the industry. This state of affairs posed a big challenge to the Technical Training Institutions. (Hans 1998, Nyang‘ute, 1996; Development plan, 2002-1007, TVET; 2003).

Despite calls and recommendations geared towards addressing these challenges, very little had been done to solve the problems facing Technical Training Institutions in their endeavour to impart job oriented skills to technical trainees.

The current shortcomings in the delivery of Technical Education Programs seemed to be affecting the quality of technical training adversely with regard to effective training for a dynamic and competitive labour market.

Various works and authors had acknowledged that there is need to address the state of Training Equipment and the challenges faced by Technical Teachers first before any meaningful technical training in any Institution commences. (Aleke-Dondo, 1991, Development Plans, 1994-1996, 2002-2007, Hans 2004).

It therefore follows that in order to produce technical graduates with relevant skills, knowledge and attitude that will meet identified industrial needs, the problems facing Technical Training Institutions with regard to staff training and improvement of training equipment must be addressed in a careful and systematic approach.

The main question was, what challenges are Technical Training Institutions facing in preparing trainees to satisfy qualitative and quantitative requirements of the market? It is against this background that the research set out to evaluate the effectiveness of Technical Education and Training Programs offered in Technical Training Institutions.
and whether there were any programmes in place that addressed their short comings. Besides assessing the adequacy of the training equipment, the study also sought to identify whether there was any relationship between the Technical Teachers’ age, gender, experience, academic and professional qualifications with their productivity.

1.3 PURPOSE OF THE STUDY
The purpose of the study was to establish the difficulties encountered by Technical Training Institutions in delivering market oriented technical skills, knowledge and attitude to trainees in technical institutions within Nairobi Province.

1.4 OBJECTIVES OF THE STUDY
The main objective of the study was to evaluate the effectiveness of Technical Education and Technical Training Programmes in Kenya.

The specific objectives of the study were to:

I. Identify skill improvement areas in which Technical Teachers wished to participate in order to improve their productivity.

II. Find out the staff training and development programs in which the Technical Teachers actually participated.

III. Find out the relevance and adequacy of the training equipment used in providing technical skills required in the industry.

IV. Find out the extent to which existing Technical Education and Training programs met the needs of the changing technology in industry.

V. Establish whether there is any desire for Technical Teachers to participate in skill up-grading programs.

VI. Identify the problems faced by Technical Training Institutions in accessing staff training and development opportunities to their staff.

1.5 RESEARCH QUESTIONS
The following research questions guided the researcher in order to achieve the above stated objectives.
I. What skill improvement programs do Technical Teachers participate in?

II. Are the teaching staff adequate for and competent in the training of the students?

III. To what extent does the training equipment provide the type of skills required by the new technologies in industry?

IV. What staff training and development programs do Technical Training Institutions desire to access to their teachers?

V. To what extent do the existing staff training and development programs meet the desired performance levels of Technical Teachers?

VI. What is the relationship between academic and professional qualifications, age and gender of Technical Teachers and their desire to participate in staff training and development programs?

1.6. SIGNIFICANCE OF THE STUDY

The study may be useful to M.O.E.S.T. in that, it will identify problems and suggest possible solutions to enhance the quality of Technical Education and Technical Training Programmes in TVET institutions.

The study may also be beneficial to all bodies involved in Technical Industrial Vocational and Entrepreneurship Training. They may be able to identify areas lacking in the provision of marketable technical skills and probably sponsor training and attachment programmes in these areas.

The Principals of technical training institutions may benefit by seeking the governments intervention in updating the training infrastructure in their institutions.

1.7 LIMITATION OF THE STUDY

The study was limited to Technical Training Institutions within Nairobi Province.

It was hoped that the Technical Teachers in these Institutions would express the challenges they experienced in discharging their duties.
Due to financial and other logistics, the study could not include all Technical Training Institutions. However generalization could be made to other Technical Training Institutions but with caution as each Technical Training Institution had a different approach regarding staff training and development.

The busy schedule of Technical Teachers in both workshops and classrooms could limit responses, however the researcher assured them that only little of their time could be taken. The busy schedule of managers in the industry meant that it would be difficult to get appointments with the targeted line managers in the industry. Teachers would fear being branded dormant and archaic if they had not attended any in-service or staff training programmes.

The Technical Teachers with little workload and those whose performance was lower than expected would think that the study could expose their weakness.

1.8 DELIMITATION OF THE STUDY

The study focused on evaluating the effectiveness of Technical Education and Technical Training Programmes in selected institutions in Nairobi Province. Besides making the questionnaires anonymous to encourage honesty, efforts were made to authenticate responses by secondary data.

1.9 BASIC ASSUMPTIONS

The assumptions underlying the study were:-

1. In-service courses and staff training and development programmes attended by technical teachers motivate them to better performance.

2. Availability of adequate, relevant and up to date training tools and equipment contributes to high quality training in technical institutions.
3. Collaboration between training institutions and the industry improves the quality of skills imparted to trainees.

1.10 DEFINITION OF OPERATIONAL TERMS

**Technical Education and Training** will restrictively refer to those programmes that impart skills, knowledge and attitudes to individuals preparing to take middle level professional positions in the world of work particularly in engineering and scientific disciplines. Graduates of Technical Education and Training programs include artisans, craftsmen, technicians and technologists.

**Technical Teachers** are people with a technical background who are employed to impart technical skills, knowledge and attitudes to individuals who are preparing to join the world of work particularly in engineering and scientific disciplines.

**Technical Skills** are skills that are imparted to trainees pursuing Technical Education in order to prepare them to participate actively in the world of work.

**An Artisan** is a skilled person with thorough knowledge of techniques, which are needed to do a job with efficiency in a specific trade.

**A Craftsman** is a skilled person in a specific trade who has the ability to do a practical job or work at a high level of efficiency. He/She possesses more relevant scientific and technological knowledge than the artisan.

**A Technician** is a person who has the ability to perform a wide range of skilled and analytical tasks at a high level of competence. He/She is required to interpret, design and supervise other employees below him/her.

**A Technologist** possesses a high level of educational training in science and technology. He/She has the ability to design systems. He/She is essentially a manager in the
workshop set-up.

1.11 ORGANIZATION OF THE STUDY

The study is organized into five (5) chapters.

Chapter one deals with the introduction to the study. Various studies related to the current study were reviewed in chapter two. Design and Methodology were dealt in chapter three and included the study population, sampling procedures, development of data collection instruments and procedures.

Data analysis and presentation was dealt with in chapter four. The findings of the study were discussed and conclusion and recommendations made in chapter five. Chapter five finally closed with suggestions for further research.
CHAPTER TWO - LITERATURE REVIEW

2.0 INTRODUCTION TO LITERATURE REVIEW

In this chapter, related literature to the study was reviewed. The researcher utilized magazines, text books, sessional papers, reports and journals among other sources of literature.

The section was divided into the following parts:

2.1 Rationale for Technical and Vocational Education and Training.

2.2 The challenges facing implementation of Technical Education and Training Programmes.

2.3 Staff training and development programmes for Technical Teachers.

2.4 The skill levels of graduates of technical training institutions with regard to industry Needs.

2.5 The current state of training tools and equipment in technical training institutions.

2.6 Linkage between the technical training institutions and the industry.

2.7 Industrial attachment and supervision of technical trainees.

2.8 Conceptual framework.

2.1 Rationale for Technical and Vocational Education and Training.

Training is regarded as any learning activity which is directed towards the acquisition of specific knowledge and skills for the purpose of an occupation or task. While development is regarded as any learning activity which is directed towards future needs, and which is concerned more with career growth than immediate performance.

Cole(1993). Training in this case is seen as a key instrument in the implementation of human resources policies and practices.
Technical and Vocational Education and Training has featured prominently since the inception of the new structure of education (8:4:4), Mackay report (1981).

Effective training for Technical Teachers should therefore be seen as a key instrument in introducing new working practices and instructional techniques required in a dynamic and competitive labour market.

Sessional paper No.1 of 1986 focusing on economic management for renewed growth emphasizes the Government’s commitment to providing skills which ensure continued supply of the required professionals in technical and management skills in the economy.

According to sessional paper no.6 (1998), the government put emphasis on the introduction of technical education at all levels of the education system. This was mainly aimed at developing skills among the Kenyan Youth for gainful employment in industry of self employment in the informal sector commonly referred to as ‘Jua Kali’.

Technical training institutions have grown in number over the years until at the moment there are nineteen public Technical training institutes, sixteen Institutes of technology, four National polytechnics and one Technical teacher training college. All these institutions are involved in offering technical training to middle and high level manpower to meet the demand of the economy.

2.2 The Challenges facing the implementation of Technical Education and Training Programmes

It is important to note that Technical training institutions continue to experience a number of challenges that result from poor training infrastructure, lack of appropriate training equipment and failure to upgrade skills of training and management staff regularly.
According to Nyang'ute (1996) the majority of technical training institutions had not kept pace with the changing technology in industry and that the training equipment was in most cases obsolete and did not provide the type of skills required by the new technology in industry.

This scenario has had a marked effect on the quality of Technical Education and Training offered in these institutions. It also helps to explain why the management in Technical institutions need help and advice on the conduct of technical education and training programs through a systematic evaluation of the existing programs.

The Koech report (1999) concurs with the above observation that technical institutions should be strengthened to produce the required manpower and the curriculum be redesigned to be responsive to the labour market. Technical Teachers should therefore be continuously trained or inserviced in the relevant areas to keep abreast with the demands of the industry.

According to Owour (2003) the misplaced focus on white collar employment by the current TVET system has been responsible for most of the country's employment woes. He noted that huge amounts of money was invested in Education without a corresponding investment in areas of Technical Training, which have immediate job creation potential. It follows that Technical Institutions have an important role to play in shaping the communities and should therefore be facilitated to offer meaningful experience and education.

Technical Teachers being among the resources of technical training institutions should be well managed through staff training and development programmes for the institutions to
achieve their mission and goals.

2.3. Staff Training and Development Programmes for Technical Teachers

This study was also meant to find out the potential of Technical teachers as suppliers of the artisan, craft and technician skills required by both formal and informal sectors and the rest of Kenyan economy both currently and the years ahead. This will go along way in improving the quality of Technical Education and training programmes as away of overcoming the challenges faced by the teachers.

In addition, staff development programmes are one-way that the Ministry of Education, Science and Technology ensures that it secures adequate and relevant man-power to run its Technical Education and Training Programmes.

In the recent past, industries and employers have complained that their man power requirements are not being met despite the high number of craftsmen, technicians and technologists who flood the labour market. (Aleke-Dondo, 1991). This calls for training institutions to identify training needs of individuals and the labour market.

According to Okumbe (2001), human resources are the most important assets an organization has and therefore the success of the organization depends on how effectively its workers are managed. It follows that human resource development is important in technical training institutions for teachers to adjust to rapid technological changes.

Consequently the need to adapt to technological changes and development calls for training and development.

Rapid technological changes have tended to create new demands for training and development, Hans (2004). In essence all employees regardless of their previous
training, education and experience should seek further training and development in order to keep abreast with the changes in technology.

Kamunge report (1988) is in agreement with the above since it suggested that employees needed further training and development to increase their productivity.

The study is geared towards evaluating the effectiveness of Technical training institutions in equipping trainees with marketable survival skills.

2.4. **Skill Levels of Graduates of Technical Training Institutions with regard to industry needs.**

The role of Technical teachers cannot be underrated especially this time when the Ministry of Education, Science and Technology is expected to formulate programmes and activities which should enable training institutions to provide manpower requirement to support industrial transformation by the year 2020. (Okaka, 1998). It is indeed important for training institutions to impart requisite job skills and knowledge to trainees.

According to Hans (2004) there is concern over the need to link formal education with Vocational training skills geared to the labour market in order to effectively sustain economic growth and maintain international competitiveness. It is against this background that an Inspectorate of Technical Training should not only be seen as necessary but desirable as an instrument for control, direction and improvement of education and training in Technical institutions.

In Sessional paper no.2 (1996), it was observed that Kenya is moving towards a newly industrialized nation. This goal is to be achieved in the year 2020. This means that the country will require well trained man-power with the necessary technical and managerial skills that will improve the productivity, maintenance and effectiveness of our industries,
goods and services. It is against this background that Nyang’ute et al(1996) argue that the competence of technical graduates and the demand for their skills and how well they fit in the labour market has not been well addressed.

The current study will investigate the extent to which such challenges affect the morale and productivity of Technical teachers in their endeavour to produce technical graduates who are job oriented.

The quality of graduates in most cases depends on how well they have been prepared for their various disciplines by their respective training institutions (Bakhida, 2005). Technical institutions should therefore play a key role in imparting adequate and relevant technical skills to trainees in order to prepare them for the labour market.

The current study is set to investigate the factors that affect the effective design and implementation of Technical Education and Technical Training Programmes and make appropriate recommendations.

2.5 The Current State of Training Tools and Equipment in Technical Training Institutions

The government, through Sessional Paper No.6(1988) withdrew financial support for teaching and learning materials from technical institutions. Since then, most of the technical training institutions are still using old and obsolete training tools and equipment. According to TVET report (2003) some institutions, for example are still using dead engines to train automotive trainees. Lack of adequate and relevant training tools and equipment in training institutions could adversely affect the quality of technical skills imparted to trainees. Aleke-Dondo (1991) agrees with the above to the extent that the major challenge facing implementation of Technical Education Programmes is the
issue of inadequate training infrastructure, training tools and equipment.

Technical Education and Training Programmes are intended to match theory and practice to facilitate employment and self reliance for the achievement of social economic goals (Kamunge report 1988). However the need for adaptation for survival remains one of the most crucial challenges facing effective implementation of Technical training programmes. This calls for an evaluation of the existing programmes with the objective of improving the quality of Technical Education in middle level colleges through staff training and development and by updating the training tools and equipment.

In the National Development Plan (2002-2007) it has been observed that there is a need to maximize the utilization of Technical and Vocational institutions through upgrading the capacity, introducing flexible curriculum and upgrading some institutions to be centres of excellence in specific skills. A critical evaluation of the existing Technical Education and Training Programmes should lead to controlling and correcting the training programmes in order to reflect the needs of the trainees and the industry.

2.6 Linkage between Technical Training Institutions and the Industry.

Sessional Paper No.1 (1994), on ‘Recovery and Sustainable Development to year 2010’ emphasized the fact that Education and Training will continue to be the most important long term means of reducing the level of unemployment. The paper further suggested that training programmes should however be matched with the needs of the private sector in order to bridge the existing gaps. It is therefore important to develop suitable training programmes that impart requisite job skills and knowledge to trainees by forging a linkage between training institutions and the industry.
There have been calls to strengthen planning and coordination of Technical training programmes with a view to reducing existing imbalances in the training design and implementation of the programmes to meet the industry needs, (1994-1996 Development Plan). In essence an evaluation of the effectiveness of the existing technical training programmes is necessary to identify the training needs of the trainees and the labour market and hence fill the existing gaps.

2.7 Industrial Attachment and Supervision of Technical Trainees

According to TVET report (August, 2003): focusing on the status of Technical and Vocational Education and Training in Kenya, it was reported that although graduates of middle level colleges have better skill orientation and tend to adapt more easily to industry than their counterparts from Universities, their skill competencies have steadily declined in recent years due to poor instructional methods, outmoded training equipment and lack of meaningful industrial attachment. Lack of meaningful and coordinated collaboration between technical training institutions and the industry means that students are largely left to fend for themselves in search of industrial attachment which at times could be hard to come by.

Owour (2003) Concurs with the above TVET report to the extent that a good institution is rated by the calibre of students it produces as seen in their skill levels, level of maturity and interpersonal qualities as exhibited in the labour market. It follows that those students who secured attachment places on their own may not have been supervised adequately by their teachers since there is a possibility of not having had a follow-up programme from the training institutions.
2.8 Conceptual Framework

The study took into consideration the need for effective delivery of Technical Education and Technical Training Programmes. This could be achieved through continuous in-service training for technical teachers and improved training infrastructure. The diagram below describes some of the factors that could influence the quality of Technical Education and Training Programmes and possibly the outcomes of the training.

Factors influencing the quality of Technical Training Programmes:

1) Skill improvement courses for Technical Teachers.
2) Staff training and development programs or teachers.
3) Adequacy of Training equipment.
4) Relevance of Training equipment.
5) Industry participation in designing and implementing of Technical Training Programs.

Effects on Technical Training Programmes:

Improvement of
- Quality of technical education programmes
- Teaching methods
- Skills levels of teachers and trainees
- Knowledge of networking and technology trends

Dependent Variables

Source – TIQET Document of 1999 on challenges of further Education and Training

2.8.2. Skill Improvement Courses for Technical Teachers.

The role of trained and experienced technical teachers is very crucial in determining the quality of Technical Education and Training Programs (Okaka, 1998). It is important for serving technical teachers to attend skill upgrading courses especially in the industry in order to keep abreast with the industry needs. The inservice courses should be spread
between a time period of three and six months. The skill improvement courses will enable technical teachers to impart skills and knowledge to technical trainees that are responsive to the labour market and hence improve the quality of technical education.

2.8.3 Staff Training and Development

Technical Teachers have the potential to supply the technical skills required by both formal and informal sectors (Hans, 2004). The teachers will therefore feel important, recognized and strongly motivated when they are given opportunities for staff training and development. These programs will not only improve the teachers knowledge, skill and attitudes but will also motivate them to be effective and hence improve the quality of Technical Education.

2.8.4 Adequacy of Training Equipment

Adequate training equipment is likely to provide the type of skills required by the technical trainees since it gives every trainee enough time to practice the skills learned (Aleke-Dondo, 1991). The reverse, however, is true of inadequate and irrelevant training tools and equipment adversely affecting the quality of Technical Education and Training.

2.8.5 Relevance of Training Equipment

In order to produce technical graduates with relevant skills, knowledge and attitude that will meet identified industrial needs, it is necessary to update the training equipment Accordingly (TVET, 2003). Training Institutions with obsolete Training equipment are therefore not likely to keep pace with the changing technology in industry. Use of obsolete training equipment is likely to affect the quality of technical training adversely with regard to effective training for a dynamic and competitive labour market.
2.8.6. Industry Participation

A linkage between formal training and the industry could be enhanced through effective industrial attachment programs for both teachers and trainees (TVET, 2003). The attachment will help the teachers to introduce new working practices and instructional techniques in training institutions that are needed in a dynamic and competitive labour market.

Contributions by experts from the industry during the designing of Technical Programs at the Kenya Institute of Education and at the institutional level are likely to improve the quality of Technical Education. While industrial attachment for Trainees will help them to improve on and practice the skills learned in Training Institutions.

2.9 CRITICAL REVIEW OF THE MAJOR ISSUE

According to Amadou (1979), a surplus of graduates unable to find employment rather than the shortage of skilled workers was the main worry in most countries. It follows that a sound training infrastructure is likely to provide the type of skills required by both the trainees and the industry. The reverse, however, is true of inadequate training infrastructure adversely affecting the quality of technical skills imparted to trainees.

In the recent past, industries and employers in Kenya have complained that their manpower requirements are not being met despite the high number of craftsmen, technicians and technologists who flood the labour market. (Aleke-Dondo 1991).

It can be noted from the foregoing review that the competence of technical graduates and the demand for their skills and how well they fit into the labour market has not been well addressed. It was on this strength that this research was conceived.
2.10 SUMMARY AND GAPS TO BE FILLED BY THE RESEARCH.

Nyang'ute,(1996) examined the impact of training needs on the institution capacity, focusing on the mismatch between the supply and demand for some occupations in the labour market. This study essentially focused on the evaluation of Technical Education and technical training programmes offered by selected Technical training institutions. Further more, no empirical studies had been done to evaluate the existing Technical Education and Technical Training Programmes in the middle level colleges since the inception of 8:4:4 system of education as a result of the Mackay report of 1981. There was a wide disparity between institutions offering similar courses since there were no standard guidelines on the minimum level of equipment and staffing that had to be met prior to introduction of a new course.

This research has therefore made recommendations that are intended to fill the gaps between the technical skills imparted to trainees and the industry needs. The study will also act as a springboard for further research.
CHAPTER THREE- RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the design and methodology that was used in the study.

The chapter is divided into the following sections:

3.1 Research Design
3.2 Study Area
3.3 Target Population
3.4 Sampling Procedure
3.5 Research Instruments
3.6 Pilot, Validity and Reliability
3.7 Data Collection Procedures
3.8 Data Analysis

3.1 Research Design

The study fits in the descriptive survey design and it entailed to establish the effectiveness of Technical Education and Technical Training Programmes in selected technical institutions within Nairobi Province. According to Mugenda, (1999), descriptive research helps the researcher to determine and report the way things are. The researcher found it more flexible when using both the survey and exploratory designs.

3.2 The Study Area

The study was conducted in Technical Institutions within Nairobi Province in the Republic of Kenya. The Institutions included, Kenya Polytechnic, Kenya Technical Teachers’ College, Kabete Technical Training Institute, Kinyanjui Technical Training Institute and Nairobi Technical Training Institute. The study also involved five industries within Nairobi Province. They included D.T. Dobie, Unilever E.Africa, E.A. Breweris, General motors, and Mugoya construction company. Nairobi was
chosen for being the capital city with adequate infrastructure and close vicinity to industries that have the potential to offer attachment places for trainees and also employ technical graduates.

3.3. Target Population

The research population was constituted of Technical Teachers in Kenya Polytechnic, KTTC, Kabete T.T.I, Nairobi T.T.I and Kinyanjui T.T.I.

The study targeted Principal Lecturers, Senior Lecturers, Assistant Lecturers and Technical Masters teaching in the five technical institutions above.

The study also involved five line managers in the selected companies and twenty four final year engineering students in the above colleges.

3.4 Sampling Procedure

The researcher sampled teachers and students from the five colleges. The researcher used stratified random sampling technique in order to represent teachers and students from the Technical Training Institutions of Nairobi Province.

The researcher also used stratified random sampling to ensure that the five line managers selected represented the industries within Nairobi Province in the disciplines namely Electrical, Automotive, Mechanical, Building and Civil Engineering.
3.4.1. The teachers were distributed as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Lecturers</td>
<td>5</td>
</tr>
<tr>
<td>Senior Lecturers</td>
<td>11</td>
</tr>
<tr>
<td>Lecturers</td>
<td>8</td>
</tr>
<tr>
<td>Assistant Lecturers</td>
<td>5</td>
</tr>
<tr>
<td>Technical Masters</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

3.4.2 The final year engineering students were distributed as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Electrical/Electronics</td>
<td>6</td>
</tr>
<tr>
<td>Automotive</td>
<td>6</td>
</tr>
<tr>
<td>Building and Civil</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

The five line managers represented each of the major engineering areas shown above.

3.5 Research Instruments

The following research instruments were developed, validated and tested for effective collection of information.

(a) Questionnaire
The questionnaire was the major data collection procedure that was used in this study. It was administered to teachers, students and the line managers in industry. According to Mugenda (1999), a questionnaire is commonly used to obtain important information about the population. The questionnaire had both closed ended and open ended questions. Open ended questions allowed a greater depth of response by allowing the subjects to give their own views about the challenges facing effective design and implementation of Technical Education and Training Programmes.

(b) Interview Schedule

Interviews were conducted to line managers in the private industry. According to Mugenda (1999), the interview can get more information by using probing questions. The use of the interview provided in depth data and allowed flexibility in questioning.

3.6 Pilot, Validity and Reliability

Piloting of the questionnaire was carried out in the five technical training institutions before the actual data was collected. Pre-testing of the questionnaire was carried out to ensure that the instruments produced the same results even when offered twice to the same group of subjects.

3.7 Data Collection Procedures

The researcher first sought authority from MOEST before proceeding for data collection in the training institutions. The researcher then handed a copy of the authority letter to Principals of Technical Institutions in preparation for data collection.

To collect data, the researcher visited the sampled technical institutions and distributed the questionnaire accordingly. The filled questionnaire was finally collected by the
researcher for analysis. The researcher personally conducted interviews with the line managers from the industry.

**3.8 Data Analysis**

After administering the measuring instruments, the mass of raw data collected was coded for analysis by scoring the questionnaire responses. Responses from the subjects were directly scanned from the questionnaire into the computer. The Statistical Package for Social Sciences (S.P.S.S.) was used to analyse the data. The use of S.P.S.S. to analyse the data enables one to get the actual meaning of the results. Data analysed using this software gives concrete information in form of tables and graphs.

Data collected through interviews was analysed manually by the researcher.

The research questions addressed the following:

1. Inservice training and development programmes attended by technical teachers.
2. Challenges facing implementation of Technical Education and Training Programmes.
3. Technical skill levels of teachers and trainees.
4. Linkage between the training institutions and the industry.
5. Academic and professional qualifications of technical teachers.

In their responses, only 10% of the technical teachers had been attached to the industry while 28% had been sponsored for staff training and development programmes as described in the research findings. On challenges facing implementation of technical training programmes over 70% of teachers cited inadequate training infrastructure as the most serious problem.

On skill levels of teachers and trainees, most subjects concurred that most of the skills the teachers had and those acquired by trainees in training institutions were not in tandem
with the industry needs.

70% of the respondents reported that the collaboration between the training institutions and the industry was lacking.

75% of the teachers in their responses indicated that they needed higher training in academic and professional areas to cope with the training needs of their students and the industry.

72% of the respondents reported that the state of training tools and equipment in the institutions was poor.

Other research questions on the challenges facing the quality of Technical Education and Training Programmes were answered through analysing the responses from the interviews conducted. The analysed data was then interpreted and the report written accordingly.
CHAPTER FOUR
DATA ANALYSIS AND INTERPRETATION

4.0 Introduction

The research design that was used in the study was the descriptive survey design. The research targeted thirty two (32) Technical Teachers, twenty four (24) final year engineering students and five (5) line managers from Private Industries within Nairobi. Data pertaining to the research questions have been presented, analysed and discussed in this chapter.

4.1 FINDINGS

The study was aimed at evaluating the effectiveness of Technical Education and Technical Training Programmes offered in selected Technical Training Institutions within Nairobi Province.

The analysis of data focused on research questions that were formulated at the beginning of the study.

Research findings were also interpreted and discussed in this chapter since naturally descriptive studies emphasize interpretation. The data analysis is organized under the following headings:

4.2 Background information of the Technical Teachers.

4.3 Technical Education and Technical Training Programmes attended by the Technical Teachers.

4.4 The current state of training tools and equipment in the Technical Training Institutions.

4.5 Factors that affect effective delivery of Technical Skills to Technical Trainees by the Teachers
4.6 Placement and supervision of trainees on industrial attachment.

4.7 In-house staff development unit in the Technical Training Institutions and its facilitators.

4.8 Co-operation between the Technical Training Institutions and the Industry.

4.2 Background Information of the Technical Teachers

This section examined major characteristics of Technical Teachers in the target population. Results from the teachers questionnaire as in Table 1 below reveals that none of the teachers holds a Doctoral degree. The table reveals that 18.7% of teachers had Masters degree, 20% had Bachelors degree, 34% had Higher Diploma and 18.7 had Diploma.

Table 4.1: Professional Qualifications of Teachers

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral Degree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Masters</td>
<td>6</td>
<td>18.80%</td>
</tr>
<tr>
<td>Bachelors</td>
<td>9</td>
<td>28.1%</td>
</tr>
<tr>
<td>Higher Diploma</td>
<td>11</td>
<td>34%</td>
</tr>
<tr>
<td>Diploma</td>
<td>6</td>
<td>18.8%</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source of Data collected – M.O.E.S.T. JUNE ’05 STAFF RETURNS

From the data above it was observed that more than 50% of the teachers had Higher Diploma qualifications and above. It was also noted that out of this number, 42% were
Higher Diploma holders. The data reveals that Higher Diploma holders are teaching higher diploma trainees while Diploma holders could be handling some Diploma classes. This does not augur well with the Ministry’s policy that requires teachers to have higher qualifications than their trainees.

This information was important in order to establish the calibre of Technical Teachers posted in Technical Training Institutions within Nairobi Province.

4.2.1 Position of Respondents in the Technical Training Institutions.

Table 4.2: Respondents’ Position in Technical Institutes

<table>
<thead>
<tr>
<th>Position</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deputy Principal</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Registrar</td>
<td>3</td>
<td>9%</td>
</tr>
<tr>
<td>Head of Department</td>
<td>6</td>
<td>18%</td>
</tr>
<tr>
<td>Deputy (H.O.D)</td>
<td>5</td>
<td>15%</td>
</tr>
<tr>
<td>Head of Section</td>
<td>10</td>
<td>30%</td>
</tr>
<tr>
<td>Course Tutor</td>
<td>8</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>100%</td>
</tr>
</tbody>
</table>

From the table above it was established that only 9% of the respondents were Registrars, 18% were Heads of department, 15% were Deputy Heads of department, 30% were Head of Section while 25% were course tutors. The table reveals that more than 70% of the respondents’ positions were spread between deputy head of department and course tutors. This explains why these calibre of technical teachers was appropriate since they are the ones who spend more time with technical trainees imparting to them technical skills and knowledge. The Principals, deputy principals, registrars and heads of department have a light work load since most of their time is dedicated to administrative matters. All the principals and their deputies found it appropriate to have the questionnaires handled at
departmental level since the information sought was technical and could easily be obtained at that level.

4.3 Technical Education and Technical Training Programmes attended by the Technical Teachers.

4.3.1 Attachment Programmes which lasted for few hours to five months that were attended by Technical Teachers.

Table 4.3: Short term attachment programmes attended by Teachers.

<table>
<thead>
<tr>
<th>Courses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those organized within Institutions</td>
<td>8</td>
<td>20%</td>
</tr>
<tr>
<td>Seminars/Workshops/Conferences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Attachment to the Industry</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>Curriculum development at the Kenya Institute of Education (K.I.E)</td>
<td>10</td>
<td>25%</td>
</tr>
<tr>
<td>Special projects/tasks</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td>Committee Assignments</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>Writing Trade/Business Projects Proposals</td>
<td>9</td>
<td>22.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>40</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: The frequency of 40 against 32 teachers arises as a result of several teachers having received attachment in more than one discipline.

Table 4.3 shows that Seminars/Workshops and Conferences organized by Institutions were attended by 20% of the teachers while Industrial Attachment to the Industry had 10%.

Special projects/tasks was the least attended training with 7.5% while Curriculum development at K.I.E had 25%. Committee assignments was attended by 15% and Writing Trade and Business Proposals had 22.5%. The table shows that Training
Institutions are not putting greater emphasis on Industrial Attachment by teachers to the industry and on special projects and tasks.

4.3.2 **Long Term Staff Training Development Programmes that last for more than six months actually attended and desired to be attended by Technical Teachers since joining their current stations.**

**Table 4.4: Long Term Staff Training and Development Programmes attended and desired to be attended by teachers.**

<table>
<thead>
<tr>
<th>Responses</th>
<th>Actual Frequency</th>
<th>%</th>
<th>Desired Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Training for Higher Diplomas and Degrees</td>
<td>10</td>
<td>26</td>
<td>13</td>
<td>31.0</td>
</tr>
<tr>
<td>Overseas Training in Higher Diplomas and Degrees</td>
<td>4</td>
<td>10.7</td>
<td>9</td>
<td>21.4</td>
</tr>
<tr>
<td>Inter-University/Polytechnic Staff exchange programmes</td>
<td>4</td>
<td>10.7</td>
<td>6</td>
<td>14.30</td>
</tr>
<tr>
<td>Attachment to Special Projects in or outside your Institution.</td>
<td>Outside 2 Inside 6</td>
<td>16.0</td>
<td>Outside 3 Inside 1</td>
<td>7</td>
</tr>
<tr>
<td>Continuing Education while on study leave</td>
<td>12</td>
<td>31.6</td>
<td>10</td>
<td>23.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>38</td>
<td>100</td>
<td>42</td>
<td>100</td>
</tr>
</tbody>
</table>

**Note:** The frequency of 38 against 32 teachers and 42 against 32 teachers arises as a result of several teachers having attended more than one programme and also desiring to attend more than one programme.

Table 4.4 shows that 26% of the Technical Teachers had attended local training for Higher Diplomas and Degrees while 31% had desired to attend the same programme. Overseas training was the least attended training with 10.7% while 21.4% of the teachers desired to attend it. Inter-University/Polytechnic staff exchange programmes was attended by 10.7% while 14.3% of the teachers desired to attend the programme.
The table shows that 5% of the teachers were attached to projects outside the Institution while 16% were attached to projects within their Institutions. Those who desired to be attached to projects outside the Institutions were 7% while 2.5% desired to be attached to projects inside the Institutions.

The table reveals that 31.6% of the teachers had attended continuing education while on study leave while 23.8% had desired to attend the same programme.

The table shows that there is greater emphasis on the need for local training for higher diploma and degrees and on continuing education while on study leave by Technical Teachers.

The selection of teachers for overseas training and exchange programmes was done at both the Ministry of Education level and at the Institutional Level. The small number of teachers who attended the programmes as shown in the table could indicate lack of opportunities for overseas training in Higher Diplomas and Degrees for Technical Teachers.
4.3.3 Training and Development Programmes attended by Teachers for the last three years through either self-sponsorship or institutional sponsorship.

Graph 4.1: Training and development programmes attended by teachers.

According to graph 4.1 above, 72% of Technical Teachers had attended staff training and development programmes through self sponsorship while 28% were Institutional sponsored. From the responses given by the teachers, the programmes which they had attended included local training for Higher Diplomas and Degrees.

4.4 The current state of training tools and equipment in the Technical Training Institutions.

4.4.1 The current state of Training tools and equipment in the selected Technical Colleges.
From the responses of Technical Teachers as described by the graph above, 12% of teachers reported that the state of Training Tools and equipment was improving, 38% reported that it was deteriorating, while 41% reported that it was constantly poor.

Those who reported that the state of tools and equipment was constantly good are the least with 9%. The graph reveals that the current state of training tools and equipment in the Institutions is generally poor.

4.4.2 State of Training Tools and equipment in the technical institutions
Graph 4.3: Maintenance status of the training equipment in the Technical Institutions

From the responses of the Technical Teachers as described by the graph 4.3 above, 31% of the teachers reported that training tools and equipment are not maintained at all, 28% of the teachers reported that the training equipment was maintained regularly while 41% of the teachers reported that the equipment was maintained on ad-hoc basis. The graph shows that training institutions pay least attention towards the maintenance of training tools and equipment.

4.4.3 The condition of training tools and equipment from the point of view of final year engineering students.

Table 4.5: Condition of training tools and equipment as reported by trainees.

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving</td>
<td>2</td>
<td>8.4%</td>
</tr>
<tr>
<td>Deteriorating</td>
<td>10</td>
<td>41.6%</td>
</tr>
<tr>
<td>Constantly Poor</td>
<td>9</td>
<td>37.5%</td>
</tr>
<tr>
<td>Constantly Good</td>
<td>3</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>100%</td>
</tr>
</tbody>
</table>
According to table 4.5 above, 8.4% reported that the condition of training tools and equipment was improving while 41.6% reported that the condition was deteriorating. 37.5% of the students reported that the condition of training equipment was constantly poor while 12.5% reported that the condition of the equipment was constantly good. The table reveals that over 75% of the final year engineering students reported that the condition of training equipment was poor.

4.5. Factors that affect effective delivery of Technical Skills to Technical Trainees by the Teachers

Table 4.6: Problems affecting effective delivery of Technical Skills by Teachers

<table>
<thead>
<tr>
<th>Responses</th>
<th>Ranking</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of adequate training facilities in workshops and laboratories</td>
<td>2</td>
<td>7</td>
<td>22%</td>
</tr>
<tr>
<td>Use of obsolete training equipment</td>
<td>1</td>
<td>8</td>
<td>25%</td>
</tr>
<tr>
<td>Lack of training and development policy by the Institution</td>
<td>3</td>
<td>6</td>
<td>19%</td>
</tr>
<tr>
<td>Personal Constraints</td>
<td>6</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Poor remuneration and working conditions</td>
<td>5</td>
<td>3</td>
<td>9%</td>
</tr>
<tr>
<td>Lack of collaboration between the Training Institutions and the Industry</td>
<td>4</td>
<td>5</td>
<td>16%</td>
</tr>
<tr>
<td>Poor relations between the teacher and the administration</td>
<td>7</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>32</td>
<td>100%</td>
</tr>
</tbody>
</table>

From the responses of the Technical Teachers as shown in table 4.6 above, 25% of the teachers reported that use of obsolete training equipment was the most serious problem affecting their delivery of skills to trainees while personal constraints was the least problem with 3%. 22% of the teachers ranked inadequate training facilities as the second most serious problem affecting them, while lack of training and development policy was ranked third with 19%. Lack of collaboration between the training Institution and the industry was ranked fourth with 16%, while poor remuneration and working conditions was fifth with 9%. Poor relations between the teacher and the administration ranked seventh with 6%. The table shows that lack of adequate training equipment and
use of obsolete equipment was reported by teachers as the most serious problems affecting their effective delivery of relevant and adequate technical skills to trainees. Results from the teachers’ questionnaire also indicated that other factors that affected their performance included lack of training materials, inadequate basic training tools and equipment, lack of teacher/technician co-ordination, use of outdated syllabus and poor ventilation in work shops.

4.6. Placement of trainees in the industry for industrial attachment

Graph 4.4: Industrial attachment of technical trainees as reported by teachers.

From the responses of teachers as described by the graph 4.4 above, 60% of the trainees sought for their own attachment through a college introduction letter while 40% were
placed by the Industrial Liaison Officers.

It is noted from the higher percentage of students seeking for attachment places individually that, the collaboration between Training Institutions and the industry needs to be enhanced. It follows that those students who sought for attachment places individually could not have been adequately supervised by the teachers.

4.6.1 Industrial Attachment of trainees as observed by engineering students.

Graph 4.5: Attachment by either Liaison Officer or individual students.

According to graph 4.5 above 58% of the trainees sought for industrial attachment places by using introduction letters from the college while 42% were attached to industries by Industrial Liaison Officers. The graph reveals that the responses given by the final year trainees concur with those given by the teachers to the extent that more than 55% of the trainees sought for industrial attachment individually and hence the need for proper co-ordination industrial attachment programmes.
4.6.2 Supervision of technical trainees by teachers during industrial attachment period.

Chart 4.1: Number of times final year students' were visited by their teachers during Industrial Attachment period.

According to chart 4.1 above, 37% of the students reported that they had not been visited by their supervisors during industrial attachment while 29% reported that they had been visited once. The chart shows that 25% of the trainees had been visited twice while only 9% of the trainees had been visited three times and above. The chart reveals that more than one third of the students on industrial attachment had not been visited at all and this showed lack of seriousness in conducting industrial attachment programmes by Training Institutions.
4.7 In-house staff development unit in the Technical Training Institutions and its facilitators.

Chart 4.2 Presence of In-house staff development unit in the Technical Training Institutions

<table>
<thead>
<tr>
<th>Yes - Present in the Institution</th>
<th>37.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not present in the Institution</td>
<td>62.5%</td>
</tr>
</tbody>
</table>

According to chart 4.2 above 37.5% of teachers reported that there are in-house training units in their institutions while 62.5% of the teachers reported that in-house staff development units did not exist in the Training Institutions. The chart therefore reveals that a majority of teachers who did not get staff development and training opportunities outside their institutions had little chances of updating their skills from within their Institutions.

Table 4.7: Facilitators of the In-house, staff development Units in the Technical Training Institutions.

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experts from Industry</td>
<td>7</td>
<td>21.9%</td>
</tr>
<tr>
<td>Donor agencies</td>
<td>8</td>
<td>25%</td>
</tr>
<tr>
<td>Inter-departmental Members</td>
<td>12</td>
<td>37.5%</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>15.6%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>32</td>
<td>100%</td>
</tr>
</tbody>
</table>

Results from the teachers questionnaire as is in table 4.7 above reveals that 21.9% of
facilitators of in-house staff development units came from experts from the industry while 25% of the facilitators came from the donor agencies. It was further reported that 37.5% of the in-house facilitators came from inter-departmental members while a minority of facilitator with 15.6% came from others who included staff from colleges such as Kenya Technical Teachers College (KTTC).

4.8 Adequacy and relevance of skills acquired by technical trainees with regard to Industrial needs

Chart 4.3: Opinion of Trainees on the adequacy and relevance of skills imparted to them

According to the chart 4.3 above 62% of the trainees felt that the technical skills they were acquiring from the institutions were adequate and relevant while 38% felt that the skills were inadequate and irrelevant. The chart reveals nearly 40% of the Trainees felt that there is some gap between the skills they acquired from the training institutions and those desired by the industry. This could have been attributed to the experiences they had in the industry during the attachment period.

4.8.1 Industrial attachment places sought from the private industries
According to chart 4.4 above, 57% of the industrial attachment places processed by the private industries were sought by individual technical trainees while only 43% were sought by training institutions through industrial liaison officers. The chart reveals that there was less collaboration between training institutions and the industry as evidenced by the percentage of Trainees seeking for attachment places individually.

The researcher established from the interview carried out with line managers that they received many requests for Industrial Attachment for technical trainees by both Training Institutions and individual trainees.

4.8.2 The level of skills that trainees exhibited when handling tools and equipment during the attachment period.
Table 4.8: Skills levels exhibited by trainees on attachment as reported by the line managers

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Moderate level</td>
<td>3</td>
<td>60%</td>
</tr>
<tr>
<td>Low level</td>
<td>2</td>
<td>40%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5</td>
<td>100%</td>
</tr>
</tbody>
</table>

According to table 4.8 above, none of the line managers in the industries that attached trainees reported that the trainees exhibited high level of technical skills in handling tools and equipment. While 60% of the trainees were reported to possess moderate level technical skills. The table reveals that 40% of the technical trainees on industrial attachment possessed low level technical skills and hence required more Induction in their attachment stations before they could be allowed to handle tools and equipment within their respective trade areas in the industry. The table therefore indicates that there exists a gap between the skills imparted to trainees by training institutions and the skills required in the industry.

4.8.3 Adequacy and relevance of skills imparted by training institutions to Trainees with regard to the needs of the world of employment.

Chart 4.5 Adequacy and relevance of technical skills imparted by training institutions before industrial attachment as reported by the line managers in the industry.
According to chart 4.5 above, 75% of the line Managers in the industries reported that the technical Skills imparted to trainees by training institutions before attachment were not relevant and adequate for the industry needs. The remaining 25% of the line managers reported that the technical trainees possessed relevant and adequate technical skills before they were first attached to the industry.

4.8.4 Participation of the private industry in the design and development of the Technical Education and Training Programmes at the Kenya Institute of Education (K.I.E) or at Institutional level.

Table 4.9 Private industry participation in the design and development of Technical Programmes.

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No participation at all</td>
<td>2</td>
<td>40%</td>
</tr>
<tr>
<td>Participates regularly</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td>Once in a while</td>
<td>2</td>
<td>40%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

According to table 4.9 above, 40% of the line managers reported that their industries had participated in the curriculum design and development at both institutional level and at K.I.E while 40% also reported that their industries participated once in a while. 20% of the managers reported that their industries participated regularly in the design and development of Technical Education and Training programmes at both Institutional level and at K.I.E. The table reveals that a greater percentage of the industries did not participate regularly in the design and development of Technical programmes and yet the products of the training institutions are expected to work in the industries on completion of training.
CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter is divided into four sections as follows:

Section 1- a summary of the research problem and what it seeks to find out.

Section 2- Discussion on the findings.

Section 3- Conclusions based on findings analysed in chapter four.

Section 4- Recommendations based on the findings of the study.

5.1 SUMMARY OF THE RESEARCH STUDY

The research study sought to evaluate the effectiveness of Technical Education and Technical Training Programmes offered in Technical Training Institutions within Nairobi Province. It also sought to look at possible solutions to the constraints affecting the quality of Technical Education and Technical Training Programmes in Kenya. The study employed questionnaires and an interview schedule as the main research instruments. A total of 32 Technical Teachers, 24 final year engineering students and 5 line managers from the private industry were interviewed and the findings were analysed and conclusions made.

5.2 DISCUSSION OF FINDINGS

This section deals with the findings of the study. The main areas discussed include background information of the Technical Teachers, Technical Training Programmes attended by the teachers, the current state of training tools and equipment in the Technical Institutions, placement and supervision of trainees on industrial attachment and the co-
operation between the Training Institutions and the industry.

5.2.1. Background Information of the Technical Teachers

From the research findings, most Technical Teachers had ages ranging between thirty six and forty years. The findings also revealed that all the Technical Teachers had some level of technical training in their respective disciplines the biggest number being Higher Diploma holders. It was noted from the research findings that whereas most of the Technical Teachers were professionally qualified, at least 50% of them were of low academic qualifications (Diploma level) given that they were imparting skills to trainees at the same level.

The findings agree with Nyang’ute (1996) to the extent that the knowledge and technical skills possessed by some technical trainees is inadequate and needs to be updated for the teachers to be able to impart to the trainees adequate and relevant skills and attitudes that are responsive to the labour market.

5.2.2. Technical Education and Training Programmes attended by Technical Teachers.

From the various short-term and medium term attachment programmes attended by the teachers, least attention was paid to industrial attachment to the industry. Greater emphasis had instead been put on curriculum development at the K.I.E. and on writing of trade and business project proposals. The findings revealed that selection of teachers to participate in curriculum development was initiated by K.I.E. while writing of trade and business proposals was a requirement by KNEC to be fulfilled by final year trainees. This explains why the level of teachers participation in these areas was high.

Findings on industry attachment agree with Okaka (1998) who reported that, there was
poor linkage between the industry and Training Institutions and yet Training Institutions were expected to formulate programmes and activities which should provide man power requirement to support industrial transformation by the year 2020.

The findings also agree with Hans (2004) to the extent that industrial attachment to the industry by most technical trainers from Training Institutions was inadequate and yet it is meant to improve their teaching in this era of accelerated industrialisation.

The results from the findings showed that most technical teachers desired to access further staff training and development programmes through overseas training while the rest opted to seek local training for degrees through continuing education while on study leave. The findings are in agreement with Owour (2003) who reported that huge amounts of money are invested in Education without a corresponding investment in areas of technical training which have immediate job creation potential. This explains why there are many Technical Teachers aspiring for further staff training and development opportunities especially those sponsored by the government through Training Institutions.

The findings also agree with Hans (2004) to the extent that rapid technological changes have tended to create new demands for training and development and that all employees should seek further training in order to keep abreast with changes in technology.

5.2.3. The Current State of Training Tools and Equipment in the Technical Training Institutions

The results from the findings showed that most of the training tools and equipment in the Technical Training Institutions were in a poor state. Despite the poor state of the training tools and equipment, it was evident through observation that very few of them were maintained regularly. The findings further revealed that most of the training equipment
and machinery was inadequate and sometimes obsolete.

The findings concurred with Aleke-Dondo,(1991) who reported that the major challenges facing effective implementation of Technical Education Programmes in Training Institutions was the issue of inadequate training infrastructure, tools, equipment and staff development.

The findings also concur with the National Development Plan (2002-2007) which reported that there was a need to maximise the utilization of Technical Training and Vocational Institutions through up grading the existing training facilities in order to address the needs of the trainees and the industry adequately.

This explains why it has been difficult for Technical Institutions to impart adequate and relevant technical skills to trainees in a bid to prepare them for the labour market. The findings also agree with Amadou,(1979) to the extent that a surplus of graduates unable to find employment rather than the shortage of skilled workers was the main worry in most countries since the training infrastructure in most institutions was not able to impart skills that were in tandem with industry needs. The findings are in agreement with TVET report (2003) which reported that the skill competencies of graduates from middle level colleges have steadily declined in recent years due to out moded training equipment.

5.2.4 Placement and Supervision of Trainees on Industrial Attachment.

The findings showed that most of the technical trainees sought for attachment places individually through an introduction letter from the Training Institution. The findings revealed that there was meaningful and coordinated collaboration between Technical Training Institutions and the industry and hence students were largely left to fend for themselves in search of industrial attachment.
The findings also showed that most of those who secured attachment places were not supervised by their teachers since there was no follow-up from the Training Institutions. These findings may be used to partly explain the current mismatch between industry skills demand and training skills provision by Technical Training Institutions. The findings were also in agreement with Sessional Paper No.1(1994) which reported that there was need to match the training programmes with the need of the private sector through well coordinated industrial attachment programmes in order to bridge the existing gaps.

The findings were in agreement with the TVET report (2003) to the extent that lack of meaningful industrial attachment might be the single most important factor contributing to the current mismatch between training skills imparted to trainees and skills required in the industry.

The findings concurred with Bakhda, (2005) who reported that the quality of graduates in most cases depends on how well they have been prepared and exposed to their various disciplines by their respective Training Institutions. The findings also agreed with Nyang’ute (1996) to the extent that the majority of Technical Training Institutions had not kept pace with changing technology in industry due to lack of well co-ordinated industrial attachment programmes for their trainees and teachers.

5.2.5. Co-operation Between the Training Institutions and the Industry.

Results from the line managers in private industries showed that most firms did not take individual students requests for attachment places seriously due to lack of institutional follow up and attachment skills guidelines and hence very few requests were considered.
The findings further revealed that most students on attachment were ill prepared and had only moderate level skills in their trade areas and hence needed more time for induction before they could be deployed in productive work.

The findings also revealed that the main concern from the industry was that industrial attachment for both teachers and trainees was poorly programmed and co-ordinated.

The findings revealed that there was little participation of the private industry in the design and development of Technical Education programmes at K.I.E. This could have been attributed to lack of proper coordination between the government and experts from the industry.

The findings are in agreement with Hans,(2004) who reported that there is lack of a link between formal Technical Training Institutions and the labour market which needs to be enhanced for economic growth and international competitiveness.

The findings are also in agreement with Okaka(1998) to the extend that there is no adequate collaboration between Training Institutions and the Industry and yet they are expected to work in unison in order to support industrial transformation by the year 2020.

The findings also agree with the Koech report (1999) which reported that middle level colleges need to improve on the linkage with the industry in order to produce the required man power that is responsive to the labour market.

5.3.0 CONCLUSIONS

The purpose of the study was to evaluate the effectiveness of Technical Education and Technical Training Programmes offered in Technical Training Institutions within Nairobi Province.
From the foregoing it can be concluded that:

1. The government together with technical training institutions had not provided adequate staff training and development courses to technical teachers as expected. This left technical teachers to remain with their college grades with no value addition hence affecting the adequacy and relevance of skills imparted to trainees adversely.

2. It can be concluded that the skill competencies of technical graduates had steadily declined in recent years due to poor instructional methods, outmoded training equipment and lack of meaningful industrial attachment.

3. Most Technical Training Institutions lacked sufficient capacity in terms of equipment and staff to adequately offer a variety of technical courses and also to supervise industrial attachment.

4. The various constraints hindering effective delivery of Technical Education and Training Programmes such as lack of staff development programmes and inadequate training infrastructure had not been properly addressed by the government to enable Institutions offer job related skills. This had let to a mis-match between supply and demand for skilled man power at different levels.

5. Industry participation in curriculum development meetings especially at K.I.E. was minimal. This led to a situation where most of the technical training programmes did not benefit from the direct inputs of technical managers, engineers, technicians and other professionals.

6. Although previous recommendations on how to improve the provision of Technical Education and Training Programmes had been cited in some reports of various committees, commissions and presidential working parties, little had been done to implement them.

5.4 RECOMMENDATIONS

The researcher made various recommendations based on the findings of this study. The recommendations made can be used to improve the quality of Technical Education and Technical Training Programmes in the country. Recommendations made were as follows:
1. Arrangements should be made jointly by the government and training institutions for teachers of institutions that offer programmes up to diploma level to have a minimum of higher diploma or first degree in their areas of specialization plus professional skills in teaching.

2. The government should put into place staff development programmes for technical teachers in public institutions to enable them have the necessary professional and academic qualifications. Promotion of teachers should also be pegged on in-service programmes attended.

3. The inspectorate section within the Directorate of Technical Education should be restored and strengthened in order to conduct inservice courses for technical teachers on issues of new curriculum and methodologies.

4. Arrangements should be made by the Government to replace obsolete and worn out Equipment in the public Technical Training Institutions and assist in the co-ordination of industrial attachment.

5. Collaboration between the Technical Training Institutions and the industry should be strengthened in order to minimise the gap between supply and demand for skilled manpower at different levels.

6. The Government should allow technical Training Institutions especially the national polytechnics to enjoy the autonomy of developing their training infrastructure, acquiring of new training equipment and recruitment of teaching staff.

7. The Government of Kenya should develop technical institutions to serve as centres of excellence and ensure that they are adequately equipped and staffed for various technical courses.

8. Additional resources should be provided by the government to K.I.E. and K.N.E.C. in order to empower them to service Technical Education and Technical Training Programmes effectively.

9. The Government of Kenya in collaboration with other stake holders should develop technical training programmes which will meet emerging skills and technologies required by the industry.

10. The Government of Kenya should put mechanisms in place which will ensure that there are regular manpower surveys in order to facilitate manpower planning and requirements for use by training institutions and industry.

11. Arrangements should be made by the Government to strengthen institutional capabilities to undertake technical graduates tracer studies.
12. The Government should encourage employers to participate in the planning and development of technical training programmes for training institutions.

13. A scheme of part-time lecturing by industrial practitioners in technical training institutions should be encouraged. Like-wise arrangements should be made to facilitate the attachment of technical teachers to the industry.

14. Appropriate training programmes should be designed for principals of technical training institutions in order to equip them with basic management skills on resource management and utilisation.

5.5 SUGGESTIONS FOR FURTHER RESEARCH

The study carried out on the evaluation of the effectiveness of Technical Education and Technical Training Programmes in technical institutions within Nairobi Province established that there is need for further research.

1. This study was limited to Technical Training Institutions and Private Industries in Nairobi Province.

Further research is recommended to cover a wider area to establish the extent to which the findings of this study could be generalised.

2. An investigation should be carried out with a larger sample to determine to what extent the constraints facing technical teachers affect the quality of Technical Education and Technical Training Programmes in Kenya.

3. A study on needs analysis of Kenyan Technical trainees and industry needs should be carried out to establish what relevant technical skills should be imparted to trainees in Training Institutions.

4. A study should also be carried out on the role of the inspectorate division of the M.O.E.S.T. on the provision of in service courses to technical teachers. This would help establish modalities for offering in service training to all Technical Teachers.
BIBLIOGRAPHY


APPENDICES

APPENDIX A: LETTER OF INTRODUCTION

LETTER REQUESTING PARTICIPATION OF RESPONDENTS

JACKSON M. ANDAI
M. O. E. S. T
DIRECTORATE OF
TECHNICAL EDUCATION
P O BOX 60209
NAIROBI

DATE.................................

Dear Sir/Madam,

You have been selected to participate in a study on an evaluation of the effectiveness of Technical Education and Training Programs in Kenya. You are requested to fill in the questionnaire according to the instructions given in each part.

The information you give will be treated confidentially.

The findings of this study will be used purely for academic purposes.

Your co-operation and honesty will be highly appreciated.

Sincerely,

JACKSON M. ANDAI.
APPENDIX B: RESEARCH QUESTIONNAIRE FOR TECHNICAL TEACHERS

Instructions: Please write in the space(s) provided or tick(✓) appropriately as applies to you.

Part 1: Demographic Information

1. Indicate your gender
   Male [ ]
   Female [ ]

2. What is your marital status?
   Single [ ]
   Married [ ]
   Others [ ]

3. Indicate your age
   Below 25 years [ ]
   25-30 [ ]
   31-35 [ ]
   36-40 [ ]
   Above all [ ]

4. Indicate your entry grade upon your appointment
   Principal Lecturer [ ]
   Senior Lecturer [ ]
   Lecturer [ ]
   Assistant Lecturer [ ]
   Technical Master [ ]

5. What is your highest level of qualification?
   Doctoral Degree [ ]
   Masters [ ]
   Bachelors [ ]
   Higher Diploma [ ]
   Diploma [ ]
   Others [ ]

6. What is your area of specialization
   Mechanical Engineering [ ]
   Electrical/Electronics Engineering [ ]
   Automotive Engineering [ ]
Building/Civil Engineering [ ]
Indicate any other area that is not listed above...........................................

7. What is your current grade?
   Principal Lecturer [ ]
   Senior Lecturer [ ]
   Lecturer [ ]
   Assistant Lecturer [ ]
   Technical Master [ ]

8. In which Technical Institution are you situated?
   Kenya Polytechnic [ ]
   Kenya Technical Teachers' College [ ]
   Kabete Technical Training Institute [ ]
   Nairobi Technical Training Institute [ ]
   Kinyanjui Technical Training Institute [ ]

9. For how long have you worked in this Institution
   Less than 1 year [ ]
   1-5 years [ ]
   5-10 years [ ]
   Above 10 years [ ]

10. Indicate your terms of service
    Temporal/Contract [ ]
    Permanent [ ]

11. Apart from teaching what other responsibility/post do you hold in this Institution?
    Deputy Principal [ ]
    Dean of students [ ]
    Registrar [ ]
    Head of department [ ]
    Head of Section [ ]

Part II

Information on staff training and development programmes that Technical Teachers participate in and those they wish to participate in.

12. Below are staff training and development programmes.

   In the first column indicate the number of times (0,1,2,3) you have had a chance to participate, on the second column indicate the number of times (0,1,2,3) you wish to have had a chance to participate.
A. Short term and medium term industrial attachment programs which last for few hours to 5 months

<table>
<thead>
<tr>
<th>Staff training and development programs</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
</tr>
<tr>
<td>1. Those organized within Institutions Seminars/ Workshops/Conferences</td>
<td>[ ]</td>
</tr>
<tr>
<td>2. Industrial attachment to the industry</td>
<td>[ ]</td>
</tr>
<tr>
<td>3. Participation in curriculum development in Technical Training programs at K.I.E</td>
<td>[ ]</td>
</tr>
<tr>
<td>4. Special projects or tasks</td>
<td>[ ]</td>
</tr>
<tr>
<td>5. Committee Assignments</td>
<td>[ ]</td>
</tr>
<tr>
<td>6. Writing Trade/Business Project Proposals</td>
<td>[ ]</td>
</tr>
<tr>
<td>7. Indicate others that are not in the list but fall in this category</td>
<td>(i) ..............................................</td>
</tr>
<tr>
<td>(ii) ..............................................</td>
<td></td>
</tr>
<tr>
<td>(iii) ..............................................</td>
<td></td>
</tr>
</tbody>
</table>
PART III

13. The following are problems that affect your effective delivery of technical skills to trainees. Rank the problems from the most serious to the least serious (1 most serious........8 least serious).

(a) Lack of adequate training facilities [   ]
(b) Use of obsolete training equipment [   ]
(c) Lack of training and development policy by the institution. [   ]
(d) Personal Constraints [   ]
(e) Poor remuneration and working conditions [   ]
(g) Lack of collaboration between the Training Institution and the Industry [   ]
(h) Poor relations between you and the Administration. [   ]

14. Are there other factors that affect your effective delivery of knowledge, skills and attitudes to technical trainees and are not included in the list? State them briefly.

(i) ........................................
(ii) ........................................
(iii) ........................................
(iv) ........................................

15. How many Technical Training and Development Programs have you participated in for the last five years?

1-5 [   ]
5-10 [   ]
Above 10 [   ]
16. Long term staff training and development programmes that last for more than six Months since you joined the current Technical Institution.

<table>
<thead>
<tr>
<th>Staff training and development programs</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
</tr>
<tr>
<td>1. Local training for higher diplomas and degrees</td>
<td>[ ]</td>
</tr>
<tr>
<td>2. Overseas training in higher diplomas and degrees</td>
<td>[ ]</td>
</tr>
<tr>
<td>3. Inter University/Polytechnic staff exchange programs</td>
<td>[ ]</td>
</tr>
<tr>
<td>4. Attachment to special projects and assignments in or outside your Technical Training Institution</td>
<td>[ ]</td>
</tr>
<tr>
<td>5. Continuing education while on study leave</td>
<td>[ ]</td>
</tr>
<tr>
<td>6. Indicate others that are not in the list but fall in this category.</td>
<td></td>
</tr>
</tbody>
</table>
(i) ..............................................................
(ii) ............................................................
(iii) ..........................................................
(iv) ..........................................................

17 How many training and development programs have you sponsored yourself for the last 3 years?

- 1-2 [ ]
- 2-4 [ ]
- Above 4 [ ]

18 How many training and development programs has the Institution/employer sponsored you for the last 3 years?

- 1-2 [ ]
- 2-4 [ ]
- Above 4 [ ]

19 In your opinion what is the state of Technical Training Equipment in your Institution?
Improving [ ]
Deteriorating [ ]
Constantly poor [ ]
Constantly good [ ]

20 How often is the training equipment in your Institution maintained?

Not at all [ ]
Regularly [ ]
On ad-hoc basis [ ]

21 Are there other problems that affect your teaching of workshop practice to technical trainees and are not included in the list (16) and (17) above? State them briefly.

(i) ..............................................

(ii) .............................................

(iii) .............................................

22 When was the current curriculum launched? .................................................

23 When was the curriculum last revised? .........................................................

24 How do students access industrial attachment during training?

Individually through an introduction letter from the Institute [ ]
Placed by Industrial Liaison Officer [ ]

25 How often are students supervised by their teachers while on industrial attachment?

None at all [ ]
Once [ ]
Twice [ ]
3 Times and above [ ]

26 Is there an in-house staff development unit in the Institution especially meant for Technical Teachers?

Yes [ ]
No [ ]

27 If yes above (18) who are the facilitators

Experts from the industry [ ]
Donor agencies [ ]
Inter departmental members [ ]
Others specify [ ]

APPENDIX C: RESEARCH QUESTIONNAIRE FOR FINAL YEAR TECHNICAL TRAINEES.

Instructions: Please write in the space(s) or tick (✓) appropriately as applies to you.

Part 1: Demographic information

1. Indicate your gender
   Male [ ]
   Female [ ]

2. What is your area of specialization?
   Mechanical Engineering – Diploma [ ]
   – Certificate [ ]
   Automotive Engineering – Diploma [ ]
   – Certificate [ ]
   Building/Civil Engineering – Diploma [ ]
   – Certificate [ ]

3. In which Technical Institution are you undergoing Training?
   Kenya Polytechnic [ ]
   Kenya Technical Teachers College [ ]
   Kabete Technical Training Institute [ ]
   Nairobi Technical Training Institute [ ]
   Kinyanjui Technical Training Institute [ ]

Part 2

Information on Technical Education and Training Programs by the final year Technical Trainees.

1. In your opinion what is the state of the training equipment in your institution?
   Improving [ ]
   Deteriorating [ ]
   Constantly poor [ ]
   Constantly good [ ]

2. How did you secure industrial attachment placement during training?
Individually through an introduction letter from the institute [ ]
Placed by industrial liaison officer [ ]

3. How many times were you supervised by your teachers during the industrial attachment period?

   None at all [ ]
   Once [ ]
   Twice [ ]
   Thrice and above [ ]

4. In your opinion is the current technical education and training program you are pursuing equipping you with adequate relevant skills and knowledge for the world of work?

   Yes [ ]
   No [ ]

5. If your answer in 4 above is No, state briefly factors that affect effective delivery of technical education and training programs.

   i. ..............................................................
   ii. .............................................................
   iii. .............................................................
APPENDIX D: RESEARCH QUESTIONNAIRE FOR THE INDUSTRY

Instructions: Please write in the space(s) or tick (✓) appropriately as applies to you.

Part 1: 1. Indicate the name of the industry

Part 2: Information on Technical Education and Training Programs by the line managers in the industry.

1. How often do you receive technical trainees from training institutions in your firm for industrial attachment?
   Not at all [ ]
   Regularly [ ]
   Once in a while [ ]

2. Do you deal with individual students or institutions when giving trainees attachment opportunities?
   Individual students [ ]
   Institutions [ ]

3. What level of skills do trainees exhibit when handling and caring for working tools, machines, documents and chemicals during the induction period?
   High level [ ]
   Moderate [ ]
   Low [ ]
4. In your opinion are the current technical education and training programs equipping technical trainees with adequate and relevant skills for the world of employment?

Yes [ ]
No [ ]

5. How often does your firm participate in the design and development of Technical Education and Training Programs at the Kenya Institute of Education or at institutional level?

Not at all [ ]
Regularly [ ]
Once in a while [ ]
APPENDIX:E

INTERVIEW SCHEDULE FOR THE LINE MANAGERS IN THE INDUSTRY

1. What is the name of the firm you are working for?
2. What is your area of specialization?
3. How long have you been a line manager in this firm?
4. How many officers work under you?
5. How would you rate the technological level of TIVET graduates who join this firm?
6. What can you suggest as a possible way forward for TIVET institutions with regard to relevance and adequacy of skills being imparted to trainees?
7. Is your firm prepared to support the design and development of Technical Education and Training Programmes?
8. How can the problems affecting the trainees' industrial attachment placement and supervision be addressed?