

**RELEVANCE OF LEARNING THEORIES IN THE TRAINING OF
TECHNICAL TEACHERS AND INSTRUCTORS IN UGANDA**

BY

MUKASA JOHN DDUNGU-KAFULUMA

**A THESIS SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL
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DECLARATION

Declaration by Candidate

I, Mukasa John Ddungu-Kafuluma, declare that I am the rightful author of this thesis and any assistance I received during its preparation is fully acknowledged and disclosed. I also confirm that I have cited all sources from which I obtained data, ideas and words that are either quoted directly or paraphrased. This thesis was specifically prepared in full fulfilment of the requirements for a PhD in Educational Technology of the University of Eldoret and it has never been presented at any other university.

Signature----- **Date**-----

Mukasa John Ddungu-Kafuluma

EDU/D.PHIL/CI/001/12

Declaration by Supervisors

This is to certify that this research thesis was carried out under our supervision. We affirm that it satisfies the requirements for the award of Doctor of Philosophy degree in Educational Technology of the University of Eldoret and is now ready for submission.

Submitted with my consent:

Signature----- **Date**-----

PROF. JOHN SIMIYU
University of Eldoret
School of Education
P.O Box 1125-30100, Eldoret, Kenya

Signature----- **Date**-----

DR. SIMON WANAMI
University Of Eldoret
School of Education
P.O Box 1125-30100, Eldoret, Kenya

DEDICATION

This thesis is dedicated to my family and my late mother Faith Nanyonga.

ABSTRACT

Learning theories are being used in Teacher education the world over to help trainees acquire professional skills such as ability to analyze learning needs of students, plan, and design and manage learning as well as providing counseling. In Technical teacher education learning theories can be used to ensure high quality and effective teaching and learning. This study investigated the extent to which learning theories are applied in the training of technical teachers and instructors and ascertained those theories that are more relevant. The study examined learning theories present in the curriculum, the extent to which learning theories are being applied in the training of technical teachers and instructors and ascertained what theories are relevant in producing a quality technical teacher or instructor in Uganda. Data was collected from 238 respondents, who included 145 students, 81 technical teachers and instructors and 12 managers of instructor training colleges and ministry officials. Respondents were selected using purposive and convenience sampling. Structured questionnaires, interview guides and an observation schedule were used to collect data. Descriptive statistics, means, standard deviation and frequency tables as well as content analysis were used to analyze the data. Findings show that learning theories are not so much used in the training of technical teachers and instructors and they did not appear in most of the curriculum apart from the pedagogy course units. This was due to the fact that teaching models are not used intentionally in training and little emphasis is placed on planned and systematic ways of doing things which may require principles from learning theories. Trainers used their own skills and experience to reinforce and assess learning and occasionally borrowed from learning theories. Institutions focused less on vocational pedagogy and effective training of technical teachers and instructors. Learning theories were perceived as pure theory that had little application to technical teacher education. Participants agreed that learning theories enable teachers to acquire professional skills such as ability to analyze learning needs of students, plan, and design and manage learning as well as providing counseling. Respondents further agreed that constructivism, cognitivism and behaviourism promote hands-on training and experiential learning. Hence learning theories are very relevant and can ensure high quality and effective teaching and learning in technical teacher education. It is recommended that, a complete rethinking of the design and implementation of TVE teacher training in Uganda be done to infuse in relevant learning theories. TVET teacher training in Uganda should open up to new and effective teaching and learning approaches that are based on the principles of learning theories. TVE teacher trainers in Uganda through refresher training should develop extensive knowledge in the use of learning theories in teaching. Constructivism and cognitivism should be infused into TVE teacher and instructor training to promote experiential learning. This will subsequently improve the quality of TVE teachers and instructors in Uganda.

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LIST OF ABBREVIATIONS AND ACRONYMS

B.Ed:	Bachelor of Education
BTTE:	Bachelor of technical teacher education
BTVET:	Business, Technical and Vocational Education and Training
B.VOC:	Bachelor of Vocational Studies with education
CBET:	Competence Based Education and Training
CTTE:	Certificate in Technical Teacher Education
CVI:	Content validity index
CVTI:	Certificate in vocational training Instructor
DOSTE:	Department of Science and Technical Education
DTTE:	Diploma in Instructor, Technical Teacher Education
DVTI:	Diploma in Vocational Training Instructor
EACM:	East African Common Market
GTZ:	German Development Cooperation
JICA:	Japanese International Development Cooperation
SPSS:	Statistical Package for Social Sciences
TTE:	Technical Teacher Education
TIET:	Teacher Instructor Education and Training
TVE:	Technical and Vocational Education
TVET:	Technical and Vocational Education and Training
UNESCO:	United Nations Education Scientific and Cultural Organisation
UNEVOC:	The International Centre for Technical and Vocational Education and Training
VETTI:	Vocational Education Teacher Training Institute

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CHAPTER ONE

INTRODUCTION

1.1 Overview

The study was in the area of technical teacher and instructor training. It was motivated by the fact that, effective technical teachers and instructors in Uganda should train technologically competent and competitive technicians who are the foundation of technological, social and economic development of any country. In this study, learning theories was the independent variable while quality of training technical teachers and instructors was the dependent variable. In this chapter, the background of the study and the problem statement are presented. The objectives and the research questions are also stated. The chapter also mentions the significance of the study, the scope of the study, the limitations and the assumptions. The chapter illustrates the theoretical framework and winds up with definitions of operational terms.

1.2 Background to the Study

This part of the study presents an overview of historical, contextual and the conceptual issues that led to the study.

1.2.1 Historical Back ground

Prior to 1957, virtually none of the Technical Vocational Education (TVE) teachers in Uganda were professionally trained as there were no institutions that trained TVE instructors as well as craftsmen who were aspiring to become technical teachers. Most TVE instructors were hired for their occupational expertise and not necessarily for their teaching credentials. In fact, the first technical and vocational trainers in Uganda were

craftsmen who had been trained by missionaries (Ssekamwa, 2000). Contributing to this practice was the difficulty in finding persons who had both technical and vocational skills and teaching expertise. During that time Uganda had a system when TVE schools had to choose between a technical expert and someone with teaching expertise. The technical expert typically won the day (Egau, 2001). This was so because institutions training technical teachers were not yet established and at that time what was required were practical skills. Currently, Uganda has a number of institutions that train TVE technical teachers and instructors.

The first technical and vocational teacher training in Uganda started in 1957 at Kampala Technical Institute (KTI) (Okello, 2005). This was the first national TVE teacher training programme. The certificate in technical teacher education (CTTE) was awarded by Makerere University. Technicians and craftsmen who had certificates in their trades were trained for one year in pedagogy. This training continued even after KTI became Uganda Technical College Kyambogo in 1963. In 1994, Uganda Technical College Kyambogo became Uganda Polytechnic Kyambogo (UPK) and it continued to offer CTTE. In 1999, UPK introduced a Diploma in Technical Teacher Education (DTTE) in addition to CTTE. DTTE provides two year training to students who have advanced crafts certificates, and technicians, and one year to CTTE holders, who enter/join in the 2nd year.

Kenya started training TVET teachers in 1976 at Kenya Technical Teachers College at diploma level, and in 1989, a bachelor's degree in Technology Education at Moi University at Chepkoilel Campus which is now University of Eldoret. In 2000, a

Master's degree was started at Chepkoilel campus in Technology Education (Kerre, 2010). In 2010, the doctoral degree was started in Technology Education; unfortunately, it was shelved in the same year. In 2010, the Doctor of Philosophy degree in Technology Education started again at the University of Eldoret.

In 2001, Uganda Polytechnic Kyambogo became part of Kyambogo University and a Bachelor of Technical Teacher Education (BTTE) was introduced. Bachelor of technical teacher education was a four year programme for A-level candidates, DTTE, and CTTE holders. Ordinary diploma holders take 3 years and Higher National Diploma holders take 2 years. In the same year, Kyambogo University ceased to offer training in CTTE and the program moved to a private institution, KAL Institute of Technical Teacher Education (KALIOTTE). But before the Institute of Teacher Education Kyambogo (ITEK) became part of Kyambogo University, it was offering Bachelor of Education (B.Ed) in Technological Studies, a two year programme for upgrading teachers teaching technical subjects in secondary schools.

Currently, a number of public and private institutions offer diploma in Instructor Technical Teacher Education (DITTE) and a Certificate in Technical Teacher Education (CTTE) and are affiliated to Kyambogo University. The institutions are; National Instructor College Abilonino, Nakawa Vocational Training Institute, Jinja Vocational Training Institute, Kyambogo University which are public institutions and KAL institute of technical teacher education (KALiotte) a private institution). In 2015, another private institution, African College of Commerce and Technology Kabale joined the training of technical teachers and instructors. The DITTE programme came as a result of

harmonization of the DTTE, CTTE, DVTI and CVTI in 2011. The Certificate in Vocational Training Instruction (CVTI) and Diploma in Vocational Training Instruction (DVTI) were being offered by Nakawa Vocational Training Institute. While DTTE and CTTE were being offered by Kyambogo University, National Instructors College Abilonino and KAL institute of Technical Teacher Education. Out of these institutions, KALotte continued offering CTTE till 2015, because of the high demand for the technical teachers of this qualification for Skilling Uganda Strategic Plan of the Ministry of Education and Sports. However, 2016 was the final year for Uganda to train CTTE technical teachers. It was Kyambogo and Makerere Universities that were offering bachelor of technical teacher education (BTTE) as public universities. Makerere University through its Department of Science and Technical Education (DOSTE) started BTTE programme in 2007. Unfortunately, both programs were shelved; BTTE of Kyambogo in 2009, and of Makerere in 2012.

Kyambogo University offering a degree program, code named Bachelor of Vocational (BVOC) with education and Bachelor of Education (B.Ed.) in Technological Studies that provides training to teachers of technical subjects in secondary schools. National Teachers Colleges affiliated to Kyambogo university offer diploma programmes in Technological Studies (Okello, 2005). The entry requirements are; A-level science combinations, and advanced crafts or technicians' certificate. Diploma students receive two years training while degree students receive three years training in educational pedagogy and technology education. Graduates of B.VOC and B.Ed technological studies

teach technical subjects such as Woodwork / Carpentry, Metal work, Agriculture, Technical Drawing, Power and Energy to O-level and A-level students.

1.2.2 Contextual Background

Sustainable economic growth and development in developing countries is heavily dependent on a country's training institutions ability to train competent technological, knowledgeable workers for today's workforce. The Government of Uganda is currently promoting technical and vocational education (TVE) as a major avenue for modernization. This is because technical and vocational education prepares learners who can do practical jobs, develop their expertise in technology and enables them acquire skills that result into immediate employment (Ministry of Education and Sports, 2015). However, a critical aspect to the training of a technologically competent and skilled workforce is the training of competent technical and vocational education teachers (Akim, 1998).

Uganda needs competent technical and vocational education technical teachers to develop and implement strategies and interventions that will increase the usefulness of this education to the country's economy (Rwendeire, 1993). Technical and vocational skills can only be vital for Uganda's development if technical and vocational schools can produce graduates who can use technological skills to cope with the current global challenges (Egau, 2001). Therefore, it is important that the majority of Uganda's population, men and women alike, develop basic functional, technological knowledge

and skills from competent teachers. In addition, economic and technological forces are currently pushing in the same direction to produce a more open, and connected international environment that requires good technological skills. The quality of any education system reflects on the quality of the teaching staff. Similarly, the quality of any TVET system is a reflection of the quality of its TVET teachers/ instructors. (Van den Berg, 2010). Indeed it is true that the quality of the TVET products will depend on the quality of the technical teachers and instructors.

In most parts of Africa, no meaningful attention has been given to TVET teachers. Besides, due to increased technological innovations and the demand for higher education and skills in the modern workplace, much more is demanded of a TVET teacher today than ever before, (Kerre, 2010). National reviews of education and training reveal that, almost 90% of vocational teachers and instructors working in the public vocational training system require continuous upgrading of training skills, (Kerre, 2010). A Ministry of Education Department, Business, Technical and Vocational Education and Training (BTVET), is responsible for the coordination and harmonization of TVET in Uganda (Egau, 1991). BTVET is mandated to ensure that Uganda has a highly skilled, certified and technologically competent workforce in a competitive global economy. The department fosters partnerships, both with government, industry and training providers in Technical Vocational Education and Training (TVET), but it is not in charge of developing and supervising curricula for technical teacher training programs. This implies an oversight and standardization of TVET teacher training remains under training

institutions. Kenya which started training technical teachers in 1976, now has doctorate programme and Uganda has just reviewed its diploma programme.

In the current curriculum for training technical teachers and instructors in Uganda, learning theories are only mentioned in Educational Psychology, but do not appear in the core course units for technical teacher and instructor training. Infusing learning theories in the teaching methodology is crucial in producing a competent and holistic technical teachers and instructors. Hence there was need to explore what learning theories are included in the curriculum for training technical teachers and instructors in Uganda and if they have played any role in Competence Based Education and Training (CBET) and skilling Uganda programmes. So it is against this background that the researcher carried out the study to investigate the relevance of learning theories in the training of technical teachers and instructors in Uganda.

1.3 Statement of the problem

Studies show that effective use of relevant technical teacher training philosophy and learning theories results into technically and pedagogically competent TVET teachers (Altinyelkien, 2004; Kadocsa & Koppony, 2004; Geert, 2008). In order to improve the quality of craftsmen and technicians in Uganda, the government, through Teacher Instructor Education and Training (TIET) and BTVET departments, tertiary institutions such as Kyambogo University and the support of NGOs like German Development Cooperation (GTZ) and Japanese International Development Cooperation (JICA) have combined efforts to improve the training of technical teachers and instructors. Several in

service training courses on pedagogy and use of training facilities have been held over the years.

However, there is still a general dissatisfaction on the quality of technical teachers and instructors in Uganda. Studies show that institutions which employ these teachers complain of them being very theoretical and unable to effectively develop creativity and innovativeness among students (Egau, 2014). These technical teachers and instructors do not apply learning theories that enable teachers to acquire professional skills that promote hands-on training and experiential training.

Empirical studies on whether training institutions implemented modern training methods and relevant learning theories in the training of technical teachers and instructors in Uganda were scanty. Information on how this influenced the quality of technical teachers and instructors was not readily available. Therefore, this study explored the extent to which relevant learning theories are being used in the training of technical teachers and instructors and the influence it has had on the quality of trainers produced in order to provide evidence based information to guide policy decision-making.

1.4 Purpose of the Study

The purpose of the study was to investigate the relevance of learning theories in the training of technical teachers and instructors in Uganda.

1.5 Objectives of the Study

To achieve the study purpose, the specific objectives indicated below were adopted

1.5.1 Specific Objectives

The study was guided by the following objectives:

1. To establish learning theories present in the curriculum for training technical teachers and instructors in Uganda.
2. To determine the extent to which learning theories being applied in the training of technical teachers and instructors.
3. To ascertain learning theories that should be used to produce a quality technical teacher or instructor in Uganda.

1.6 Research questions

The study sought answers to the following research questions.

- a) What learning theories are in the curriculum for training technical teachers and instructors in Uganda?
- b) To what extent are learning theories being applied in the training of technical teachers and instructors?
- c) What learning theories should be used to produce a quality technical teacher or instructor in Uganda?

1.7 Significance of the Study

Learning theories are a very important tool in the training philosophy of training technical teachers and instructors. If, in Uganda, the relevant learning theories are included in the curriculum and applied, training institutions will produce technical teachers and instructors of high quality. In return, these quality technical teachers and instructors will produce competent technicians and craftsmen & women. Therefore, findings from the study if implemented, the Ministry of Education and Sports through its departments of Business, Technical, Vocational Education and Training (BTVET) and Teacher Instructor Education and Training (TIET) may benefit because its dream of Skilling Uganda and Competence Based Education and Training (CBET) may be realized. Industries may get technicians and craftsmen & women who are competent – holistically trained. Even the technical teachers and instructors themselves stand to benefit because they will gain confidence in imparting the skills and even be in position of creating jobs for themselves, because they will have acquired skills of being creative and innovative.

1.7 Justification of the study

The quality of training technical teachers and instructors plays a very important role in the quality of technicians and craftsmen they produce. The Uganda 2040 vision of transforming from peasants to a middle income country is largely dependent on having good technicians and craftsmen who can work to sustain industrialization and transform agriculture, the major employer in Uganda into being a mechanized occupation it is only well trained technicians who can achieve this daunting task.

Well trained technicians and craftsmen support important sectors of the economy and provide employment for many. Viewed in this perspective, it became evident that effective training of technicians and craftsmen benefits the country. Therefore, a study on how learning theories are being used to produce competent trainers and instructors of technicians was worthwhile and merited attention.

Uganda currently has a campaign of promoting practical employable skills especially among the youth called “Skilling Uganda”. We can only have skilled workers if they are trained by skilled trainers. Skilled trainers develop both practical and intellectual skills of their students. There was limited information on how trainers are trained to develop skills of their students.

Uganda was lagging behind in the numbers of technicians and craftsmen. BTVET needed empirical data that would be used to improve the effectiveness of technical teachers and instructors so that they could produce more competitive technicians and craftsmen that would be able to fit into the East African Common Market (EACM) and the world at large. This could be achieved through the effective implementation of relevant instructor training.

As it is for all professional teachers in Uganda, technical teachers and instructors are required to meet specific quality assurance standards in the global village. This is partly because; the central governments fund more than 80 % of the operations of technical teacher training colleges. Therefore, it was anticipated that the proposed study would

provide valuable information to the central government ministries and departments that oversee the training of technical teachers and instructors. .

1.8 Scope of the Study

The study was limited to institutions and people who were engaged in training technical teachers and instructors in Uganda. Some officials in the Ministry of Education and Sports especially in BTVET and TIET departments were included in the study. The variables of the study were limited to learning theories present in the curriculum, the extent to which learning theories being applied in the training of technical teachers and instructors and learning theories that should be used to produce a quality technical teacher or instructor in Uganda.

1.9 Limitations of the Study

Considering the scope of the study, the following limitations were inherent;

Data used in the study was cross-sectional and of a snapshot nature. A cross sectional study examines a particular phenomenon at a particular time (Saunders, Lewis & Thorn hill, 2009). A longitudinal study could have been more appropriate since it collects data over a longer time period. However, the duration allocated for completing doctoral studies was insufficient to conduct a longitudinal study. But, the strong relationships that existed among variables in this study make a good case for more elaborate investigations in the future.

The study did not adequately consider differences in the learning environments of institutions, yet they could have had an effect on the meaning that there is a need to consider these conditions in future studies.

This study was conducted in institutions that had a poor state of the information technology structure. This meant that the researcher had to physically travel over long distances to meet the informants, as opposed to interacting with them electronically, such as by using video conferencing. This was made more unbearable by the poor state of the roads and the presence of few but overloaded public transport vehicles.

Further, some of the informants were suspicious of the researcher, mainly because they wanted to protect their positions, while others did not want some of their hidden practices to be exposed. But they were informed that their names would not be indicated and the information they provided would only be used in this research.

1.10 Assumptions of the Study

The study was carried out basing on the following assumptions:

The key assumption for this study was that training institutions for technical teachers and instructors offer the same curriculum. It was also assumed that Technical teacher and instructor training curriculum has relevant learning theories. The researcher further assumed that institutions that train technical teachers and instructors use relevant learning theories in training and training of technical teachers and instructors focuses on having trainers who effectively skill Uganda using competence based education and training.

1.11 Theoretical Frame Work

Several theories exist to describe and explain Effective training of technical and vocational education teachers. This study was based on the Theory-Practice Interaction Theory of Korthagen and Kessels (1999) and the Parallel Technical and Teacher Training Theory of McIntyre (1993). The salient issues in these theories related to technical teacher training are examined below.

1.11.1 Theory-Practice Interaction Theory

Korthagen and Kessels (1999) in their theory-Practice Interaction Theory suggest that Technical Teacher Education (TTE) should prepare teachers and instructors who are effective and reflective. This can be achieved when TTE gives sound theoretical and practical grounding to teacher and instructor trainees. This training approach emphasizes practical skills to teacher training. Birmingham (2004) calls this a collaborative teaching approach. The proportion of time trainees spend in the classroom, focusing on core technical and teaching skills, is reduced in favour of practical work in workshops and real teaching situations.

In case of teaching pedagogy, Geert (2008), advises that teacher trainees are provided with training on job where they can observe and learn from great teachers. This will give the trainee practical experience in preparation of schemes of work, lesson planning, learner motivation, classroom behaviour control, instructional media development and learner assessment. Teacher trainees should also be given practical training in the technical fields which they will teach (Pearson, 1989). This is done by providing

industrial training and supervised project work in their technical fields (Lawlor, 1990). This kind of training is important because a technical teacher and an instructor is not just a subject expert such as a carpenter or a mechanical engineer. A technical teacher is a mentor and therefore needs to understand the technical field in its relation to other fields and a part of the overall education of students (O' Hear, 1988). TVE teachers and instructors teach apprenticeship which is a very practical thing that should be done in a very practical work place. They have to think of ways of approaching things but doing it in a practical sense.

1.11.2 Parallel Technical and Teacher Training Theory

The Parallel Technical and Teacher Training Theory indicates that the most effective mode of TVE teacher training is one that produces TVE teachers and instructors who are technically and pedagogically competent. Implying that, they can offer relevant knowledge, skills and values to the trained technicians and craftsmen & women. McIntyre (1993) advises that for TVE teachers to be globally competitive, they need to have parallel technical and teacher training at the same time. Geert (2008), indicates that this type of dual course work prepares TVE teachers and instructors for two alternative professions: engineer, technician or technical teacher.

Kadocsa and Koppony (2004) advise that in this type of training, more time, about three quarters of the total training hours, should concern engineering subjects, and one quarter have to centre on pedagogical subjects. In addition, students need to have some industrial placement as engineering assistants. They also need to complete practical engineering

projects related to the solution of a real industrial problem guided by an industrial expert and a supervisor of the academic staff. This approach prepares TVE teachers and instructors to be more grounded in practical technological issues and it makes them more competent teachers and instructors of TVE. Technical teacher and instructor trainees then complete teaching practice in technical and vocational institutions. Teaching practice activities should be guided by a senior school instructor and a supervisor of the academic staff (UNESCO-UNEVOC, 2006). Experience indicates that competitive TVE requires technical teachers and instructors who can practically demonstrate to learners how to solve pertinent technological problems.

1.12 Conceptual frame work

The conceptual frame work below shows the relationship between the major variables of the study. In this study, the independent variable was learning theories used the training of technical teachers and instructors, while the dependent variable the quality of the trainers. The quality of whether they are skilled and competent trainers. Use of quality leaning resources was the moderating variable. Figure 1.1 below gives a graphic picture of the relationship among the major variables of the study.

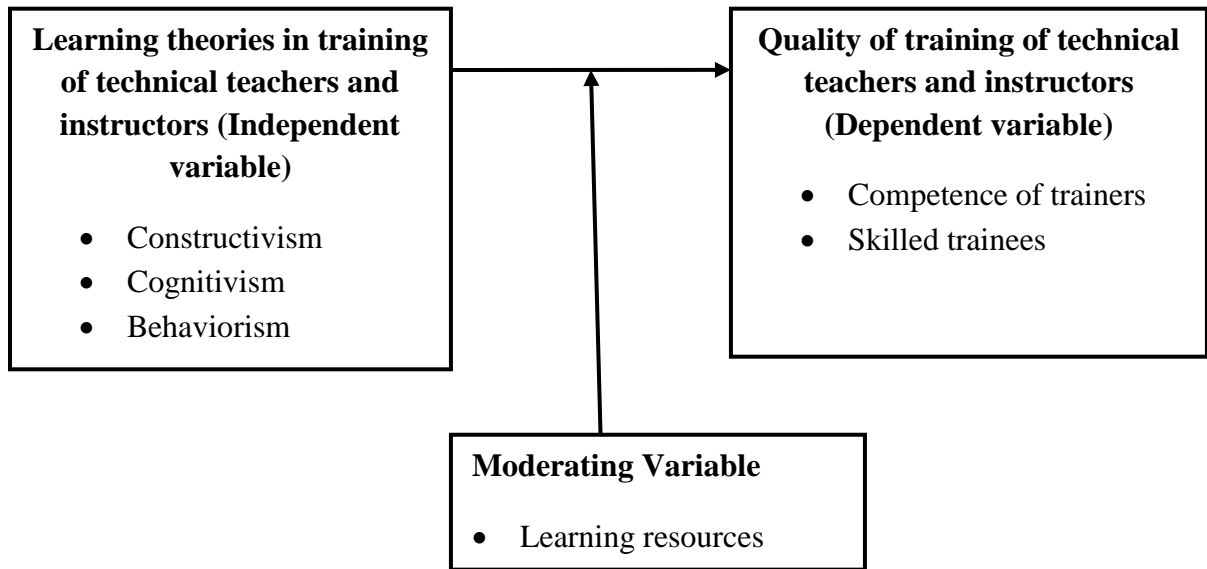


Figure 1.1: Conceptual Framework; Adapted from Korthagen and Kessels (1999) and McIntyre (1993)

The framework shows the relationships between the independent, dependent and moderating variables. The independent variables were learning theories relevant in training technical teachers and instructors. Three theories were picked for this study and were; constructivism, behaviourism, and cognitivism. The dependent variable was the quality of training technical teachers and instructors. The moderating variable was the learning resources.

Geert (2008), argues that the quality of technical teachers and instructors, exhibited through teaching competence largely depends on the quality of training they have received. Korthagen and Kessels (1999) assert that, quality training of Technical

Teachers and Instructors combines both teaching pedagogy and practical technical skills training. McIntyre (1993) adds that relevant pedagogical training for technical teachers and instructors is based on careful and intentional use of learning theories, especially constructivism, cognitivism and behaviourism. Kadocsa and Koppony (2004) advise that when technical teachers and instructors are trained using relevant learning theories, they become skilled and competent trainers, who are able to train innovative, creative and globally competitive technicians. Wadi (2000) warns that the products of the training largely depend on the use of modern learning resources.

According to the framework, when relevant learning theories; the constructivism, behaviorism and cognitivism are applied in the training of technical teachers and instructors, quality technical teachers and instructors may be produced. This can only be possible if there is availability of relevant learning resources, like modern tools and equipment. It therefore implies that, when quality technical teachers and instructors are produced, in turn, competent technicians and craftsmen & women may be produced.

Hence effective TVE training is one that encourages students to discover principles by themselves. To achieve this, the instructor and student engage in an active dialog (Korthagen and Kessels (1999). The instructor should translate information to be learned into a format appropriate to the learner's current state of understanding. Learning should be organized in a spiral manner so that students continually build upon what they have already learned (McIntyre, 1993). Therefore, instruction should address; (1) predisposition towards learning, (2) the ways in which a body of knowledge can be structured so that it can be most readily grasped by the learner, (3) the most effective

sequences in which to present material, and (4) the nature and pacing of rewards and punishments. Good methods for structuring knowledge should result in simplifying, generating new propositions, and increasing the manipulation of information.

1.13 Operational definition of terms

In this study the operational definition of terms are as follows:

Skilling Uganda – Refers to having every Ugandan with at least some sort of skills from which he/she can earn a living. And this is in the 10 year strategic plan of 2012 of the Business Technical Vocational Education and Training (BTVET) department - Ministry of Education and Sports.

Competence Based Education and Training - This refers to the kind of education that puts emphasis on practical skills training more than theory (Knowledge). The kind of training that helps industries / workplaces to meet their needs or requirements. The kind of education which recommends the teaching that involves the integration of theory with practices and attitude in a single lesson.

TVET Curriculum - Refers to a curriculum which takes care of technical, vocational, education and training of skills in tertiary institutions.

Technical Education – Refers to the type of education where a learner directly develops expertise in a particular group of techniques or technology. Technical education offers knowledge and practical skills and attitudes towards work and with more scientific theory to a learner, (UNESCO, 2001; Mukasa, 2010). Technical education offers about 60% knowledge and 40% practical skills.

Vocational Education – Refers to the education that prepares learners for jobs that are based on practical activities and totally related to a specific occupation or vocation, in which the learner participates. Vocational education might be classified as teaching Procedural Knowledge, (Windham, 1992).

In my own understanding, Vocational education offers about 20% theory/knowledge and 80% practical skills. Sometimes it is referred to as a non-formal education, which may not require a formal curriculum.

Technical Teacher – Refers to a teacher who passes on practical skills to others and commonly found in Technical Institutes and Technical Schools. He/she teaches both theory/knowledge and practical skills.

An Instructor – Refers to a person who passes on practical skills to others and commonly found in Vocational Training Institutes or centres and in Military Institutions. At a greater extent an Instructor handles more practical skills as opposed to theory/knowledge or principles. Take an example of driving school instructors, and military instructors.

Learning Theories – Is a conceptual framework that describes how information is absorbed, processed, and retained during learning.

1.14 Chapter Summary

The chapter has highlighted the purpose, the objectives and the research questions and the scope of the study. It has shown how the findings of the study may benefit the institutions training technical teachers and instructors. The industries and the government in general

may benefit because it may reduce on the unemployment rate by having many “Ugandans Skilled.”

It has also shown what is expected to be the limitations and the assumptions that; all the institutions training technical teachers and instructors offers a harmonized curriculum, the respondents will positively participate in the study. Truly, the respondents participated in the study.

Furthermore, the chapter presents the theoretical framework of the study. Lastly, the chapter states the operational definition of terms; the Skilling Uganda, and competence based education, TVET curriculum, technical education, vocational education, technical teacher, an instructor, and learning theories.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A number of African countries, Uganda inclusive, are aggressively promoting technical and vocational education and training (TVET) as a major avenue for modernization. However, the success of this development strategy depends on TVET training institutions' ability to train technological competent skilled technicians, craftsmen and craftswomen. Currently, Uganda has TVET institutions right from technical schools to university level. For TVET graduates to contribute to Uganda's economic development, and for Uganda to be able to Skill its citizens (Skilling Uganda), we need relevant TVET curricula having relevant teacher training methods. This chapter critically reviews literature on relevant TVET curricula, quality of lecturers/tutors responsible for training technical teachers and instructors, standards of instructors, the various learning theories, and training methods.

2.2 Effective TVE learning and training

Effective training requires a good learning environment. A good learning environment has effective methods of teaching, using good learning materials by quality instructors. This section critically reviews these three aspects with regards to TVE.

2.2.1 Training methods

The quality of technicians is largely dependent on the quality of training they have received. No student is better than the quality of training he has received (Farrant, 1988). This implies that effective training is crucial in having an effective TVET instructor.

Vernon and Reynolds (2011) advise that the content, methods and means of technical teacher training should be based upon new approaches. New approaches that include longer industrial training and practical technology have been discovered to make TVET more competitive. In a study done by UNESCO (2002) on technical teacher training in Asia, it was recommended that, new methods of training should be adopted together with new types of teaching materials. A clear connection between new methods and new types of assessment and evaluation was suggested. Hence, Wadi (2000) advises that this training approach enhances the development of not only the memory but also the creativity and the capacity of doing practical work among TVET graduates. Modern technological innovations also require very close contacts with enterprises and other stakeholders, including employment services, labour market institutions and other social partners, for purposes of effective teaching/training and career guidance. This gives TVE students opportunity to work in industries or even interact with other TVE stakeholders (UNESCO, 2005). As a result come in touch with the real technical world. This calls for TVET programmes at universities to include practical experience acquired in industry. It is currently not clear whether university TVET programmes offer these opportunities to their students.

2.2.2 Training philosophy

Altbach (1991) suggests that, effective TVET should be centered on enabling students learn how to solve practical issues. Students should be trained to use technology to solve practical problems in their communities. This can be achieved if training is centered on practical issues instead of just the use of technology. Students should be able to see the

benefits of using technology to solve practical problems. In a study that was done by Burkhart (1996), in India, it was discovered that effective TVET teacher should centre on acquisition of critical skills such as research, navigation, information management (inference, analysis, synthesis, interpretation), and independent thinking. In this way they will be able to use technology as a tool for solving community, national and global problems.

In order for TVE training to be relevant in solving problems, it has to have appropriate technology. TVE students need to learn technology that will provide clear benefits for students and not simply how to use the technology - this creates interest and an incentive to teach (Daugherty, 1997). Wadi (2000) also advises that training should broaden awareness of technology with more emphasis on appropriate technology which is currently underused in the community. This implies that students should be taught to consider the types of technological resources currently available in their communities and adopt their learning to the use of local technology resources. Kadocsa and Koppony (2004) caution that, if TVET uses unavailable and irreverent technology, this will result in lower innovation and creativity, yet they are the cradles of technology. There was need to explore whether TVET teacher training programmes in Uganda promote relevant technological philosophies.

2.2.2.1 Encourage on-going Skills Acquisition

Effective TVET programs encourage trainees to reflect on and make decisions about their own technology skills development needs on an on-going basis (van den Berg, 1996).

This practice ensures more involvement and ownership and greater integration of technology within the community. TVE training should provide flexible training and development opportunities by allowing choice and guidance for only going career progression (Wadi, 2000). In a modern labour market with ever changing innovations and the requirement for lifelong learning, the ability to self-learn in a team approach is even more important than having a broad range of technical and vocational know-how learned from theoretical coursework and imitation of skills by learners (ITEA, 1997). Therefore, TVET student should have the capacity to use available resources to improve their proficiency. This capacity can be acquired from the university. However, it is not clear whether universities that offer TVET develop this capacity in their students.

2.2.2.2 Create a culture of peer coaching and mutual support

TVET in developing countries should learn to be more independent when they are in their work stations (Burkhart, 1996). This is because technological resources in developing countries are insufficient. Relying upon a few technology specialists and developing dependency relationships can delay their progress toward technology integration, sharing and empowerment. Delannoy (2000) advises that in order for them to be effective, TVET students should learn how to support each other through peer coaching. This implies that training programmes should develop these capabilities in their students.

2.2.3 TVET instructors' training and qualifications

The quality of TVET graduates is largely dependent on the competence of instructors. Akim (1998) indicates that effective TVE instructors have to have good training if they

are to produce technically competent graduates. Training and education standards of TVE teachers vary country by country. Currently in most Africa countries, training and qualifications of TVE instructors can vary from one being an experienced craftsman to a masters or P.hD holder trained in a higher education institution (van den Berg, 1996). TVE teachers can have academic or non-academic work experience (Grollman, 2009). Kadocsa and Koppony (2004) advise that TVE teachers need extensive knowledge in one or more technical subjects or fields of learning. They need to have a high degree of functionality in ICT and technological processes. Wadi (2000) adds that, TVE teachers should have the capacity to impart technical and vocational skills to students through their instruction and organization of learning processes. They should be able to do practical research, have the capacity to innovate and impart innovation in learning. They should also be able to change as necessary in teaching practice.

Experts advise that the most effective mode of TVE teacher training should be Parallel technical and teacher training. This mode of training produces TVE teachers who technically and pedagogically are competent. It provides parallel engineering or technical and teacher training at the same time. Delannoy (2000) indicates that this type of dual course work prepares TVE teachers for two alternative professions: engineer, technician or technical teacher. Kadocsa and Koppony (2004) advises that, in this type of training more time- about three quarters of the total training hours should concern engineering subjects, and one quarter have to centre on pedagogical subjects. In addition, students need to have some industrial placement as an engineering assistant. They also need to complete complex engineering projects related to the solution of a real industrial problem

guided by an industrial expert and a supervisor of the academic staff. This approach prepares TVE teachers to be more grounded in practical technological issues and it makes them more competent teachers of TVE. Teacher trainees then complete teaching practice in a vocational school. Teaching practice activities should be guided by a senior school instructor and a supervisor of the academic staff (UNESCO-UNEVOC, 2006). Experience indicates that competitive TVE requires instructors who can practically demonstrate to learners how to solve pertinent technological problems.

Countries in Europe and Asia that have used this system have produced very competent TVE teachers who can work as technicians and at the same time teach technical subjects. China has used this approach, and it has brought it into the first world (China Vocational Education, 1999). TVE teachers in china are able to effectively use technical machines and run regular technology investigation projects with their students. This has given Chinese technicians the motivation to be innovative and this is why china is now more competitive in the global economy. Germany also has a very good TVET system as a result of implementing Parallel technical and teacher training. Schneider (2010) indicate that to be a TVET teacher in Germany one should have acquired University studies of at least three years in a vocational major (e.g. electrical engineering) and a non-vocational minor subject, as well as in pedagogy. The individual should also have obligatory 12-months' work experience in a technical industry. In addition, the person is supposed to acquire a two-year pre-service teacher training program at a vocational education teacher training institute (VETTI) combining work as a vocational school teacher with seminars in the major and minor areas of specialization. Then after being appointed a TVET

teacher, the person has to get ongoing in-service training program in technical areas, vocational pedagogy and new technologies before being confirmed (Atchoerena & Dellsu, 2001). This kind of training brings together the theoretical experiences from university studies with TVET teaching and training in schools by developing the identity of the teachers as experts in vocational teaching. It emphasizes reflective learning, project work, and business-process related learning, and development of occupational competencies (Vernon, & Reynold, 2011).

Daugherty (1997) asserts that in Saudi Arabia TVE teacher training combines a theoretical training in a vocational discipline such as business administration, information technology, electrical technology, mechanical technology, automotive technology and construction technology, with vocational pedagogy (learning how to teach technical subjects), field practice (internships), vocational field practice (trial teaching situations in real TVET classes) and a practical bachelor project (e.g. planning, carrying out and evaluating sequences of teaching or planning tracer studies for students from TVET schools). This type of TVE teacher training produces teachers who can practically develop technical skills of their students. Technology is then taught practically instead of theoretically. As a result, we are able to have technicians with practical skills that they can use to develop their country.

In countries where their TVE teachers have been theoretical, have organized short-term and longer-term in-service courses to promote TVET teachers practical skills at regular intervals. These programs have assisted new teachers and trainers in the transition from

universities to TVET institutions, to quickly respond to changing roles and professional development needs of TVET personnel. A number of countries in Eastern Europe, such as Croatia, Slovenia have implemented in-service teacher training program for TVET staff at national level, operating in the ministries of education or labour, with national TVET centres for teacher training (Burkhart, 1996). These centres have played an important role in supporting teachers with training that enhances their capacity to adapt to change and increase professional development. A study was needed to assess whether TVET teachers in universities in Uganda have the necessary training and qualifications that can enable them give good training to their students.

2.2.4 Training Facilities

Competitive TVET training requires use of modern training facilities. Technical teacher and instructor training institutions and also TVET institutions should have modern technology training facilities. A study that was done by Kunguvu (2000), in Uganda indicated that, technical teacher training institutions rarely used modern technical workshops and basic tools and equipment in their training. The availability of modern technical workshops and basic tools and equipment enables hands-on technology training. Inadequate workshops and tools in teacher and instructor training institutions and in TVET institutions may lead to theoretical training that produces half-baked technical teachers and instructors. In turn also half-baked technicians and craftsmen & women will be produced. Studies (Vernon and Reynold, 2011).) done across Africa indicate that most universities that offer TVET and technical teacher and instructor training institutions together with other TVET institutions have inadequate training

facilities or are outdated and not relevant to what is needed for specific skills development. This has resulted into TVE teaching and training that has little relevance for what students have to face in the world of work after they left training institutions. This makes them half-baked and may not be able to compete with well trained technicians from developed countries (Greenberg, 1987). There is need therefore to evaluate the quality and adequacy of TVET training facilities in Ugandan training institutions. This done to establish whether they meet standards to influence the application of relevant learning theories that can produce quality technical teachers and instructors together with competent technicians and craftsmen & women.

2.3 Learning Theories

According to King, Hayman, Palmer, Wedgwood, and Thin (2007), a Learning Theory is defined as a descriptive, showing how learning occurs. And according to George Siemens, learning theory informs and gives rise to practice (even legitimates it). Learning theory is a conceptual framework which describes how information is absorbed and retained during teaching-learning process (Sawyer, 2006). Learning theories endeavours to describe how children learn. Learning theories help us to identify and select the suitable or appropriate instructional media to use. Learning theories helps us to understand the process of teaching-learning (Pearson, 1989).

Learning theories therefore are tools that if applied in training and teaching-learning process, can effectively facilitate or improve learning at all levels of education; childhood education, primary education, secondary education and all tertiary institutions (Bandura, 1977). Technical teachers and instructors can use them to design instructional

models. However, in the case of technical and vocational education, learning theories are used for two major purposes, 1st, explains very well the best how one can acquire technical and vocational skills, 2nd, develops creativity and innovativeness in learners/trainees. Some of the common learning theories used in teaching and training are; Observational learning (Bandura), Gestalt learning (Wertheimer), Constructivist learning (Bruner), Cognitive Dissonance, Learning by Doing (Dewey), Experiential learning (Rogers), and Behaviourism. However, Sawyer (2006) indicates that Constructivism, Cognitivism and Behaviourism are the three learning theories more relevant to the training of technical teachers and instructors. These three theories have formed instructional models for training technical teachers and instructors in many countries across the world (King, et al, 2007). In the next section, a review is made on these three theories and how they apply to training technical teachers and instructors.

2.3.1 Constructivism and the Quality of TVE Teachers

Constructivism learning theory is a holistic perspective on learning that combines experiences, perception, cognition and behaviour. This is the learning theory that directly relates to learning and teaching in technical education. This learning theory is founded on the premise that, by reflecting on our experiences, we construct our own understanding of the world we live in (Radin, 2009). The theory emphasizes the central role of experience in the learning process. Learning becomes a continuous process grounded in experience (Kolb, 1984). In the teaching learning situation, the teacher provides an opportunity for learners to consciously reflect on the thoughts, emotions and behavioural actions and transforming them.

Gagne and Driscoll (1988) say that constructivism promotes active and discovery learning and knowledge building. By acting as a facilitator, the teacher encourages students/learners to discover principles and procedures for themselves. Furthermore, it helps them to construct knowledge and skills by working to solve realistic problems (King, et al, 2007). Hence, learning becomes something done by the learner instead of being something imposed on him/her from outside.

During instruction, educators focus on making connections between facts and fostering new understanding in students. For instructors, there should be tailor teaching/training strategies to learners/students responses. They encourage learners/students to analyze, interpret, and predict information. Gagne (1985) says that for teachers, rely heavily on Open-ended questions and promote extensive dialogue among students. In instruction it encourages Discovery, Hands-on, Experiential, Collaboration, Project-based and Task-based to be applied in teaching-learning process.

The social constructivist approach to learning also encourages instructors to adapt the role of facilitators instead of being only teachers, (Bauersfeld, 1995). He goes on to say that, a teacher gives a didactic lecture that covers the subject matter, whereas a facilitator helps the learner to get his or her own understanding of the content (subject matter). In the former scenario the learner plays a passive role and in the latter scenario the learner plays an active role in the learning process. The emphasis thus turns away from the instructor and the content and reflects towards the learner (Gagne & Driscoll, 1988). This dramatic change of roles implies that, a facilitator needs to display a totally different set of skills than a teacher (Vernon and Reynold, 2011).

In order for Uganda to be able to Skill Ugandans and to fully implement the Competence Based Education and Training (CBET) in totality, technical teachers and instructors should be well trained to come out as highly competent teachers and instructors. They should be able to support learners to construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. Learners should be helped to reconcile new ideas with previous ideas and experience. For learners to be creative, they should develop the ability to maybe changing what we believe, or maybe discarding the new information as irrelevant. Learners should be able to ask questions, explore, and assess what they know. This requires trainers to use different teaching practices that encourage students to experiment, do real-world problem solving and to create more knowledge and then to reflect on and talk about what they are doing and how their understanding is changing. Trainers have to first understand the students' pre-existing conceptions, and guide the activity to address them and then build on them. Application of learning theories can significantly help TVE teachers to effectively support experiential learning among their students. However, information on the view of TVE instructors in Uganda on the role of learning theories, specific theories that encourage students to gain understanding and the extent to which they are used to help students become expert learners was not available. There was, therefore, need to explore extent of inclusion of the relevant learning theories in the curriculum and instructional methods of technical teachers and instructors in Uganda and its implication of skilling Uganda and development of learners' ability to solve pertinent technological problems.

2.3.1.1. Implications of Constructivism in training technical teachers and

instructors:

Curriculum

With regard to curriculum, constructivism calls for the elimination of a standardized curriculum. Instead, it promotes using curricula customized to students' or learners' prior knowledge. It talks of a curriculum which emphasizes hands-on and problem solving. This therefore calls for having the necessary relevant tools and equipment. Take an example where the curriculum is not customized, is to subject "Engineering Mathematics" to a Tailoring and Cutting Garment (TCG) student.

Instruction

Constructivism has three major types of learning which make it to be very relevant in the training of technical teachers and instructors. Gagne and Driscoll (1988) say that they include; active learning, discovery learning and knowledge building. These promote the student's free exploration within a given framework or structure. In constructivism, the teacher acts as a facilitator who encourages students/learners to discover principles and procedures for themselves. Furthermore, it helps them to construct knowledge and skills by working to solve realistic problems (King, et al, 2007). Therefore according to constructivists, learning is something that is done by the learner and it is not something imposed on him/her from outside, hence, the doing aspect of external learning theories (Michael, 2006).

During instruction, educators focus on making connections between facts and fostering new understanding in students. For instructors, there should be tailor teaching/training strategies to learners/students responses. They encourage learners/students to analyze, interpret, and predict information. Gagne (1985) says that for teachers, rely heavily on Open-ended questions and promote extensive dialogue among students. In instruction it encourages Discovery, Hands-on, Experiential, Collaboration, Project-based and Task-based to be applied in teaching-learning process.

According to the social constructivist approach, instructors have to adapt to the role of facilitators and not teachers, (Bauersfeld, 1995). He goes on to say that, a teacher gives a didactic lecture that covers the subject matter, whereas a facilitator helps the learner to get his or her own understanding of the content (subject matter). In the former scenario the learner plays a passive role and in the latter scenario the learner plays an active role in the learning process. The emphasis thus turns away from the instructor and the content and reflects towards the learner (Gagne & Driscoll, 1988). This dramatic change of roles implies that, a facilitator needs to display a totally different set of skills than a teacher (King, et al, 2007). King, et al, (2007), describe a teacher and a facilitator very well. A teacher tells, a facilitator asks; a teacher lectures from the front, a facilitator supports from the back; a teacher gives answers according to a set curriculum, a facilitator provides guidelines and create the environment for the learner to arrive at his or her own conclusions; a teacher mostly gives a monologue, a facilitator is in continuous dialogue with the learner. Greenberg (1987) advises that a facilitator should also be able to adapt

the learning experience “in mind-air” by taking the initiative to steer the learning experience to where the learners want to create value.

It is important to note that constructivism is not a particular pedagogy. In fact, constructivism is a theory just describing how learning happens. Take an example of learners building a model of a car or airplane, are they using their experiences to understand a lecture or following instructions? In both cases, the theory of constructivism suggests that learners construct knowledge out of their experiences. However, constructivism is often associated with pedagogical approaches that promote active learning or learning by doing. As you do or practice you definitely learn.

Brooks and Brooks (1993), tried to summarize constructivism by showing the difference between traditional classroom and constructivist classroom activities as shown below;

Table 2.1: Difference between Traditional Classroom and Constructivist Classroom**Activities**

TRADITIONAL CLASSROOM	CONSTRUCTIVISM CLASSROOM
Students primarily work alone.	Students primarily work in groups.
Curriculum is presented part to whole with emphasis on basic skills, (bottom – up).	Curriculum is presented whole to part with emphasis on the big concept, (top – bottom).
Strict adherence to a fixed curriculum is highly valued.	Pursuit of student questions is highly valued.
Curricula activities rely heavily on textbooks of data and manipulative materials.	Curricula activities rely heavily on primary sources.
Students are viewed as “blank slates” onto which information is etched by the teacher.	Students are viewed as thinkers with emerging theories about the world.
Teachers generally behave in a didactic manner, disseminating information to students.	Teachers generally behave in an interactive manner, mediating the environment for students.

Assessment

Constructivism calls for the elimination of grades and standardized testing. Instead, prefer assessment to become part of the learning process so that students/learners play a larger role in judging their own progress. This therefore calls for hands-on activities and not knowledge based. What is done can be physically seen and appreciated.

2.3.2 Behaviourism and Quality of TVE Teachers

Behaviorism concerns the observable change in behavior. Behaviorists believe that learning is provided by a change in actions through an explorative process. It exposes individuals to external stimuli until a desired response is received. Knowledge and skills are transferred by the teacher to the learner using the principles of reinforcement (Harzem, 2004). In behaviourism, the lecturer / tutor arranges the environment to elicit desired responses through behavioural objectives, competence-based learning and skills development (Greenberg, 1987). Teaching is done through “skill and drill “exercises to provide consistent repetition necessary for effective reinforcement of response patterns. Geert (2008) argue that stimulus (question) and response (answer) frameworks can be used to develop good practical skills. Regular reviews are used as guided practice combined with positive reinforcement such as verbal praises, good grades and prizes to develop appropriate knowledge and skills.

This learning theory focuses on objectively observable behaviours and discounts the mental activities. Behaviourism defines learning as nothing more than the acquisition of new behaviour. According to behaviourism, People learn by observing others, trial and error, copying and assimilating. Number of psychologists have contributed to this learning theory. Both Pavlov and skinner say that, learning is based on change in knowledge through controlled stimulus and responses. This means, the teacher / instructor demonstrates factual knowledge, and then the student / learner observe, measure, and modify behavioural changes in specified direction, (Gagne, 1985). This type of learning is a conditioned response or rote memorization of facts, rules, laws and

terminologies. So, behaviourism is acquisition of a new behaviour through conditioning. Gagne and Driscoll (1988) say that, there are two types of conditioning, classical and operating conditioning. Classical conditioning was developed by Pavlov. This is learning by producing a reflex response to the stimulus. Operant conditioning was developed by Skinner. In this form, learning is reinforced by the reward or a punishment (positive or negative reinforcement), (Schraw, 2006).

However, Bandura (2001) believes that behaviour can be learned through observation of others. Take a case where a teacher or an instructor demonstrates a skill when students are observing. They eventually practice out what they have observed (assimilation), hence creating learning. Locke (1996) says that, individuals are not “blank slates” on which teachers could “write” knowledge. This implying that a learner should be given time to see or observe and then creates meaning from what he/she has observed – creating learning. Thorndike (1932), explains in connectionism that learners form connection or associations between a stimulus and a response. And also that, through trial and error, rewarded responses would be strengthened.

2.3.2.1 Implication of Behaviourism in Training TVET teachers

Instruction

According to Behaviourism the lecturer / tutor arranges the environment to elicit desired responses through behavioural objectives, competence-based learning and skills development (Greenberg, 1987). Teaching can be done through “skill and drill “exercises to provide the consistent repetition necessary for effective reinforcement of response patterns. Stimulus (question) and response (answer) frameworks are used to develop good

practical skills. Regular reviews are used as guided practice combined with positive reinforcement such as verbal praises, good grades and prizes to develop appropriate knowledge and skills.

Assessment

In the case of assessment, the degree of learning should be measured using methods that indicate observable behaviour such as performances and practical projects. Therefore, behaviourists teaching methods can be successful in teaching aspects where there is a correct response or easily memorized material (Wells, 2007). The correct behavioural responses are transmitted by the teacher or instructor and absorbed by the learners.

2.3.3 Cognitivism and the quality of TVE teachers

This is a learning theory where humans generate knowledge and meaning through sequential development of an individual's cognitive abilities (Greenberg, 1987). Cognitive abilities such as; recognition, analysis, reflection, application, creation, understanding and evaluation are used to develop necessary skills. In Cognitivism, knowledge is viewed as symbolic mental constructions organized or processed in the mind. Learning occurs when there the learner is an active participant (Gagne, 1984). Vernon and Reynold (2011) argue that, for this theory to be effective in technical education , the instructor needs to give students opportunity to explore, manipulate, experiment, question, and to search for answers by themselves. Thus, institutions have to create learning environments which stimulates curiosity for exploration (Akinsanmi, 2008). Learning is much more meaningful if the learners is allowed to have places for individual and group study besides social interaction. Cognitivist bvvteaching methods

aim at assisting learners in assimilating new information to the existing knowledge and modifying existing intellectual framework to accommodate that information. Use of skill and drill exercises is encouraged in the memorization of facts, formulae, and lists (Schmeck, 1988). Greater importance is placed on strategies that help learners to actively assimilate and accommodate new material. This is done by asking students/learners to explain new material in their own way.

2.3.3.1 Implication of Cognitivism in Training Technical Teachers and Instructors.

Instruction

Cognitivist teaching methods aim at assisting learners in assimilating new information to the existing knowledge and modifying existing intellectual framework to accommodate that information. Use of skill and drill exercises is encouraged in the memorization of facts, formulae, and lists (Schmeck, 1988). Greater importance is placed on strategies that help learners to actively assimilate and accommodate new material. This is done by asking students/learners to explain new material in their own words.

According to Oluniyi (2009), there is a need to re-brand the country's (Nigeria) education sector through teaching methods. So, one can affirm that teaching methods remain a critical area of concern to be persistently addressed if success is to be achieved.

The Federal Republic of Nigeria through the Ministry of Information broadcasted the implementation of "re-branding" to be applied to all sectors of Government including Education. The Aim of re-branding was to adopt new and better ways of demonstrating responsible style that will foster the achievement of the country's vision 2020 in

sustainable human development. We need to adopt effective classroom practices and a shift from teacher-centred teaching methods to student-centred and activity-based methods. This led Nigeria to “re-branding” teaching methods at all levels of education (King, *et al*, 2007).

Traditionally, learning has been reviewed as something that occurs within an individual. Yes, individuals may participate and learn in groups, but it is the individual person that learns. With few exceptions, the education systems in Europe and North America have adopted this perspective, if not entirely with regard to instructional practices, certainly in the evaluation of student performance and the assessment of grades (Wertheimer, 1996).

Assessment

Assessment based on cognitivism should focus on concept formation, linkage of concepts to real learning tasks. Wells (2007) says that learners should also be helped to form cognitive maps of content and use them to generate own meaning. Greenberg (1987) also argues that, the mental models that students have used to perceive the world and the assumptions they make to support those models should be tested by assessment methods.

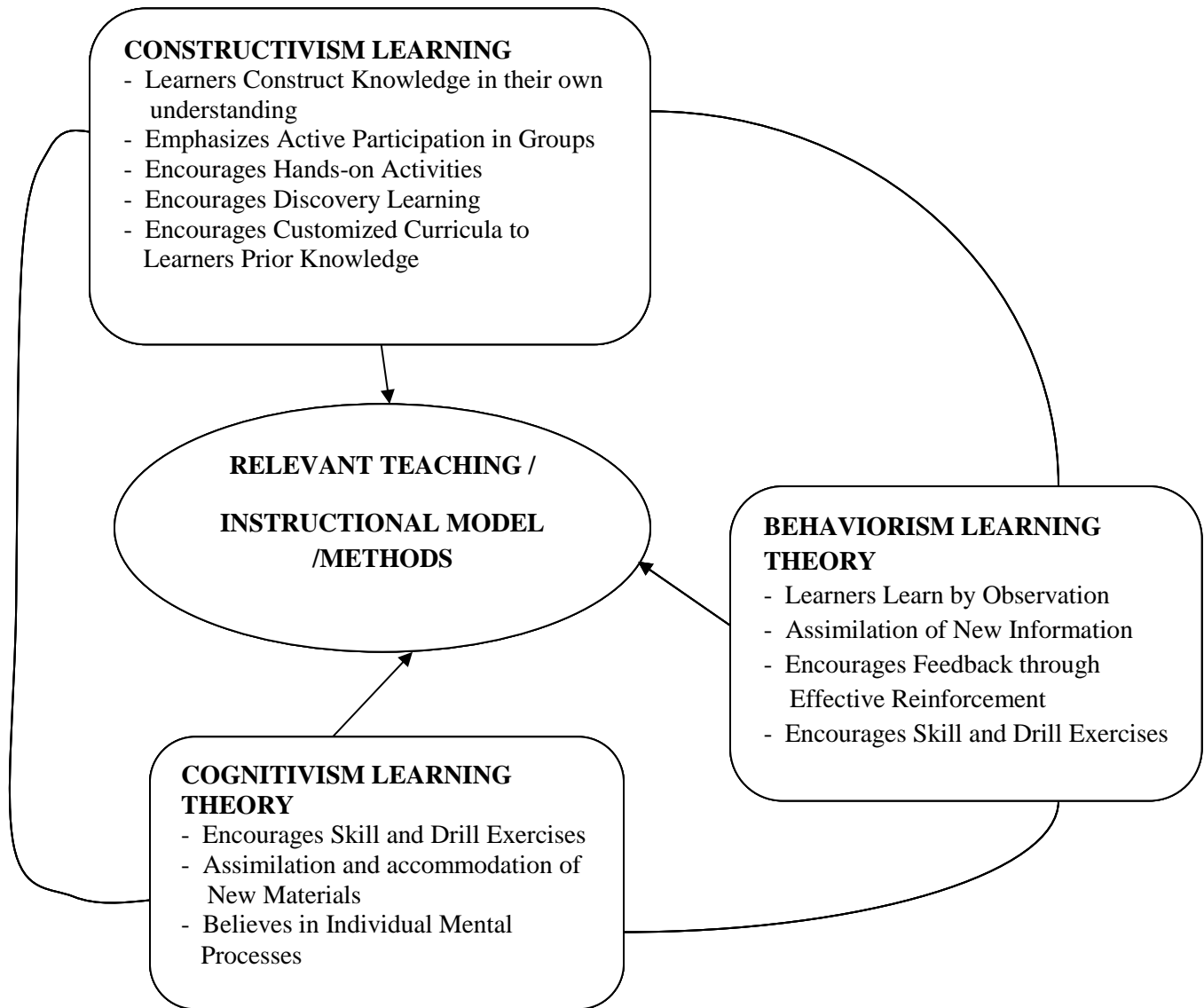


Figure 2.1: A summary of the relevance of Constructivism, Behaviourism and Cognitivism in the training of technical teachers and instructors

According to figure 2.1 above, to be effective, technical teachers and instructors should be well trained to come out as highly competent teachers and instructors. They should be able to support learners to construct their own understanding and knowledge of

the world, through experiencing things and reflecting on those experiences. Learners should be helped to reconcile new ideas with previous ideas and experience. Application of learning theories can significantly help TVE teachers to effectively support experiential learning among their students. There was, therefore, need to explore extent of inclusion of the relevant learning theories in the curriculum and instructional methods of technical teachers and instructors in Uganda.

2.4 Chapter Summary

In order for Uganda to be able to Skill Ugandans and to fully implement the Competence Based Education and Training (CBET) in totality, the technical teachers and instructors should be well trained to come out as highly competent teachers and instructors. They should be able to support learners to construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. Learners should be helped to reconcile new ideas with previous ideas and experience. For learners to be creative, they should develop the ability to maybe changing what we believe, or maybe discarding the new information as irrelevant. Learners should be able to ask questions, explore, and assess what they know. This requires trainers to use different teaching practices that encourage students to experiment, do real-world problem solving and to create more knowledge and then to reflect on and talk about what they are doing and how their understanding is changing. Trainers have to first understand the students' pre-existing conceptions, and guide the activity to address them and then build on them. Application of learning theories can significantly help TVE teachers to effectively

support experiential learning among their students. However, information on the view of TVE instructors in Uganda on the role of learning theories, specific theories that encourage students to gain understanding and the extent to which they are used to help students become expert learners was not available. There was, therefore, need to explore extent of inclusion of the relevant learning theories in the curriculum and instructional methods of technical teachers and instructors in Uganda and its implication of skilling Uganda and development of learners' ability to solve pertinent technological problems.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the plan of action for the study and it comprise of seven sections. These are: research design, study area, study population and sample. The chapter also describes the sampling procedures, data collection instruments, reliability and validity issues of the instruments and the procedures of data collection. The chapter finally focuses on the methods of data analysis.

3.2 Research Design

Raymond-Alain and Samantha (2001) describe a research design as the framework through which the various components of a research project are brought together. Mugenda and Mugenda (2009) argue that a research design is a crucial element of empirical research projects. It enables the researcher to make decisions that make up the master plan specifying how the study will be done. This study was rooted in the positivism paradigm. According to (Zikmund, 2010), this paradigm asserts that there is a single apprehensive reality that can be known, categorised, and measured. The positivist paradigm was used to examine and analyse issues across time and context.

The study adopted a descriptive exploratory survey approach, because of its strength in relation to the research problem. Surveys enable quantifying of certain factual information. With regard to the study, factual quantitative and qualitative information from a representative sample of a study was needed population. The study explored and

described the relevance of the learning theories in the training of technical teachers and instructors in Uganda. The study employed both quantitative and qualitative methods. Quantitative research methods were used because they enable a structured statistical measurement of variables (Amin, 2005). Qualitative methods were used so as to collect in-depth information on the research variables and this was to enable triangulation of the data collected so as to increase its validity (Ary, and Razavieh, 2002). Data was collected using questionnaires and a key informant interview guides. Quantitative data was analyzed using statistical methods. This was done in order to triangulate the findings so as to increase their validity (Bell, 2004).

3.3 Study Area

The study was done among institutions involved in the training of Technical Teachers and Instructors located in Kampala, Jinja and Lira in Uganda. The ministry of Education departments of Business, Technical, Vocational Education and Training (BTVET) and Teacher, Instructor Education and Training (TIET), were also included. The BTVET institutions were also included in the study because they produce the technicians and craftsmen. Instructors and students were selected from Nakawa Vocational Training Institute, Jinja Vocational Training Institute, National Instructor College Abilonino (NICA) and KAL institute of technical teacher education (KALiotte).

3.4 Target Population

Data was collected from a cross-section of stake holders in the training of technical teachers and instructors. These included; university lecturers, technical education tutors

and instructors, and officials from the Ministry of Education. The population of officials and policy makers from the departments of BTVET and TIET was 9. A total of 14 lecturers from Kyambogo University were targeted. Fifteen (15) Managers of Instructor training colleges were targeted and 117 instructors and 260 students were targeted.

3.5 Sampling

Both random and non- random sampling techniques were used to select a representative sample. Given the fact that the target population was large, purposive and convenience sampling techniques were employed. Respondents who were available and had the required information about the research problem were selected. After establishing the total population, then Krejcie and Morgan (1970) guide was used to determine the sample size. The table below shows the number of respondents who participated in the study in each category.

Table 3.1: Respondents selected for the study

Category	Population	Target sample	Actual Sample
Ministry of Education and Sports officials in charge of BTVET	9	9	4
Lecturers of KYU	14	10	4
Managers of Instructor training colleges	15	14	5
Instructors	117	86	81
Students	260	152	145
Total	415	271	238

The findings in the table above show that out of a population of 415 respondents, 4 ministry of Education and Sports officials in charge of BTVET, 4 lecturers of KYU, 5 managers of instructor training colleges, 81 instructors and 145 students participated in the study. The MOEs officials included the Asst. Commissioner Technical, Asst. Commissioner Vocational, Asst. Commissioner TIET and a Principal Education Officer TIET. In relation to lecturers of KYU, participants included; the Dean of Faculty of Education, a senior lecturer department of Teacher Education and Development Studies, head of Department of Technological Studies and senior lecturer in Faculty of Vocational Studies. Managers of instructor training colleges included Deputy Principal and academic registrar National Instructors College Abilonino, Deputy Principal training Nakawa VTI, Deputy Principal training, Jinja VTI and Principal of KALlotte. The final sample for

respondents who were selected purposively was determined during data collection using saturation. The researcher collected data from the available respondents until no new information was being received. The final sample of instructors and students also differs from the target sample because; it was determined by the number of instruments that were returned, fully completed. Some questionnaires were not fully completed and so could not be included in data analysis.

3.6 Instruments of Data Collection

The researcher used structured and self-administered questionnaires and interview and observation guides to collect data.

3.6.1 Structured questionnaires for lectures and instructors

Structured questionnaires (see appendix A) were used to collect data. The questionnaires were used to obtain information from academic staff of the university and technical teacher training institutions and students. The questionnaire had structured items. Structured questions were used because they allow collection of specific data. Using questionnaires also allows the respondents some time to reflect on answers to avoid hasty responses (Mugenda and Mugenda, 1990).

Section A of the questionnaire measured the demographic variables of respondents. The demographic variables that was measured include; employee category, gender, education and organizational tenure. Section B measured competence based TVET curricula, section C measured training and competence of TVET lecturers and instructors, while section D measured standard TVE technical teacher training. New scales were

constructed following Saunders *et al* (2003) steps. This was done, because no scale is available to measure these aspects in Uganda. For all items in sections B up to D respondents responded on a five-point scale for which 1 represent “strongly disagree” to 5 “strongly agree”.

3.6.2 Interview guides

An Interview guide was used to collect in-depth information from those individuals who have broad knowledge about the research problem and hold important information that is relevant to the objectives of the study (Opdenakker (2006); Mugenda and Mugenda, 1999). Those interviewed were officials from the ministry of education and managers of technical teacher and instructor training colleges. Interviews were used because the study targeted respondents who had real opinions on the research problem. The interview questions focused on the major themes of the study (Kvale & Brinkmann, 2009). Interviews also gave an opportunity to the researcher to probe and obtain detailed information on the research questions (Amin, 2005). In addition, interviews were also used to help the researcher to triangulate information that was collected by questionnaires and thus giving validity to the data collected. During the interview, respondents were speaking while the researcher records the responses (Kvale & Brinkmann, 2009; Mugenda & Mugenda, 2005).

3.6.3 Observation guides

For the purpose of ascertaining the availability of training materials, facilities and the training methods used, the researcher used observation guide. The guide was based on the

research objectives. The researcher took all the aspects that present in the institutions and university that can result into competence based technical skills.

3.7 Pilot Study

In order to collect reliable and valid data, the researcher ensured that good instruments are used. Good research instruments are required to be reliable and valid. Besides, they should be easy to complete so that respondents are motivated to provide honest responses. A pilot test was conducted on the instruments and the procedure of data collection. The pilot test ensured that the questionnaires were reliable and that the participants would respond in accordance with the instructions. The pilot study also examined the best way to handle unanticipated problems and gauged how long the respondents would take to fill in the questionnaire. The pilot sample included a total of 34 students and 18 instructors. The psychometric properties of the instruments that were tested are described in the section below.

3.7.1. Validity

The validity of the two instruments was tested. According to Arya et al. (2002), validity refers to the extent to which an instrument measures what it claims to measure. In order to ensure this, first, the content validity of an instrument was ensured. This was done because Kaahwa (2008) affirms that respondents are less likely to complete and return questionnaires perceived to be inappropriate. Therefore, the researcher ensured that all items in the questionnaire have face validity. The researcher also ensured that the instruments had simple wording and clarity.

With regard to content validity, the supervisor evaluated the questionnaires for their content validity. As recommended by Amin (2005), items that were found to be ambiguous and those judged to be inappropriate were either eliminated or adjusted. In the content validity test, the validity of each item was evaluated on a scale for which 1 = relevant, 2 = quite relevant 3 = somehow relevant and 4 = not relevant. The validity of the instruments was tested using the Content Validity Index (CVI). The CVI was measured using the formula:

$$\text{Content Validity Index (CVI)} = \frac{\text{Number of items declared valid}}{\text{Total number of items}}$$

The results are presented in the table below.

Table 3.2: Content validity index (CVI) of instruments

Evaluator	Questionnaire for students	Questionnaire for Instructors	Interview guide for Key informants	Observation guide
Expert	0.84	0.79	0.74	0.76
Supervisor	0.87	0.82	0.76	0.80
Average	0.86	0.81	0.75	0.78

Source: Pilot data (2015)

According to table 3.2, the average content validity index for the students' questionnaire was 0.86 that of the instructors and lectures was 0.81, the interview guide for key informants was 0.75 and the observation guide was 0.78. As recommended by Arya *et*

al. (2002), and Amin (2005), the CVIs for all the instruments were above 0.7, a value recommended for research instruments.

3.7.2. Reliability of the Questionnaire

When an instrument is reliable, it yields consistent responses because it is interpreted well. If the desired variable is not measured reliably, the information obtained would not be correct and therefore not be valid. Pilot data was used to help in enhancing the reliability of the instruments. Data from the ten respondents was entered in the Statistical Package for Social Sciences (SPSS) and a Cronbach alpha coefficient test of reliability was calculated using the formula below;

$$\alpha = \frac{K}{K - 1} \left(1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

Where σ_X^2 is the variance of the observed total item scores, and $\sigma_{Y_i}^2$ is the variance of component i for the pilot sample. The variables with an alpha correlation coefficient of at least 0.7 were taken to be reliable (Kaahwa, 2008). The reliability test findings are presented in the table below.

Table 3.3: Reliability coefficients (Cronbach's alphas) of the questionnaires

Variable	No. of items	Students Questionnaire	Instructors' questionnaire
Presence of learning theories	6	0.802	0.809
Use of learning theories	6	0.873	0.913
Learning theories relevant to Instructor training	6	0.917	0.947

The findings in the table above show that the Cronbach's alpha coefficient results were found to be above Cronbach's alpha value 0.700 as recommended by Ahuja (2005) and, therefore, considered satisfactory for research purposes. The alpha coefficients for students' questionnaire with regard to Presence of learning theories were 0.802 and that of instructors was 0.809. The alpha coefficients for students' questionnaire with regard to use of learning theories were 0.873 and that of instructors was 0.913. The alpha coefficients for student's questionnaire with regard to learning theories relevant to Instructor training were 0.917 and that of instructors was 0.947.

Furthermore, the questionnaire used was simple to understand questions in order to avoid ambiguity or problems related to misinterpretation. Additionally, the formulation of the statements was kept simple in order to avoid any response biases by leading the respondents to agree or disagree with the statement. Social desirability effect, the

tendency for respondents to guess what might be socially acceptable and respond according to this was avoided by confirming that the respondents' answers are kept strictly confidential and therefore, express their true feelings against the statements. For this reason no names were asked to be noted down. Therefore, the attempt of the respondents to make a good impression will be minimized (Mugenda and Mugenda, 2005).

Finally, the layout of the questionnaire was condensed in a few pages so that multiple pages would not act as a de-motivator for the respondents to comply with the study's most important requirement; the willingness of the respondents to respond in a motivated and genuine manner.

3.8 Procedure of Data Collection

The researcher first constructed the instruments and gave them to the supervisors for approval. The supervisors ascertained the face validity and clarity of the instrument. Changes were made as recommended by the supervisors. After the approval, the researcher went out in the field. Using the authority letter from the university, the researcher introduced himself to the relevant authorities in all the institutions from which data was collected. The researcher explained the purpose of the research and its benefits. The researcher assured the respondents of confidentiality in relation to the information they will provide. He then distributed questionnaires to the selected respondents and collected them after two weeks. Interviews were conducted within a day in each institution.

3.9 Data Analysis

This is the process of analyzing the collected data to get results of the study. Both quantitative and qualitative methods were used.

3.9.1 Quantitative Data Analysis

After data was collected, it was edited, coded and then analyzed.

3.9.1.1 Editing

After collecting the data, all questionnaires were examined to ensure that they were fully and correctly completed by respondents. The questionnaires were sorted on the basis of whether they had been correctly and fully completed or not. Questionnaires that were not fully completed were discarded. Only fully completed and clear questionnaires were used for data analysis.

3.9.1.2 Coding

The researcher designed a coding scheme during the data collection process. The coding scheme helps to check whether all the necessary questions have been included in the questionnaire. During coding, several answers/responses were in limited number of categories or classes. The categories/classes were formed in view of the research problem. The main advantage of coding is that, it puts the several answers into small classes which contain critical information required for analysis.

3.9.1.3 Analysis

Quantitative data analysis was done at the univariate level. Descriptive statistics, means, standard deviation, and frequency tables were used to present and quantitative data. The

analysis of quantitative data was performed using the Statistical Package for Social Sciences (SPSS). Quantitative data was checked for completeness, consistency and accuracy immediately after it was collected. Data entry screens for quantitative data were developed with all the necessary validation tools to eliminate error that could be introduced at the stage of data entry. The mean response and standard deviation as well as overall rating on each item were calculated. The mean response was taken to show the general view of respondents on the item. The more the items on which respondents generally agreed the higher the level of agreement of respondents on the variable. The overall rating showed the general level of agreement or disagreement to the item. This was taken as the predominant view of the respondents on that issue.

3.9.2 Qualitative Data Analysis

Qualitative responses were analysed using thematic analysis (Mugenda and Mugenda; 2005). Data was first coded into sub-themes and categorised into themes and used to give credence to qualitative findings. Data was examined and classified under themes derived from the objectives (Trochim, 2006). Clusters of text with similar meaning were presented together and analysed in relation to the study. The intensity and frequency with which certain ideas were mentioned were ascertained. The reasoning and meaning behind the ideas were established. This led to understanding the respondents' perceptions and beliefs regarding the research questions. The frequency of concepts showed the measure of direction or bias in data interpretation (Trochim, 2006).

3.10 Logistical and Ethical Considerations

The researcher operated within the available funds and other logistics that were within his reach. Ethical issues were observed with the seriousness they deserve. Specifically, informants were assured of the confidentiality of the information given to the researcher and his assistants. The purpose of the data to be collected was explained to the respondents to allay any fears that may arise from the exercise. In addition the respondents were given an environment that could allow them to respond willingly and voluntarily.

3.11 Chapter Summary

This chapter described the research design as a crucial element, and the design was the quasi-experimental and descriptive exploratory survey. It has also explored and described the relevance of the learning theories in the training of technical teachers and instructors. In the chapter, the researcher described the study area from which the target population was expected, and this included training institutions of technical teachers and instructors, BTVET institutions which train technicians, craftsmen and women, and the Ministry of Education and Sports. The sampling procedure and size were described as well as the nature of instruments and data collection. The researcher further explained the piloting of the research instruments, the validity and reliability of the research instruments and the data analysis procedures. The researcher also explained the logical and Ethical issues together with the expected output. The next chapter is a data presentation, analysis and interpretation.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION

4.0 Introduction

This chapter presents the findings of the study, which examined the relevance of learning theories in the training of technical teachers and instructors in Uganda. Specifically the study examined whether the theories of Constructivism, Behaviourism, and Cognitivism are being used in the training of technical teachers and instructors, how they are used and whether they are still relevant in training competent technical teachers and instructors. Analysis addressed the three research questions that were the major focus of the study. Frequency counts and percentages were run to determine demographic characteristics of respondents. Descriptive statistics were used to explore aspects of the independent variables that significantly contributed to the variation in the dependent variable. The findings are presented in four parts in relation to the study objectives. The study was carried out across the country. Data was collected from technical teachers and instructors, student teachers, and administrators of technical and vocational institutions and Government officials from the Ministry of Education and Sports. The instruments used to collect data included; questionnaires, interview and observation guides. The findings are presented in four sections according to research objectives that were the focus of the study.

4.1. Demographic information of respondents'

Demographic information of respondents that was related to the research questions and would therefore improve the validity and reliability of respondents was collected. The findings are presented in the table below.

4.1.1 Demographic information of students

Data was collected from students who were training as technical teachers and instructors. The findings are presented below.

4.1.1.1 Gender distribution of students

Students were asked to indicate their gender. The findings are indicated below.

Table 4.1: Gender of students (N=145)

Gender	Frequency	Percent
Male	111	76.6
Female	34	23.4
Total	145	100.0

Source: Primary data from the field (2015)

The results in table 4.1 show that the majority of students were male (76.6 %) and the rest (23.4 %) were female. Hence the views of both genders were represented.

4.1.1.2 Age category of Respondents (N=145)

In the table below, respondents indicated their age category.

Table 4.2: Age of students (N=145)

Category	Frequency	Percent
18-30	118	81.4
31-45	20	13.8
46-55	7	4.8
Total	145	100.0

Source: Primary data from the field (2015)

The results in table 4.2 show that the majority (81.4%) of students were aged 18- 30 years, followed by 13.8 % who were aged 31-45 years, then by 4.8 % who were aged 46-55 years. Therefore respondents were mature enough to understand the issues that were being investigated.

4.1.1.3 Institutions attended by students

Students indicated the institutions where they were studying and the findings are shown in the table below.

Table 4.3: Institutions attended by Students (N=145)

Institution	Frequency	Percent
NIC-Abilonino	50	34.5
Nakawa VTI	16	11.0
Jinja VTI	59	40.7
KYU	9	6.2
KALLOTTE	7	4.8
Butende Tech. Inst	2	1.4
St.Kizito-Kitovu	2	1.4
Total	145	100.0

Source: Primary data from the field (2015)

The findings in the table above show that students came from a total of seven (7) institutions. The majority (40.7%) were from Jinja VTI followed by 34.5% from NIC-Abilonino, then by 11.0% from Nakawa VTI and by 6.2 % from KYU. Other students were from KALLOTTE (4.8%), Butende Technical Institute (1.4%) and St.Kizito Technical Institute Kitovu (1.4%). Hence students came from both government (4) and private institutions (3). Therefore the views of both types of institutions were represented

which made the findings more representative of issues related to technical etcher training in Uganda.

4.1.1.4 Level of Study

Students also indicated whether they were degree, diploma or certificate students.

Table 4.4: Level of Study (N=145)

Course category	Frequency	Percent
DITTE	137	94.5
TVET student	5	3.4
DTTE	2	1.4
CTTE	1	0.7
Total	145	100.0

Source: Primary data from the field (2015)

The findings in the table above show that the majority of students 117 were pursuing a Diploma in Instructor Technical Teacher Education (DITTE) (94.5%). Students from technical and vocational institutions were 5, 3.4%. Students pursuing DTTE were 2, 1.4% and of CTTE was 1, which is 0.7%.

4.1.1.5: Year of Study

Students were also asked to indicate their year of study as shown in the table below.

Table 4.5: Year of study (N=145)

Year of study	Frequency	Percent
I	15	10.3
II	130	89.7
Total	145	100.0

Source: Primary data from the field (2015)

The findings in the table above show that the majority were in year II their final year of study and the rest (10.3%) were in year I. This implies that the majority of students selected had some experience in the teaching methods of their institutions and so were able to give reliable responses.

1.8.1.1 Technical Field of students

Student also indicated their technical fields in the table below.

Table 4.6: Technical Field of students (N=145)

Technical Field	Frequency	Percent
Agriculture	13	9.0
Civil and Building	41	28.3
Electrical Installation	21	14.5
Mechanical	39	26.9
Tailoring and Garment Cutting	17	11.7
Electronics	5	3.4
Plumbing	8	5.5
Home Economics	1	0.7
Total	145	100.0

Source: Primary data from the field (2015)

The findings in the table above show that the majority 28.3% of students were in Civil and Building, followed by 26.9% who were in Mechanical Engineering then by 14.5 % who were in Electrical Installation and then by 11.7% who were in Tailoring and Garment Cutting. Then 9% were in Agriculture, 5.5% were in Plumbing, 3.4% were doing Electronics and 0.7% were doing Home Economics. Hence the findings show that a total

of 8 technical fields were represented which is about 80% of the technical fields in technical education in Uganda.

4.1.2 Demographic information for technical teachers and instructors

Demographic information for technical teachers and instructors was also collected. The findings are presented in the tables below.

4.1.2.1 Gender distribution of technical teachers and instructors

Technical teachers and instructors were asked to indicate their gender. The findings are indicated below.

Table 4.7: Gender distribution of Technical Teachers and Instructors (N=81)

Gender	Frequency	Percent
Male	64	79.0
Female	17	21.0
Total	81	100.0

Source: Primary data from the field (2015)

The findings in the table above show that the majority (79%) of technical teachers and instructors were male and the rest (21 %) were female. Hence the views of both genders were represented.

4.1.2.2 Institutions where technical teachers and instructors work

Technical teachers and instructors indicated the institutions where they were working.

The findings are shown in the table below.

Table 4.8: Institutions of technical teachers and instructors (N=81)

Institution	Frequency	Percent
NIC-Abilonino	1	1.2
Nakawa VTI	5	6.2
Jinja VTI	33	40.7
KYU	3	3.7
Kisubi Tech. Inst.	20	24.7
Kakira-sugar works	2	2.5
Butende Tech. Inst.	5	6.2
UTC Elgon	1	1.2
KALiotte	2	2.5
St Kizito Tech. Inst. Kitovu	9	11.1
Total	81	100.0

Source: Primary data from the field (2015)

The findings in the table above show that the majority of technical teachers and instructors were working in Jinja VTI, followed by 24.7% who were working in ST.

Joseph's Technical Institute Kisubi, then by 11.1% working in St Kizito Technical Institute–Kitovu and 6.2% who were working in Butende Technical Institute and another 6.2% working in Nakawa VTI. Kakira Sugar works (2.5%), NIC Abilonino (1.2%).

Other lecturers worked in KALiotte (2.5%) and KYU (3.7%). The findings show that out of the 10 institutions from which technical teachers and instructors were selected, eight (8) were government and two (2) were private. Hence lecturers, technical teachers and instructors were selected from across-section of institutions both government and private and their views were representative of the state of affairs with regard to relevance and use of learning theories in training technical teachers and instructors.

4.1.1.4 : Responsibility of technical teachers and instructors

Technical teachers and instructors were asked to indicate their responsibility in the institutions in addition to teaching. Their responses are presented in the table below.

Table 4.9: Responsibility of technical teachers and instructors (N=81)

Responsibility	Frequency	Percent
Teaching	70	86.4
Administrator	11	13.6
Total	81	100.0

The findings in the table above show that the majority of technical teachers and instructors did not have any other responsibilities apart from teaching. Only 13.6% also doubled as administrators.

4.1.1.5 : Tenure of Service

The researcher also explored the number of years respondents had worked in technical institutions. The findings are indicated in the table below.

Table 4.10: Tenure of service of technical teachers and instructors (N=81)

Years	Frequency	Percent
1-5 years	20	24.7
6-10 years	26	32.1
11-15 years	10	12.3
16 years and above	25	30.9
Total	81	100.0

The findings in the table above show that the majority (32.1%) of technical teachers and instructors had served for 6-10 years, followed by 30.9 % who had served for 16 years and above, then by 24.7% who had served for 1-5 years , and finally by 12.3% who had served for 11-15 years. Therefore, respondents had served long enough as technical teachers and instructors and were hence very familiar with the curriculum and teaching

4.2 Learning theories present in the curriculum for training technical teachers and Instructors in Uganda

The first objective of the study was to examine learning theories present in the curriculum for training technical teachers and instructors in Uganda. To achieve this objective, students and lecturers indicated their level of agreement and disagreement to statements that indicated existence of learning theories in the curriculum. Examination of curriculum documents of institutions were made and interviews were done with instructors, institution administrators and ministry officials from BTVET and TIET departments responsible for ensuring quality standards in the training of technical teachers and instructors in Uganda. This was done to supplement and confirm the information from the questionnaires. The findings are presented below.

4.2.1 Instructors' responses on presence of learning theories in the curriculum

First, instructors indicated their level of agreement and disagreement to six (6) statements that indicated existence of learning theories in the curriculum. Responses indicated whether, the curriculum highlights, encourages lecturers to use and base all their activities with students on learning theories.

Instructors first indicated whether they have copies of the curricula they follow. The findings are presented in the table below.

Table 4.11: Whether instructors have curricula (N= 81)

Response	Frequency	Percent
Yes	69	85.3
Not sure	8	9.8
No	4	4.9
Total	81	100.0

The findings in the table above show that the majority (85.3%) of instructors had copies of the curriculum, 9.8% were not sure, and only 4.9% said they did not have copies. Therefore, generally the majority of instructors knew what was in the curriculum since they had copies. So they were able to accurately respond to questions on whether the curriculum highlights, encourages instructors to use learning theories in their work.

In the table below instructors indicated whether the curriculum has learning theories by indicating whether they agreed or disagreed to the statements below.

Table 4.12: Instructors' Mean responses, SD and Ratings on presence of learning**Theories in the curriculum (N= 81)**

Aspect	Mean response	sd	Rating
Curriculum only highlights use of learning theories in the pedagogy courses.	4.1	2.1	A
Curriculum encourages lecturers to use learning theories when training students in all courses.	1.1	0.96	SD
Curriculum encourages use of Behaviourism learning theory.	2.2	1.4	D
Curriculum encourages use of Cognitive learning theory.	1.3	2.1	SD
Curriculum encourages use of Constructivism	2.1	1.4	D
Curriculum encourages lecturers to base all their work with students on a specific learning theory	3.1	0.56	UD

Source: Primary data from the field (2015)

Key: SD= strongly disagree, D=disagree, UD=undecided, A=agree, SA=strongly agree

The findings in the table show that generally instructors agreed (mean response = 4.1, sd = 2.1) that the curriculum only highlights use of learning theories in the pedagogy courses. With regard to whether the curriculum encourages instructors to use learning

theories when training students in all courses, the majority of instructors strongly disagreed (mean response = 1.1, sd = .96). In relation to whether curriculum encourages use of Behaviourism in training, instructors disagreed (mean response = 2.2, sd = 1.4). As far as the curriculum encouraging use of Cognitive learning theory is concerned, instructors strongly disagreed (mean response = 1.3, sd = 2.1). With regard to the curriculum encouraging use of Constructivism, respondents disagreed (mean response = 2.1, sd = 1.4). Finally as far as the curriculum encouraging lecturers to base all their work with students on a specific learning theory is concerned, respondents were undecided (mean response = 3.1, sd = 0.56). These findings show that generally learning theories are not fully infused in the curriculum for training technical teachers and instructors in Uganda. This is an indication that probably institutions do not hold Learning Theories as being important in the training of Technical Teachers and Instructors. This finding agrees with Altbach (1991) who said that Learning Theories play a significant role in training effective TVET teachers. They are used to develop problem solving skills and creativity. Learning Theories are only mentioned in the pedagogy courses, especially psychology and are not highlighted in the rest of the core course units such as General and Special Methods. This implies that as Burkhart (1996) argues not infusing learning theories in the training of TVET teachers hinders acquisition of critical skills such as research, navigation, information management and independent thinking. Wadi, (2000) says that, learning theories enable TVET teachers see the benefits of learning and using technology to solve practical problems. In this way they are able to train students to use technology as a tool for solving community, national and global problems.

4.2.2 Students' Responses on presence of learning theories in the Curriculum

Students then indicated their level of agreement and disagreement to six (6) statements that indicated existence of learning theories in the course outlines. Responses indicated whether, the course outlines, highlight and encourage students to place emphasis on specific learning theories during their training. Course outlines are summaries of themes that are covered in a course unit. Through course outlines, students are able to know what the curriculum contains.

Students were first asked whether they are given course outlines for the course units they study, the findings are presented in the table below.

Table 4.13: Whether students have course outlines (N= 145)

Years	Frequency	Percent
Yes	117	80.6
Not sure	23	15.8
No	5	3.6
Total	145	100.0

The findings in the table above show that generally students are given course outlines because (80.6%) said they have course outlines. 15.8% were not sure and only 3.6 % said they did not have course outlines. This implies that most of the students were able to tell whether course outlines have learning theories or not.

Students then were asked to indicate whether their course outlines highlight specific learning theories on which their training is based. The findings are shown in the table below.

Table 4.14: Student's Mean responses, SD and Ratings on presence of learning theories

in the course outlines (N= 145)

Aspect	Mean response	sd	Rating
Course outlines only mention learning theories in the pedagogy courses	3.8	1.1	A
Course outlines provided are all infused with learning theories	1.1	2.3	SD
Course outlines mention Behaviourism	3.1	1.4	UD
Course outlines mention Cognitive learning theory	2.9	.78	UD
Course outlines mention Constructivism	1.1	2.1	SD
Course outlines mention specific learning theories on which learning will be based	2.1	1.0	D

Source: Primary data from the field (2015)

Key: SD= strongly disagree, D=disagree, UD=undecided, A=agree, SA=strongly agree

The findings in the table generally indicate that learning theories are not adequately highlighted in the course outlines given to students. Generally students agreed that learning theories are only mentioned in the pedagogy course outlines especially psychology (mean response = 3.8, sd = 1.1). With regard to course outlines being infused with learning theories, students strongly disagreed (mean response = 1.1, sd = 2.3). With regard to course outlines mentioning Behaviorism, students were undecided (mean response = 3.1, sd = 1.4). As far as course outlines mentioning the Cognitive learning theory, students were also undecided (mean response = 2.9, sd = .78). In relation to course outlines mentioning Constructivism, students strongly disagreed (mean response = 1.1, sd = .21). As far as course outlines mentioning specific learning theories on which learning will be based is concerned, students disagreed (mean response = 2.1, sd = 1.0). These findings show that students agree that course outlines do not highlight learning theories to be used in their training. This confirms the views of instructors in the section above that learning theories are not sufficiently highlighted in the curriculum for training technical teachers and instructors in Uganda.

4.2.3 Findings from examination of curricula documents

Copies of the curricula for government institutions (NIC-Abilonino, KYU, Kichwamba UTC, Nakawa VTI, St. Joseph's Technical Institute Kisubi, St Kizito Technical Institute Kitovu) and two private institutions, KALlotte and Butende Technical Institute were examined by the researcher to assess the extent to which they highlighted learning theories for use in training. Hence a total of 8 copies were examined. The findings are shown in the table below.

Table 4.15: Researcher’s examination on existence of learning theories in curriculum

Aspect examined	Times aspects was seen out of 8
Learning theories mentioned in pedagogy course units.	4
Learning theories indicated in most course units	0
Learning theories mentioned in some activities	2
Learning theories mentioned in assessment	1
Behaviourism mentioned	2
Cognitivism mentioned	1
Constructivism mentioned	1

Source: Primary data from the field (2015)

The findings in the table above show that learning theories were mainly mentioned only in psychology courses (4/8), were not indicated in all course units (0/8) and were rarely mentioned in some activities (2/8). It was evident that learning theories were not often mentioned in assessment because (1/8), Behaviourism was mentioned a few times (2/8), Cognitivism and Constructionism mentioned (1/8) each. The time when an aspect was mentioned once or twice was in government institutions with a traditional of training instructors, KYU and NIC Abilonino.

4.2.4 Interview responses on existence of learning theories in curriculum

Interviews were conducted with senior instructors, some ministry of education officials in charge of quality assurance and curriculum managers from BTVET as well as some senior managers of the institutions. Ministry officials and institution managers confirmed that learning theories do not appear in most of the curriculum apart from the pedagogy course units. A senior education assistant from BTVET said that this is partly because, *“Teaching models are not used intentionally in training technical teachers”*. A senior instructor from NIC Abilonino added that in the training of technical teachers and instructors, *“little emphasis is placed on planned and systematic ways of doing things which may require principles from learning theories”*. This implies that teaching models were not being used in the training of technical education teachers; hence institutions saw little need for using Learning Theories. A registrar from St. Joseph’s Technical Institute affirmed that *“trainers used their own skills and experience to reinforce and assess learning, some of which were borrowed from learning theories”*.

The findings above show that the nature and philosophy of training TVET teachers used in Ugandan institutions does not support use of Learning Theories. Delannoy (2000) argues that Learning Theories are more relevant if institutions have a teaching philosophy, such as either training technically or pedagogically competent instructors or both. It is also likely that institutions did not place emphasis on the kind of trainer they wanted to produce. Radin (2009) says that for learning theories to be relevant in the training of instructors, institutions have to place emphasis on either giving learners

opportunity to construct knowledge in their own understanding, by reflecting on own experiences, effective reinforcement or encouraging using individual mental processes to assimilate and accommodate new knowledge.

4.3 The Extent to which learning theories are applied in the training of technical teachers and instructors

The second objective of the study was to find out the extent to which learning theories are being applied in the training of technical teachers and instructors. To achieve this objective, again students and instructors indicated their level of agreement and disagreement to statements that indicated application of learning theories in the training. Observations of some lessons of technical teachers and instructors by the researcher were made and interviews were done with officials responsible for ensuring quality standards in the training of technical teachers and instructors in Uganda. The findings are presented below.

4.3.1 Instructors responses on application of learning theories

Instructors indicated the extent to which they apply learning theories by indicating whether they agree or disagree with 6 statements on use of learning theories in the training of technical teachers and instructors. The findings are indicated in the table below.

Table 4.16: Instructors' Mean responses, SD and Ratings on application of learning theories (N= 81)

Aspect	Mean response	Sd	Rating
Learning theories only applied in Pedagogy course units	4.5	2.1	A
Instructors use learning theories in all aspects of training	1.4	2.2	SD
Behaviourism is used in training students	3.1	1.1	UD
Cognitivism is used in training students	2.1	1.4	D
Constructivism used in training students	1.1	1.2	SD
Whatever instructors do with students is based on a specific learning theory	2.1	1.3	D

Source: Primary data from the field (2015)

Key: SD= strongly disagree, D=disagree, UD=undecided, A=agree, SA=strongly agree

The findings in the table above show that learning theories are only partly applied. With regard to learning theories being applied in Pedagogy course units, instructors agreed (mean response = 4.5, sd = 2.1). As far as instructors using learning theories in all aspects of training, respondents strongly disagreed (mean response= 1.4, sd = 2.2). In relation to using Behaviourism in training students respondents were undecided (mean response =

3.1, sd = 1.1). As far as instructors using Cognitivism in training students, respondents disagreed (mean response = 3.1, sd = 1.1). With regard to constructivism being used in training students, respondents strongly disagreed (mean response = 1.1, sd = 1.4). In relation to instructors basing on what they do with students on a specific learning theory respondents disagreed (mean response = 2.1, sd = 1.3). This finding shows that institutions do not have deliberate efforts in using learning theories in training technical teachers and instructors. Learning theories are only used to train teachers in pedagogy. This scenario has resulted from lack of a specific TVET teacher training philosophy. Wadi (2000) shows that learning theories are important in highlighting the training philosophy of institutions. But it was evident that institutions followed no specific teacher train philosophy and so, did not see the use of learning theories. The curriculum currently being followed did not emphasise use of learning Theories. The theories were only viewed as just a desirable subject instead of being an essential subject. This finding agrees with Kadocsa and Koppony (2004) who said that the use of Learning Theories in technology education is very much dependent on the teaching philosophy and the way the curriculum is organized. If the curriculum is organized in such a way that Learning Theories are the skeleton on which training is built, they will be emphasized.

4.3.2 Students' responses on application of learning theories

Students indicated whether learning theories are being applied by their instructors during their training. The findings are presented in the table below.

Table 4.17: Students' Mean responses, SD and ratings on application of learning theories (N= 145)

Aspect	Mean response	sd	Rating
Learning theories are applied in Pedagogy course units	4.2	1.1	A
Learning theories are used in all that we do at the institution	1.1	2.1	SD
Some of our learning is based on Behaviourism learning	3.1	1.5	UD
Our training is also based on Cognitivism	3.0	1.4	UD
Instructors use Constructivism when training us	2.1	1.2	D
Instructors always base our activities on a specific learning theory	3.1	1.3	UD

Source: Primary data from the field (2015)

Key: SD= strongly disagree, D=disagree, UD=undecided, A=agree, SA=strongly agree

The table shows that students agreed (mean response = 4.2, sd = 1.1) that learning theories are applied in Pedagogy course units. With regard to learning theories being used in all that students do at the institution, respondents strongly disagreed (mean response = 1.1, sd = 2.1). As far as some of the learning being based on Behaviourism learning

theory, respondents were undecided (mean response = 3.1, sd = 1.1). With regard to their training being based on Cognitivism respondents disagreed (mean response = 3.0, sd = 1.5). In relation to instructors using constructivism when training them, students disagreed (mean response = 2.1, sd = 1.4.). Finally in relation to instructors always basing students learning activities on a specific learning theory, students were undecided (mean response = 3.1, sd = 1.3), on this issue. These findings further confirm the findings from instructors that learning theories are not actively applied in the training of technical teachers and instructors.

4.3.3 Lesson observations on application of learning theories

Technical teachers and instructors' lessons and lesson plans were again observed in six government institutions (NIC-Abilonino, KYU, UTC Kicwamba, Nakawa VTI, St.Joseph's Technical Institute Kisubi, St. Kizito Technical Institute Kitovu) and two private institutions to assess the extent to which learning theories were applied in the training of technicians craftsmen, technical teachers and instructors. Two lessons, one in pedagogy and another in practical work were observed, making a total of 16 observations. The findings are shown in the table below.

Table 4.18: Researcher’s observations on use of learning theories in lessons and lesson plans

Aspect observed	Times aspect was seen out 16
Learning theory indicated in lesson plan	2
Learning theory mentioned to students	1
Teaching based on learning theory	0
Learning activities based on learning theory	0
Assessment based on learning theory	0

Source: Primary data from the field (2015)

The findings in the table above show that learning theories were mainly used in pedagogy lessons (2/16) and they were mentioned once to students (1/16). Observations further indicated that teaching was not based on learning theory (0/16), learning activities were not based on learning theory (0/16), and neither was student assessment based on learning theory (0/16). Hence it is clear that learning theories are not actively applied in the training of technical education teachers. This is most likely due to the fact that institutions do not believe that learning theories are relevant in the training of technicians. Technical teachers, and instructors. It is likely the reason why institutions are placing little emphasis on vocational pedagogy. This was evident from the little focus that was placed on high quality and effective teaching and learning in most of the lessons that were observed.

4.3.4 Interview responses on application of learning theories

Interviews were conducted with senior instructors of lessons that were observed, quality and curriculum managers from BTVET and some senior managers of the institutions. They indicated the reason why use of learning theories is not emphasised in the training of technical education teachers. The acting commissioner BTVET intimated that *“institutions are focusing less on vocational pedagogy, high quality and effective teaching and learning in technical education”* He added that *“it is application of learning theories that can ensure high quality and effective teaching and learning in technical education”*

A senior Lecturer from KYU added that technical education is *“more competence than knowledge based”*. So it is only knowledge areas that directly support competencies which are emphasised. Another senior lecturer from UTC Kicwamba said that *“learning theories are “pure theory” yet technical education is based on applied theory”*. He added that knowledge in technical education is *“essential embedded knowledge”*. This is knowledge that underpins the particular competence that has been specified in the learning outcome. Hence, knowledge cannot, in this approach, be the starting point; the ‘essential embedded knowledge’ is the starting point. This implies that the training of technical teachers and instructors in Uganda has taken a master-artisan trainer mode instead of a combination of a technical teacher in institution-based workshop. However, the registrar from NIC-Abilonino affirmed that technical and vocational teaching and learning was *“fundamentally not different from any other type of teaching and learning, so learning theories were still very crucial in this context”*. Given the

importance of context, in training, Learning theories ought to be used to guide teaching in these institutions.

4.4 Learning theories that should be used to produce a quality technical teacher and Instructor in Uganda

The last objective of the study was to explore learning theories that should be used in producing a quality technical teacher or instructor in Uganda. To achieve these objective instructors' views on the relevance of learning theories were examined. Instructors responded to six (6) items that indicated whether they agreed or disagreed to the relevance of learning theories in the training of technical teachers and instructors.

4.4. 1: Instructors views on learning theories that should be used in producing a Quality technical teacher and instructor in Uganda

Table 4.19: Instructors' Mean responses, SD and Ratings on application of learning theories (N= 81)

Aspect	Mean response	sd	Rating
All learning theories should be applied in training technical teachers and instructors	1.1	1.3	SD
Learning theories should only be applied in pedagogy lessons	4.4	2.1	A
Behaviourism is useful in training technical teachers and instructors	2.1	1.4	UD
Cognitivism is relevant to training of technical teachers and instructors	4.2	1.5	A
Constructivism is useful in training technical teachers and instructors	4.5	1.2	A
Whatever instructors do with students should be based on a specific learning theory	3.1	1.1	UD

Source: Primary data from the field (2015)

Key: SD= strongly disagree, D=disagree, UD=undecided, A=agree, SA=strongly agree

The findings in the table show that respondents strongly disagreed (mean response = 1.1, sd = 1.3), that all learning theories should be applied in training technical teachers and instructors. They were also undecided whether, whatever instructors do with students should be based on a specific learning theory (mean response = 3.1, sd = 1.1) and were undecided on whether Behaviourism is useful in training Technical Teachers and Instructors (mean response = 1, sd = 1.4). However, respondents agreed that learning theories should only be applied in pedagogy lessons (mean response = 4.4, sd = 2.1), that Cognitivism is relevant to the training of technical teachers and instructors (mean response = 4.2, sd = 1.5) and also that Constructivism is useful in training technical teachers and instructors (mean response = 4.5, sd = 1.2). These findings imply that instructors believe that learning theories can be relevant in the training of technical education teachers. They agreed that both cognitivism and constructivism are the most relevant theories in the training of technical teachers and instructors.

These findings agree with Radin (2009) who said that constructivism is relevant in technology education training because it explains how knowledge is constructed when new information comes into contact with existing knowledge. Using this theory students are able generate own “rules” and mental models, which they use to make sense of own experiences. Also Wells (2007) adds that constructivism enables students to acquire practical skills.

The findings also agree with Bruner (1978) who says that, individuals through constructivism are able to actively construct knowledge by comparing new ideas or concepts with their current knowledge.

4.4.2 Interview responses on learning theories that should be used in producing a Quality technical teacher or instructor in Uganda

Interviews were conducted with senior instructors, some ministry of education officials in charge of quality assurance and curriculum managers from BTVET as well as some senior managers of the institutions. The senior education officer in charge of technical teacher education in BTVET said that *technical education is mainly characterised by learning by doing' so hands-on training is more important than pedagogic engagement.*” So, learning theories that could bring out this fact were more relevant. The head of technical teacher education section in the teacher education department in KYU affirmed that *“vocational teaching and learning is underpinned by experiential learning and learning styles theories, and these are most relevant to this field”*. Hence, interviews reveal that, learning theories that encourage problem-solving and application of procedures are more relevant.

A senior Instructor from Nakawa VTI added that *“while it is true that scientifically grounded knowledge base is needed by technical education instructors in order to engage in the kind of problem-solving required by more advanced levels of technology, it has to be combined with tacit knowledge and competence that could only be acquired through use of learning theories”*. The acting commissioner of BTVET summarised this issue by saying that *“a good technical teacher should be able to assess learning needs of students, plan and manage learning systems at operational and strategic level, design learning, provide counselling and specialized learning support in an integrated communication technology (ICT). This can only be achieved by using principles from*

relevant learning theories”. These findings are in agreement with Wertheimer (1996) and Vygotsky (1986) who advise that TVET teachers need not to have only subject knowledge, but they need to know how to teach that subject and how to construct a curriculum. This has to be the ‘core’ of TVET and not the ‘periphery’.

4.5 Chapter Summary

The current training of technical teachers and instructors is still too passive and uninspiring. Vocational pedagogies still remain in their infancy and relatively little has been done to improve the using of learning theories. The key to the delivery of excellent teaching and learning in technical teacher training is knowledge and understanding about the role of learning theories in both pedagogy and training of technical teachers and instructors. Modern technical teacher education is interrelation between three foundational dimensions: Formal subject or technical knowledge, pedagogic expertise and practical workplace experience. Although acknowledging that, especially at instructor level, educational knowledge is lacking in terms of linking theoretical knowledge to operational expertise. There is need to replace educational knowledge as ‘generic’ with a stronger understanding of the relation between a particular form of knowledge and its pedagogy. There is need to move away from ways that separate knowledge from practice in training technical teachers and instructors and adopt those that integrate the two. This is due to the fact that different forms of knowledge have a strong effect on what counts as practice. Only then will we be able to have technical teacher education that will meet the current knowledge demands of innovation and creativity in Uganda.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

5.0 Introduction

The chapter presents the summary, conclusions, recommendations, and suggestions for further research of the study that investigated the relevance of learning theories in the training of technical teachers and instructors in Uganda. The study used questionnaire, interviews and observations to establish the relevance of the learning theories in the training of technical, teachers and instructors in Uganda and its implication for “Skilling Uganda”. The findings of the study were coded, analysed, discussed and presented in chapter four.

5.1 Summary of Findings

The findings show that respondents agreed that learning theories are still relevant in the training of technical teachers and instructors. Respondents concurred that learning theories help technical teachers and instructors to translate information to be learned into a format appropriate to the learner's current state of understanding, organize learning in a way that is easier for students to grasp concepts and also rewards appropriate learning behaviours. Student's benefits from teachers' use of learning theories by being able to engage in active learning build upon what they have already learned and subsequently discover knowledge by themselves. Despite this scenario, learning theories were not intentionally used in training technical teachers and instructors. Given the fact that little

emphasis was placed on systematic ways of doing things institutions saw little need for using learning theories. There was limited planning of teaching since trainers used their own skills and experience to do their work show that learning theories are not so much used in the training of technical teachers and instructors and they did not appear in most of the curriculum apart from the pedagogy course units. This was due to the fact that teaching models are not used intentionally in training and little emphasis is placed on planned and systematic ways of doing things which may require principles from learning theories. Trainers used their own skills and experience to reinforce and assess learning, some of which were borrowed from learning theories. Institutions focused less on vocational pedagogy, quality and effective training of technical teachers and instructors. Learning theories were perceived as pure theory that had little application to technical teacher education perceived as applied theory. Participants agreed that learning theories enable teachers to acquire professional skills such as ability to analyze learning needs of students, plan, and design and manage learning as well as provide counselling. Respondents further agreed that learning theories promote hands-on training and experiential learning. Hence learning theories are very relevant and can ensure high quality and effective teaching and learning in technical teacher education.

However, learning theories were not included in all the course units that were done by students. Learning theories were only highlighted in the Psychology course unit. This implies that leaning theories were not taken as learning and teaching philosophy for technical teacher training. They were taught as standalone course. Hence cognitivism, behaviorism, and constructivism are not infused into the course outlines and curriculum

as a result; they do not significantly influence the training of technical teachers and instructors.

So, trainees do not learn how to use them in their teaching activities and subsequently may not be able to use them. While trainers taught theories, but did not base their activities on them. This was partly due to the fact that little emphasis is placed on planned and systematic ways of doing things which may require principles from learning theories. Trainers used their own skills and experience to reinforce and assess learning, few of which were borrowed from learning theories. Institutions focused less on vocational pedagogy, quality and effective training of technical teachers and instructors.

5.2 Conclusion

5.2.1 Learning theories present in the curricula and teaching documents of technical teacher and instructor training institutions

The findings indicated that learning theories were mentioned in the curricula documents of the institutions. Students also received course outlines that mentioned some learning theories. However learning theories were not included in all the course units that were done by students. Learning theories were only highlighted in the Psychology course unit. Lesson observations also indicated that trainers did not intentionally based their teaching plans on any specific learning theories.

The MOES officials also put forth little effort to ensure that the training of technical teachers and instructors in based on specific learning theories. This implies that leaning theories were not taken as learning and teaching philosophy for technical teacher training.

They were taught as standalone course. Hence the three learning theories that are relevant to the training of technical teachers and instructors; cognitivism, behaviourism, and constructivism are not infused into the course outlines and curriculum as a result they do not significantly influence the training of technical teachers and instructors. This means that trainees do not learn how to use them in their teaching activities and subsequently may not be able to use them.

5.2.2 Extent to which learning theories are applied in the training of technical teachers and instructors

The findings showed that learning theories are applied only to a limited extent in the training of technical teachers and instructors. Learning theories were only taught in the pedagogy course units, especially that of psychology. Lesson observation revealed that trainers taught theories but did not base their activities on them. Respondents indicate that this was partly due to the fact that little emphasis is placed on planned and systematic ways of doing things which may require principles from learning theories. Trainers used their own skills and experience to reinforce and assess learning, few of which were borrowed from learning theories. Institutions focused less on vocational pedagogy, quality and effective training of technical teachers and instructors. Learning theories were perceived as pure theory that had little application to technical teacher education perceived as applied theory. The trainers also felt that TVET was fundamentally different from any other type of teaching and learning, so learning theories were not very crucial in this context.

5.2.3 Learning theories that should be used to produce a quality technical teacher and instructor in Uganda

Respondents agreed that learning theories are relevant to produce a quality technical teacher and instructor in Uganda. Respondents agreed that learning theories enable teachers to acquire professional skills such as ability to analyze learning needs of students, plan and design and manage learning as well as provide counselling. Respondents further agreed that learning theories promote hands-on training and experiential learning. In the case of technical teachers and instructors, learning theories enable them to cultivate in students a positive predisposition towards learning to structure learning so that it can be most readily grasped by the learner. Also to discover the most effective sequences in which to present material and to effectively use rewards and punishments to nurture love for self-actualization in students. Students also benefit by learning how to generate new propositions and manipulation of information. However, institutions viewed learning theories as mere pedagogic engagement and yet perceived hands-on -training as being more important than pedagogic engagement. They felt that it was difficult to use learning theories in vocational teaching and learning as experiential learning that encourages problem-solving and application of procedures. While it is true that scientifically grounded knowledge base is needed by technical education instructors in order to engage in the kind of problem-solving required by more advanced levels of technology, it has to be combined with tacit knowledge and competences that could only be acquired through use of learning theories.

The findings overwhelming supported the use of the relevant learning theories in training technical teachers and instructors so as to build the hands-on training. In turn these well trained technical teachers and instructors will produce competent technicians and craftsmen. Furthermore, from the findings of the study through the respondents, the conclusion is that, the teachers and instructors need not only have subject knowledge, but they need to know how to teach that particular subject more so practically and to construct a curriculum. The application of learning theories being the guiding principle, more so the constructivism, behaviourism and cognitivism theories.

Learning theories are important in enabling technical education teachers to acquire professional skills such as ability to analyse learning needs of students, plan, and design and manage learning as well as providing counselling. This can ensure high quality and effective teaching and learning in technical teacher education. There is need to re-think the design and implementation of TVE teacher training in Uganda by infusing relevant learning theories. This will promote experiential learning, which will subsequently improve the quality of TVE teachers and instructors in Uganda.

5.3 Recommendations

Arising from the study, recommendations are made by the researcher basing on the main areas of investigations which were; learning theories emphasized in the training of technical teachers and instructors, extent to which learning theories are being applied, assessing learning theories relevant to the training.

MOES

First of all, government through BTVET should completely re-think the design and implementation of TVE teacher training in Uganda. Relevant learning theories should be infused in all activities of training institutions and this should be taken as priority. The government should open TVET teacher training in Uganda to open up to new and effective teaching and learning approaches that are based on the principles of learning theories.

TVE Teacher Training Institutions

TVE teacher trainers in Uganda should develop extensive knowledge in the use of learning theories in teaching. Training institutions should infuse constructivism and cognitivism into TVE teacher and instructor training to promote experiential learning. This will subsequently improve the quality of TVE teachers in Uganda. Training institutions should also include learning theories in all the course units more so in the core course units like General and Special Methods. Also the technical teachers and instructors should be encouraged to use the three relevant learning theories; constructivism, behaviourism, and cognitivism in the training of technical teachers, instructors, technicians and craftsmen in TVET institutions.

NCDC

The National Curriculum Development Centre (NCDC) should fund a study to establish the extent to which includes the relevant learning theories in technical and vocational education curricula.

5.4 Suggestions For Further Research

The findings of this research point to the need for further research in the following areas;

1. Research need to be done to establish the extent to which the National Curriculum Development Centre (NCDC) includes the relevant learning theories in the technical and vocational education curricula.
2. Replication of the study on a national sample of TVET institutions would also be helpful in understanding the issues of the relevance of learning theories in the training of TVE teachers and instructors at this level.
3. There is need to explore how learning facilities influence the applicability of learning theories in the training of technical teachers and instructors in Uganda

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APPENDICES

APPENDIX I: UNIVERSITY GENERAL INTRODUCTORY LETTER

APPENDIX II: PhD RESEARCH INTRODUCTORY LETTERS

**APPENDIX III: QUESTIONNAIRE FOR TUTORS/LECTURERS TRAINING
TECHNICAL TEACHERS AND INSTRUCTORS
UNIVERSITY OF ELDORET
SCHOOL OF EDUCATION
DEPARTMENT OF CURRICULUM AND INSTRUCTION**

Dear Respondent,

I am Mukasa John Ddungu-Kafuluma a student of University of Eldoret in the School of Education, department of Curriculum Studies. I am conducting a study investigating **“The Relevance of Learning Theories in the Training of Technical Teachers and Instructors in Uganda.**

The purpose of this correspondence is to request you to participate in this research by responding to the questions in this questionnaire for the good of our country.

This research is purely academic, and the responses will be used for that purpose. Therefore, I assure you that all the information collected for this study shall be treated with confidentiality. **Please do not indicate your name on this questionnaire.**

Thank you in advance.

INSTRUCTIONS

- You are requested to respond to the questions you are capable to answer. Your answer will mean a lot to this study.
- There are three sections A, B and C.
- Where you feel that the space provided for the answer is not enough, you may write the answer on a separate paper.

SECTION A: Biographical Data of the Respondent

1. Sex.....
.....

2. Age 18-30 30-4 40-5 50- Above

3. Occupation.....
.....

4. Title.....
...

5. Institution.....
.....

6. Number of years in your
occupation.....

7. Your Technical / Vocational specialization (if
applicable).....
.....
...

8. Course(s) you
teach.....
.....
...

.....
.....

SECTION B

The responses are as follows:

1. **Strongly Agree (SA)**
2. **Agree (A)**
3. **Uncertain (U)**
4. **Disagree (D)**
5. **Strongly Disagree (SD)**

Please Tick (✓) the most appropriate response to each question. Put a tick in the box that corresponds to your answer from the responses given above.

Example: Learning Theories are not relevant in our education system.

SA	A	U	D	SD
				✓

1. Curriculum only highlights use of Learning Theories in the pedagogy courses

SA	A	U	D	SD

2. Curriculum encourages lecturers to use learning theories when training students in all courses

SA	A	U	D	SD

3. Curriculum encourages use of Behaviourism in our training

SA	A	U	D	SD

4. Curriculum encourages use of Cognitive learning theory

SA	A	U	D	SD

5. Curriculum encourages use of Constructivism

SA	A	U	D	SD

6. Curriculum encourages lecturers to base all their work with students on a specific learning theory

SA	A	U	D	SD

7. Learning theories only applied in Pedagogy course units

SA	A	U	D	SD

8. Instructors use learning theories in all aspects of training

SA	A	U	D	SD

9. Behaviourism is used in training students

SA	A	U	D	SD

10. Cognitivism is used in training students

SA	A	U	D	SD

11. Constructivism used in training students

SA	A	U	D	SD

12. Whatever instructors do with students is based on a specific learning theory

SA	A	U	D	SD

13. All learning theories should be applied in training technical teachers and instructors

SA	A	U	D	SD

14. Learning theories should only be applied in pedagogy lessons

SA	A	U	D	SD

15. Behaviourism is useful in training technical teachers and instructors

SA	A	U	D	SD

16. Cognitivism is relevant to training of technical teachers and instructors

SA	A	U	D	SD

17. Constructivism is useful in training technical teachers and instructors

SA	A	U	D	SD

18. Whatever instructors do with students should be based on a specific learning theory

SA	A	U	D	SD

19. In your opinion, what should be done in order to train competent technical teachers and instructors in Uganda?

.....

**Thank You for Participating in This Study
MAY GOD BLESS YOU**

**APPENDIX IV: QUESTIONNAIRE FOR STUDENTS IN TEACHER TRAINING
AND TVET INSTITUTIONS
UNIVERSITY OF ELDORET
SCHOOL OF EDUCATION
DEPARTMENT OF DEPARTMENT OF CURRICULUM AND INSTRUCTION**

Dear Respondent,

I am Mukasa John Ddungu-Kafuluma a student of University of Eldoret in the School of Education, department of Curriculum Studies. I am conducting a study investigating **“The Relevance of Learning Theories in the Training of Technical Teachers and Instructors in Uganda:**

The purpose of this correspondence is to request you to participate in this research by responding to the questions in this questionnaire for the good of our country.

This research is purely academic, and the responses will be used for that purpose. Therefore, I assure you that all the information collected for this study shall be treated with confidentiality. **Please do not indicate your name on this questionnaire.**

Thank you in advance.

INSTRUCTIONS

- You are requested to respond to the questions you are capable to answer. Your answer will mean a lot to this study.
- There are two sections A and B.
- Where you feel that the space provided for the answer is not enough, you may write the answer on a separate paper.

SECTION A

Biographical Data of the Respondent

1. Sex.....
.....
2. Age 15-30 30-40 40-50 Above 5
3. Institution.....
.....
4. Technical teacher trainee or Instructor trainee or student in TVET institution
.....
.....
5. Programme or course you are doing
.....
.....
6. Your Technical / Vocational
specialization.....
.....
.....
7. Year of
study.....

SECTION B

The responses are as follows:

1. **Strongly Agree (SA)**
2. **Agree (A)**
3. **Uncertain (U)**
4. **Disagree (D)**
5. **Strongly Disagree (SD)**

Please Tick (√) the most appropriate response to each question. Put a tick in the box that corresponds to your answer from the responses given above.

Example: Learning Theories are not relevant in our education system.

SA	A	U	D	SD
				√

.....
.....

8. Do you have a copies of the course outlines of the subjects that you do?

SA	A	U	D	SD

9. Course outlines only mention Learning theories in the pedagogy courses

SA	A	U	D	SD

10. Course outlines provided are all infused with learning theories

SA	A	U	D	SD

11. Course outlines mention Behaviourism

SA	A	U	D	SD

12. Course outlines mention Cognitive learning theory

SA	A	U	D	SD

13. Course outlines mention Constructivism

SA	A	U	D	SD

14. Course outlines mention specific learning theories on which learning will be based

SA	A	U	D	SD

15. Learning theories only applied in Pedagogy course units

SA	A	U	D	SD

16. Instructors use learning theories in all aspects of training

SA	A	U	D	SD

17. Behaviourism is used in training students

SA	A	U	D	SD

18. Cognitivism is used in training students

SA	A	U	D	SD

19. Constructivism used in training students

SA	A	U	D	SD

20. Whatever instructors do with students is based on a specific learning theory

SA	A	U	D	SD

21. Learning Theories are applied in Pedagogy course units

SA	A	U	D	SD

22. Learning Theories are used in all that we do at the institution

SA	A	U	D	SD

23. Some of our learning is based on Behaviourism learning

SA	A	U	D	SD

24. Our training is also based on cognitivism

SA	A	U	D	SD

25. Instructors use Constructivism when training us

SA	A	U	D	SD

26. instructors always base our activities on a specific learning theory

SA	A	U	D	SD

APPENDIX V: OBSERVATION CHECKLIST

In observation, I expect to try out my designed teaching method/model following the Constructivist classroom approach. And mainly I will be observing the participation rate of the learners. The researcher will also observe the learners participation rate and the teacher's role when the teacher/ instructor is using the traditional classroom approach.

1. INSTITUTION.....
2. CLASS/YEAR.....
3. NUMBER STUDENTS.....
4. SKILL/SUBJECT.....
5. DURATION OF THE LESSON.....
6. METHOD(S) USED.....
7. PARTICIPATION OF STUDENTS.....
8. Instructors have copies of the curricula of the subjects they teach?
9. Students have copies of the course outlines of the subjects they do?
10. Curriculum and Course outlines mention Learning theories in the pedagogy courses
11. Curricula and course outlines mention Behaviourism
12. Curricula and course outlines mention Cognitive learning theory
13. Curricula and course outlines mention Constructivism
14. Curricula and course outlines mention specific learning theories on which learning will be based
15. Learning theories only applied in Pedagogy course units
16. Instructors use learning theories in all aspects of training
17. Behaviourism is used in training students
18. Cognitivism is used in training students
19. Constructivism used in training students
20. Whatever instructors do with students is based on a specific learning theory
21. Learning Theories are applied in Pedagogy course units

22. Learning Theories are used in all that we do at the institution
23. Some of our learning is based on Behaviourism learning
24. training is also based on cognitivism
25. Instructors use Constructivism when training us
26. instructors always base our activities

**APPENDIX VI: INTERVIEW GUIDE FOR MINISTRY OF EDUCATION AND
SPORTS OFFICIALS AND MANAGERS OF TECHNICAL TEACHERS AND
INSTRUCTOR TRAINING INSTITUTIONS**

UNIVERSITY OF ELDORET

SCHOOL OF EDUCATION

DEPARTMENT OF CENTRE FOR CURRICULUM AND INSTRUCTION

Dear Respondent,

I am Mukasa John Ddungu-Kafuluma a student of University of Eldoret in the School of Education, department of Curriculum Studies. I am conducting a study investigating **“The Relevance of Learning Theories in the Training of Technical Teachers and Instructors in Uganda:” Implication for “Skilling Uganda.”**

The purpose of this correspondence is to request you to participate in this research by responding to the questions in this questionnaire for the good of our country.

This research is purely academic, and the responses will be used for that purpose. Therefore, I assure you that all the information collected for this study shall be treated with confidentiality. **Please do not indicate your name on this questionnaire.**

INSTRUCTIONS

- You are requested to respond to the questions you are capable to answer. Your answer will mean a lot to this study.
- There are two sections A and B.
- Where you feel that the space provided for the answer is not enough, you may write the answer on a separate paper.

SECTION A

Biographical Data of the Respondent

1. Sex.
.....
.....
 2. Title.....
.....
 3. Institution.....
.....
 4. Number of years in your
occupation.....
 5. Your Technical / Vocational specialization (If
applicable).....
.....
.....
27. Do Instructors have copies of the curricula of the subjects they teach?
 28. Do Students have copies of the course outlines of the subjects they do?
 29. Does curriculum and course outlines mention learning theories to be used in
training
 30. What specific learning theories are mentioned?
 31. Do Instructors use learning theories in all aspects of training
 32. Do instructors base whatever they do with students is based on a specific
learning theory
 33. What learning theories are relevant

Thank you for participating in this Study

MAY GOD BLESS YOU

**APPENDIX VII: KREJCIE AND MORGAN SAMPLE TABLE FOR
DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION**

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: 'N' is population size 'S' is sample size.

Adopted from Krejcie, Robert V., Morgan, Daryle W., "Determining Sample Size for Research Activities", Educational and Psychological Measurement, 1970.

APPENDIX VIII: INFORMED CONSENT

My name is **Mukasa John Ddungu-Kafuluma**. I am a PhD of **the University of Eldoret**

Doing a study on the **Relevance of Learning Theories in the Training of Technical Teachers and Instructors in Uganda**. This study has been approved by University Research Review Board, UNCST and the Ministry of education and sports .

Purpose of the study:

This study intends to highlight the **Relevance of Learning Theories in the training of Technical Teachers and Instructors in Uganda**. This study is also to fulfil the requirement for completion of my PhD in **EDUCATIONAL TECHNOLOGY OF IN THE UNIVERSITY OF ELDORET**

Duration for participation in the study:

This study should only take a maximum of 20 minutes for the interview, 15 minutes for the questionnaire. If you agree to be in this study, you will be asked to complete a questionnaire and or participate in the focus group discussions or interview.

Risks for participation in the Study:

There is no potential risk to your participation in this study. Your decision on whether or not to participate will not affect your current or future relations with the researcher.

Benefits and confidentiality:

The study findings will be used to promote TVET training in Uganda. This study is anonymous, confidential, and your participation is completely voluntary. Your name WILL NOT appear NOR shall it be linked to the thesis in anyway.

STATEMENT OF CONSENT

The purpose and nature of this study has been explained to me and I fully understand this information. By signing this document, I accept to participate in the study.

Name (Please Print): _____

Name of Unit /Department: _____

Signature: Date _____

Signature of Investigator: Date: _____

***NB.** You can withdraw from this study at any time, just by letting the researcher know at, or Research Coordinator*