REVIEW OF QUALITY ASSURANCE PRACTICES ON EDUCATIONAL OUTCOMES IN PUBLIC TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING COLLEGES IN UGANDA

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A THESIS SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN TECHNOLOGY EDUCATION (TVET) OF UNIVERSITY OF ELDORET, KENYA

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DECLARATION

Declaration by the Candidate

This thesis is my original work and has not been submitted for any academic award in any institution; and shall not be reproduced in part or full, or in any format without prior written permission from the author and/or University of Eldoret. This work would not have been possible without the expert insights, dedication, invaluable guidance and support of Prof. Ahamed Ferej and Dr. Hoseah Kiplagat. I am incredibly grateful for the mentorship, encouragement and thoughtful feedback offered at every stage, which pushed me to achieve my full potential.

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Declaration by the Supervisors

This thesis has been submitted with our approval as University supervisors.

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DEDICATION

I dedicate this thesis to my mother Georgina, who always believed in me, planted and natured the seeds of faith and knowledge that have brought me this far. To my husband Bernard who was there, when no one was. To my children Edwin, McBernard, Edwiger, Esther, Loyce and Allelluyah, who supported me through thick and thin. To the family altar team that never left any prayer request unattended to.

ABSTRACT

Uganda's public Technical and Vocational Education and Training colleges lack a fully coordinated Quality Assurance (QA) system, and results vary. The main objective of the study was to review the QA practices on educational outcomes in public TVET colleges in Uganda. The study was guided by the Institutional and Human Capital theories because of their importance in education and training inputs, processes and outputs. The study adopted a pragmatic approach and employed a mixed methodology and design, to collect data from five engineering technology-based TVET colleges, and ten companies. 378 respondents completed the questionnaires, and 120 participated in interviews and focus group discussions. Purposive, rotary and systematic sampling techniques were used to select participants. Quantitative and qualitative data was analysed using SPSS version 25, and NVIVO software for thematic analysis respectively. Validity, reliability, and research ethical considerations were adhered to. The findings revealed that management practices, instructional and teaching practices, and industry involvement associate with better educational outcomes. Trainees' learning experiences were mixed across respondent groups. Regression models explained about 63–67% of the variation in educational outcomes $(R^2 \approx 0.628 - 0.687)$. The study concludes that effective leadership, instruction and teaching quality, and college industry links is associated with better completion, skills and assessment performance in these colleges. The study recommends, enhanced collaborative and participatory engagements with college stakeholders; strong partnerships that involve industry in all aspects of instruction and learning; establishing effective quality assurance mechanisms and frameworks at colleges; and a complete national QA framework in the Ugandan TVET system.

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LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS

AU	African Union
BTVET	Business, Technical, Vocational Education and Training
DIT	Directorate of Industrial Training
DTVET	Department of TVET
EAC	East African Community
EU	European Union
GoU	Government of Uganda
HCT	Human Capital Theory
HoD	Head of Department
ICT	Information and Communication Technology
IPQAF	Integrated Participatory Quality Assurance Framework
IT	Institutional Theory
MoES	Ministry of Education and Sports
NCHE	National Council for Higher Education
NCST	National Council for Science and Technology
NVTC	Nakawa Vocational Training College
QA	Quality Assurance
QAF	Quality Assurance Framework
SDA	Skills Development Authority
SDGs	Sustainable Development Goals
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Organisation for Education, Science and Culture
UBTEB	Uganda Business and Technical Examination Board

UTCB	Uganda Technical College Bushenyi
UTCE	Uganda Technical College Elgon
UTCL	Uganda Technical College Lira
UTCK	Uganda Technical College Kichwamba
UTVQF	Uganda Technical and Vocational Qualifications Framework
UVTAB	Uganda Vocational and Technical Assessment Board
VET	Vocational Education and Training

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May God bless you!

CHAPTER ONE
INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter provides an overview of the background of the study and its setting. It brings out the statement of the problem, the purpose of the study, the research objectives and questions. It gives the justification to why the study was necessary, and its significance, but also highlights the assumptions, scope and limitations of the study. It highlights the theoretical and conceptual frameworks, and the operational definition of terms used in the study.

1.2 Background of the Study

Technical Vocational Education and Training (TVET) is designed to equip learners with skills for work and life, to meet their individual needs and those of the working environment and society, (UNESCO, 2025). Quality Assurance (QA) practices ensure that TVET institutions maintain high standards, and continuously improve their management, training and learning processes (Lasisi, 2025; Cabreros & Barbacena, 2024). The integration of QA systems in TVET institutions play a role in improving educational standards and ensuring alignment with industry demands (Odjo et al., 2024); Asiyai, 2022). According to UNESCO, skills for work and life is a range of learning experiences relevant to the world of work and beyond. Josephson Institute (2013), identified knowledge, skills, values and character traits, as the critical educational outcomes trainees should acquire to succeed in school, workplaces, live fulfilling individual lives, and become productive inhabitants. According to Niyonasenze et al. (2024), knowledge, skills and attitudes learners develop through their learning experiences, are the educational outcomes.
The knowledge, skills, and abilities (KSAs) possessed by employees are where companies derive competitive advantage to (Boon et al., 2018 in Liu & Liu, 2021). This makes TVET a crucial part of education system to provide valuable skills for trainees to use in workplaces (Skaar, 2023). Chamadia and Mubarik (2021), asserts that TVET is an alternative to the academic stream of education, and is recognized for channelling human capital toward national sustainable development. However, quality TVET institutions are fundamental for trainees to acquire practical skills, knowledge and attitudes required for employment (Kidega et al, 2023; Kirya & Wei-Te, 2022). A study

conducted by Mwangi and Muchanje (2025), in TVET institutions in Kiambu County, Kenya, justifies the significance of QA in predicting educational outcomes.

The Sustainable Development Goals (SDGs) especially Goal 4 (SDG4), is to ensure inclusive and equitable quality education and promote lifelong learning for all. Globally, TVET institutions contribute towards economic sustainability and development, poverty eradication and educational policy (Frick, 2018). To improve the educational outcomes in TVET globally, various organizations and countries have put in place strategies, to deliver quality education and training. The UNESCO's TVET Strategy 2022 -2029, aims at promoting TVET to enhance skills development for individual empowerment, employability, and contribute to the achievement of SDG4. Despite the global strategies in place, the level of employability among youth remains low, and approximately 267 million youth (15-24 years) globally are not employed nor in education or training (UNESCO, 2025).

The African Vision 2063, is to become an integrated, prosperous, and peaceful continent, driven by its people. According to the Organization for Economic Corporation Development (OECD), (2021), Ethiopia, Kenya, Madagascar, Tanzania, and Uganda, will need their TVET institutions to improve their image to become useful. Relatedly, a survey on youth from three (3) Eastern Africa countries (Madagascar, Tanzania and Uganda) revealed that above 40 percent of the surveyed youth were not adequately skilled and majority were underqualified for the jobs they were doing (OECD, 2021). In Mauritius, a Quality Assurance Framework for the TVET sector developed by the Mauritius Qualifications Authority (MQA) under Act No. 42 of 2001 guides TVET institutions (MQA, 2020). Quality Assurance in Malawian TVET institutions follows the legal provision stipulated in the Technical, Entrepreneurial, and Vocational Education and Training (TEVET) Act of 1999, which mandates the Authority to regulate TVET in Malawi (Chisi, 2018).

The East African Community (EAC) Vision 2050, identifies a lack of human capital, increasing unemployment, low levels of industrialization, and lack of competitiveness as among the vital development concerns (EAC S., 2016). The EAC Vision 2050, further lists the anticipated enablers for its successful implementation to include; quality and access to education, skills for emerging development initiatives, and centres of excellence in TVET institutions. The Vision, calls for East African Partner States to improve the quality of TVET in line with its aspirations. Various EAC Partner States

have taken steps and established Quality Assurance bodies for TVET; the TVET Authority (TVETA) in Kenya, the Workforce Development Authority (WDA) in Rwanda, and the National Council for TVET (NACTVET) in the United Republic of Tanzania are good examples. In addition to these legal frameworks, the EAC TVET Harmonization Strategy, emphasizes a harmonized Quality Assurance Framework among other frameworks under development (EAC, 2023).

The Constitution of the Republic of Uganda (GoU, 1995), amended in 2005, Article XIV Section (b), emphasizes the role of the State in ensuring that all Ugandans enjoy rights and access to education. Article XVIII (ii) of the Constitution, requires the State to take appropriate measures to afford every citizen equal opportunity to attain the highest educational standards possible. Legislative and policy reforms such as the Ugandan Business Technical Vocational Education and Training (BTVET) Act of 2008, and the BTVET Strategic Plan under the Ministry of Education and Sports (MoES, 2011), were undertaken. The BTVET Act 2008, was enacted with objectives to separate the training delivery of TVET from quality assurance functions, and to establish the institutional framework for the promotion and coordination of TVET. However, research show, coordination and regulation of TVET was still scattered in many ministries and agencies that in Uganda (Mutebi & Ferej, 2023). The institutional framework for the promotion and coordination of TVET envisaged by the BTVET Act was not established, and regulations for carrying into effect the provisions and principles of the Act in relation to QA in TVET institutions, were also not made by statutory instruments.

The Uganda Vision 2040 (GoU, 2013), advocates for prosperity for all, and acknowledges the low competitiveness of goods and services, and the fourth Ugandan National Development Plan (NDP IV) encompasses Human Capital Development. The Ugandan TVET Policy, 2019 provides for the development of an employer-led TVET system to ensure quality and relevance. The policy was to facilitate the review of existing laws and generate a legal framework, and have QA body and framework in place. At the time of this study, the process for enacting the TVET act to establish the TVET Council was on going. TVET institutions in Uganda, embarked on implementing the policy. They initiated QA measures and interventions such as appointing at least 66% of board/council members from employers, and implementing a flexible and decentralised admission system to improve quality and accessibility in line with the policy (GoU,

2019). The institutions also ensured that real-life projects are part of training programs (Turyatemba et al., 2023) to enhance employability of graduates.

Despite all government interventions put across, and the associated increase in trainee enrolment, educational outcomes in Ugandan TVET institutions, still fluctuate. The increase in enrolment, may not have been in tandem with available resources such as, funding, skilled trainers, trainees' support systems (Agole et al., 2022). The average completion rate at public TVET colleges, dropped from 91% in 2019 to 88% in 2024, with a drastic drop of 23% in 2020 attributed to Covid-19 (Uganda Business and Technical Examination Board [UBTEB], 2024). A tracer study conducted by UBTEB in 2023, revealed that 63% of the graduates who completed between 2016 and 2019 from various TVET institutions, were employed in their first year after completing their programs ("TVET graduates get employed", 2024). The 63% employable rate is not comparable to recommended percentages by other regions and countries to meet the SDG4. For example, the European Union (EU) Council's recommendation of 24 November 2020 to its member states, was to ensure that the share of vocational education and training graduates is 82% by 2025 (Sekmokas, 2024). According to Kintu et al. (2019), TVET institutions in Uganda were not paying much attention to specific employability skills that make TVET graduates' job ready. They noted that participation of employers in curriculum development was at 50%, a factor that contributed to skills mismatch. Policy implementation may have also met challenges (Kaddu et al., 2023).

According to Wafudu and Kamin (2021), failure to realise good educational outcomes has long been blamed on poor implementation of quality assurance policies. Morris (2013), emphasizes the need for quality assurance in education and training, to achieve quality TVET outcomes. The educational outcomes in TVET institutions, therefore, could be influenced by several factors including poor implementation policies and low emphasis of quality assurance practices at institutional level.

The study picked interest in reviewing quality assurance practices on educational outcomes, in selected TVET colleges, with the view of making recommendations for continuous improvement of TVET outcomes across the board.

1.3 Statement of the Problem

The Ugandan Policy 2019, provides for strategies to improve the quality of the TVET system, and make TVET institutions offer training to the youth and all Ugandans. Public

TVET colleges have been supported with development projects, and other interventions as part of TVET reforms. Enrolment in these colleges is rising every year as the universal primary and secondary education gain momentum in Uganda. However, resources such as trainers and infrastructure remain the same. These resources and quality checks have not kept up with the rising enrolment. In addition, Uganda has no complete and unified national TVET Qualification Framework. Ministries, departments, agencies, and TVET institutions apply quality assurance rules and regulations differently. These gaps link to weak educational outcomes. This study examined how the QA practices inside Public TVET colleges relate to what trainees achieve for their respective colleges.

1.4 Purpose of the Study

The purpose of the study was to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement.

1.5 Objectives of the Study

1.5.1 Main Objective

The main objective of the study was to assess how Quality Assurance (QA) practices associate with educational outcomes in public TVET colleges in Uganda.

1.5.2 Specific Objectives

The study was guided by the following specific objectives:

1. To examine the role of management practices on educational outcomes in public TVET colleges in Uganda.
2. To establish the trainees' learning experiences and practices in QA practices and educational outcomes in public TVET colleges in Uganda.
3. To determine instruction and teaching practices employed by trainers to improve educational outcomes in public TVET colleges in Uganda.
4. To determine the industry employer involvement in QA practices to improve educational outcomes in public TVET colleges in Uganda.

1.6 Research Questions

The key research question, the study sought to answer was; How do QA practices associate with educational outcomes in Public TVET colleges in Uganda?

To answer this question, the following specific research questions were formulated

1. What is the role of management practices on educational outcomes in the public TVET colleges in Uganda?
2. What is the trainees' perspective of QA practices and educational outcomes in public TVET colleges in Uganda?
3. What are the instruction and teaching practices employed by trainers to improve educational outcomes in public TVET colleges in Uganda?
4. In what ways are industry employers involved in QA of educational outcomes in public TVET colleges in Uganda?

1.7 Justification of the Study

Quality assurance of TVET is a concern globally and regionally, especially in meeting the Sustainable Development Goals (SDGs) and Africa Agenda 2063. The government of Uganda appreciates the crucial role TVET plays in national development, and have gone ahead to formulate appropriate strategies and policies to improve the TVET system. The study contributes to the existing knowledge, and provides useful information to policymakers, college manager and stakeholders, and employers for the next course of action in the area of QA. The results of the study contribute to the decisions by the government on how best policy provisions on QA in TVET can be formulated and implemented. It also contributes on how best further improvement can be done in public TVET colleges to become centres of excellence.

1.8 Significance of the Study

The study generates a lot of benefits to public TVET colleges, policymakers and policy implementers, assessment bodies, employers, and the society. The benefits include; providing evidence-based inputs for development of a national TVET Qualification Framework in Uganda; public TVET colleges using the findings to refine their internal QA practices, and build stronger institutional QA units; build capacity and motivate public TVET colleges to do regular self-assessment and continuously improve their educational outcomes. It also informs the development of QA frameworks, implementation plans and strategies at different responsibility centres. It helps the colleges to plan and mobilize resources to fill the gaps identified.

1.9 Assumptions of the Study

The study assumed that public TVET colleges have internalized the TVET Policy 2019 and other QA strategies despite the absence of the QA framework. It assumed there are

some existing quality practices in public TVET colleges, since some of their trainees graduated, and were employed. The study acknowledged that there are other quality assurance practices and factors not considered in this research that relate with educational outcomes, but assumed them constant. It was also assumed that the selected respondents were positive, and gave honest responses. It also assumed that the data collected would be authentic.

1.10 Scope and Limitations of the Study

1.10.1 Scope of the Study

The study was conducted in five (5) colleges that specialise in engineering technology education and training, spread across the country. The study considered the period between August 2019, when the TVET Policy 2019 was fully disseminated, and December 2024, before the TVET Act 2025 was enacted. The study concentrated on specific quality assurance practices such as quality leadership/management, training and learning practices, and industry-employers' involvement, but acknowledged other practices. The respondents were trainees, trainers, managers, and employers of TVET graduates, with relevant skills, knowledge and experience in the institutional affairs. At the time of the study, there was no position of quality assurance manager in the public TVET colleges' structure, so this position was not considered among respondents.

1.10.2 Limitations of the Study

The study was conducted in five (5) public TVET colleges, though there are fifteen (15) public colleges under the Ministry of Education and Sports in Uganda. These five are part of seven (7) colleges specialising in Engineering Technology. The selection took into account regional representation across the country. The study assessed specific attributes of quality assurance practices based on literature (IAG-TVET, 2014; Dei-Graft, 2019; Gebremeskel, 2019; Kigozi, 2020; Ramasamy etal., 2021; QAHE, 2023). Other attributes and indicators which could not be assessed in the limited time of the study, were assumed constant. Purposive sampling was used for selecting colleges and managers though there were other sampling techniques that could be used. Its strength in studies like this where specific expertise, knowledge and skills of respondents were important than the size of the sample. The study's biasness was well known and the researcher dealt with it by training research assistants thoroughly. The researcher was aware that instruments like questionnaires could not all be filled and returned, and follow

up with phone calls was done. Other research instruments such as focus group discussion guides were also designed in a more reliable and efficient manner to close the biasness gap.

1.11 Theoretical Framework

This study was guided by the Institutional Theory and the Human Capital Theory

1.11.1 Institutional Theory

Institutional Theory (IT) has been used for general understanding of various frameworks, approaches, practices, and techniques adopted by organizations (Hassan et al., 2019). According to Talib et al, 2020), IT explains why organizations behave and act the way they do. According to Henrkson and Wennstrom (2023), the view of knowledge is an important institution of the education system, which helps to tell the performing and non-performing schools. The classical view of knowledge yields greater outcomes in an education system, compared to the postmodern social constructivist view of knowledge (Henrkson & Wennstrom, 2023). They assert that, what makes education a public good is not the period the learners spend at school, but the quality of the education outcomes got from the education system. They further argue that, institutionalising a certain view of knowledge by a country in their education system, defines the quality of educational outcomes.

The Institutional Theory also presents the change within institutions based on the institutional context, and from the three types of pressures; coercive, mimetic, and normative (Cardona Mejía et al., 2020). Coercive pressure is usually exerted by the state due to its regulatory, legislative, and financing role or by standardized procedures and behaviours within the environment of operation (Cardona Mejía etal., 2020). Mimetic pressure originates from institutional responses to uncertainties (Najeeb, 2014), and in turn, the institution deals with them by imitating what other prominent institutions in the same business or environment have done (Cardona Mejía et al., 2020). Normative pressure refers to, "relations between the management policies and the background of employees in terms of educational levels, job experience, and networks of professional associations'' (Najeeb, 2014; Paauwe & Boselie, 2003). Normative pressure is more often the pressure exerted by professionals within a common occupation to maintain the values and cultures of a profession or relationships with other organizations within the same business environment (Cardona Mejía et al., 2020). Normative institutionalism emphasizes the function of institutions governed by the interpretation of societal norms

and conditions (Shand, 2015). According to Khalil (2021), mimetic and normative pressures play an important role in making a decision to implement quality assurance in education institutions. The quality of education outcomes, then, may be influenced by institutional mimetic and normative pressures, and the view of knowledge adopted for an education system. Understanding the influence of institutional theoretical view of knowledge and institutional pressures, on the quality of educational outcomes in an education system, helped the researcher to conceptualize the study variables in a TVET college set up.

1.11.2 Human Capital Theory

According to Nazarzadeh and Parvin (2023), Human Capital Theory (HCT) is based on the assumption that education helps to increase individuals' knowledge, skills, abilities, and results into productivity. HCT has a powerful influence on the analysis of the labour market (Alam (2007) in Audu et al., 2013). The HCT positions education as both an individual and a public good, in the sense that individuals and the national economy are boosted financially from the education investment (Adu-Yeboah, 2022). HCT also presumes that TVET has the potential to stimulate technological progress for national development (Akhuemonkhan, 2014). An investigation on the impact of human capital capacity, human capital knowledge and human capital skills on organizational performance, demonstrated that, the three have a significant positive relationship with organisational performance (Aman-Ullah, 2022).

According to Vandenberg and Laranjo (2020), the aggregate of knowledge, skills, abilities, and aptitudes that an individual possesses, which can be used for productive work, is what makes companies competitive.. Apparently, the Ugandan TVET policies are rooted in the human capital approach (Kim, 2021). Therefore, the HCT was essential in guiding the study, not only in understanding the purpose of TVET in Uganda, but also how the TVET colleges have addressed the issues of quality and relevance. It also helped in understanding the power of human capital capacity, human capital knowledge and human capital skills in maintaining QA practices in the colleges.

1.12 Conceptual Framework

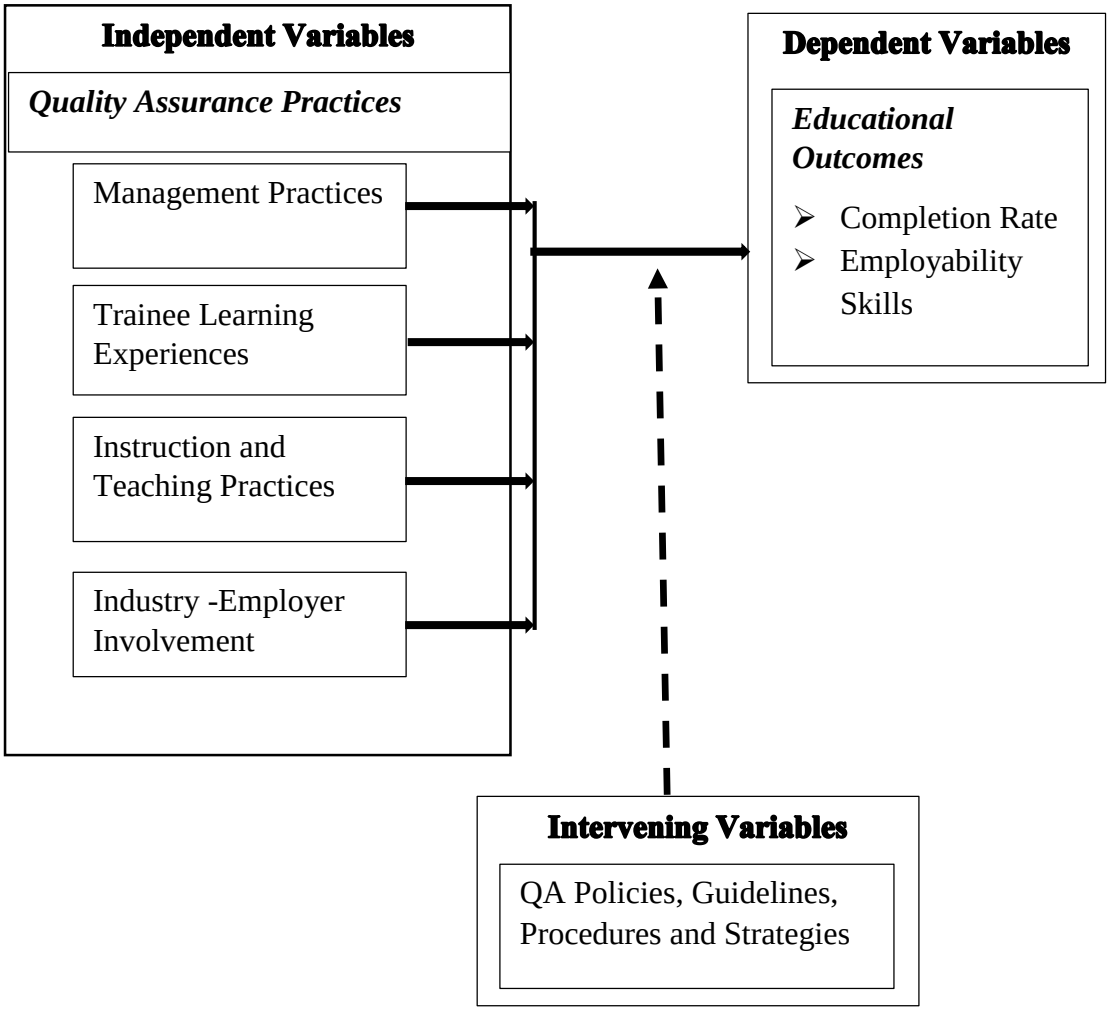
The African Union (AU, 2007), refers to quality as the different aspects of a product or a service; the input, the process, the output, or the three dimensions at the same time.

Inputs for quality TVET include; trainees, trainers, training facilities and equipment, training materials and funding resources. The trainees as training beneficiaries are the most crucial input for the learning process. Similarly, trainers are considered another important input in the teaching process. Without trainees and trainers, quality teaching and learning would not be achieved. Moreover, the classical view of knowledge acknowledges trainers as the source of knowledge and skills for trainees (Henrekson & Wennstrom, 2023). The study considered processes in terms of leadership and management processes, training and learning process, and involvement of industry employers as a process in training delivery. The output from these processes was conceptualised as the educational outcomes in terms of completion rates in TVET programs, and employability skills for graduates.

The understanding of mimetic and normative institutional pressures, and knowledge associated with HCT discussed in Section 1.11 above, lead to the conceptual framework. The conceptualization regarded inputs and processes related to QA practices as independent variables, and the output of TVET colleges characterized by completion rate and employability skills, as dependent variable.

Figure 1: The Conceptual Framework of the Study

Source: (Researcher: 2024)



In the conceptual framework, therefore, the management practices, the trainee learning experiences and practice, the instruction and teaching and learning practices, and industry-employer involvement, were the independent variables. These have an impact on the quality of educational outcomes in a TVET system. The policies, guidelines and strategies which may change at any time and affect the relationship between the dependent and independent variables, are the intervening variables. If there are changes in the policies, guidelines and procedures, the relationship between the variables may change accordingly. Figure 1 shows the conceptual framework of the study.

1.13 Operational Definition of Terms

Competency	Acquired skills, knowledge, and attitude that meet employer's needs.

Completion Rate	The degree to which trainees meet the necessary requirements for certification in accordance with the study programme.
Educational Outcomes	In this study, the term “educational outcomes” have been identified as the dependent variable (the completion rate and the employability skills) attained by trainees in a public TVET college.
Industry/Employer	An organization, company or business that hires graduates or offers training for trainees from TVET colleges
Inputs	Human, financial, technological and physical Resources required/used by a TVET college to deliver quality TVET services and products.
Implementation	Execution of plans, strategies, policies, and intentional activities for effective and efficient training delivery to realize outcomes that work for key stakeholders and people in the real world.
Manager	One that heads an institution, a company/industry, or a department/unit, is involved in decision-making and strategic planning for quality assurance of TVET services and products
Quality	The level of satisfaction by stakeholders and the society at large with the effectiveness and efficiency of TVET services and products.
Quality assurance (QA)	In this study, the term "quality assurance" was regarded as the adherence of trainees, trainers and managers to QA policies, procedures, and practices within a specific TVET college
Quality assurance practices	For this study, QA practices are the independent variables; leadership and management practices, learning experiences and practices, instruction and teaching practices, and industry-employers’ involvement, that have an effect on the educational out comes in a TVET college.
Quality training	Training that meets the trainees’ completion rate and employability needs to the satisfaction of all stakeholders.
Participants	For this study, the term “participants” referred to trainees, trainers, and managers in TVET colleges and companies/industries.
Processes	Step-by-step actions taken efficiently and effectively to achieve quality TVET training and learning delivery.

Training-learning delivery	A systematic process and execution of activities in which competencies are acquired by trainees for employability
Trainer Management	Human resource functions related to recruitment of trainers, their wage and payments, deployment and teaching load, motivation, evaluation of their performance and constant planning of future needs.
Trainer Development	A deliberate activity undertaken to enhance QA practices and empower an individual's competencies as a TVET trainer.
TVET product	A trainee who has successfully completed a program/course from a TVET College.
TVET Service	Activities in training delivery that cause a transformation of a human being by mutually agreed terms between a TVET college and a trainee.
Stakeholders	For this study, stakeholders were regarded as trainees, trainers, managers of colleges, industry/companies, the community, and policy makers.

1.14 Summary of the Chapter

This introductory Chapter, has provided theoretical and geographical dimensions of the problem in the background, and explained its significance. The Chapter highlighted QA strategies initiated globally, regionally, and in Uganda, to enhance the educational outcomes in TVET. The statement of the problem highlighted undesirable educational outcomes which could be attributed to the lack of a national QA framework in Uganda, and insufficient resources which are not in tandem with increased enrolment at public TVET colleges. The purpose, objectives and research questions of the study have also been presented. The study was justified by the fact that the quality of TVET has become a global, regional, and national concern due to its role in human capital and social-economic development. Its significance is rooted in the importance of quality assurance of TVET outcomes, to make it responsive to the needs of government, managers, trainees, trainers, employers, policymakers, and the society at large. The study was done in five TVET colleges in Uganda spread across the country, and the period considered was from August 2019 after the approval of the Ugandan TVET Policy 2019, up to

August 2024. The institutional and human capital theories guided the study. The next chapter expounds on the literature reviewed about the study and the study objectives.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the literature related to Quality Assurance aspects, best QA practices and educational outcomes in TVET. It presents several research studies done by scholars and authors globally, regionally and in Uganda. Quality outcomes of TVET and Quality Assurance practices were reviewed under various sub-headings related to the study objectives presented in Chapter One.

2.2 Educational outcomes

Globally, education is vital for economic and social development (UNESCO, 2022). Education contributes to having a well-trained, adaptable and motivated skilled worker force, which is vital for a sustainable socio-economic transformation strategy (Niyonasenze et al., 2024). In sub-Saharan Africa, the population is dominated by the youth, and an increase in unemployment rate is registered (Niyonasenze et al., 2024). In Uganda, several people in the working age population have no jobs and they face difficulties in creating their own (Uganda Bureau of Stastics [UBOS], 2024). TVET institutions are supposed to ensure that trainees attain required competences for the world of work. However, in developing countries such as Uganda, TVET institutions face several challenges (Okware & Ngaka, 2017), that hinder them to attain their intended outcomes. According to Niyonasenze et al. (2024), educational outcomes comprise of knowledge, skills and attitudes learners are expected to develop. These skills make a basis for measuring educational interventions (Gaffoor & Van der Bijl, 2019). Positive educational outcomes support individuals to be successful in the labour market especially when they combine education and employment (Caves et al., 2021). This current study, looked at educational outcomes in terms of trainees' overall performance, measured through completion rate and employability skills, as in the work of Mwangi and Muchanje (2025). These two parameters of educational outcomes are explicitly discussed below;

2.2.1 Completion rate

Completion refers to meeting the necessary requirements for certification in accordance with the study programme (Delnoij et al., 2020). Therefore, completion rate can be defined as the degree to which trainees meet the necessary requirements for certification

in accordance with the study programme. Literature also indicate that though higher learning institutions are increasingly aiming at high completion rates, interventions to that effect are limited (Delnoij et al., 2020). Low completion rate among TVET institutions is a global concern (Nthako,2020), and it is the same situation in the sub-Saharan Africa and Uganda. The low completion rates have been cited to affect individual potential and societal progress (Gaffoor & Van der Bijl, 2019). Low completion rates, therefore, becomes a significant parameter of poor educational outcomes that calls for appropriate quality assurance measures.

2.2.2 Employability Skills

Scholars define employability and employable skills in various ways, and at times interchangeably. For instance, Abdullah et al. (2022), defined employable skills as; skills abilities, knowledge, behaviour and other characteristics that a person requires to execute roles and responsibilities or succeed in their respective professional duties. Othman et al. (2020), looked at employable skills as graduate's talent aspect in enhancing their skills that include both knowledge-discipline skills and soft skills. On the other hand, Rohanai et al., (2020), defines employable skills as a group of relevant skills instilled in each person in order to yield productive workforce. The definition by Rohanai et al., "a group of relevant skills", rhyme well with the definition used in Holidi and Seman (2023), for "employability skills" as; basic skills, thinking skills, personal quality skills, interpersonal skills, information skills, and system and technology skills. Employability skills, therefore, combine both work readiness skills, work related skills and personal qualities. According to Delnoij et al. (2020), skills such as problem-solving, presentation skills, team working, and tool handling competency are key in the workplace. Abdullah et al. (2022), asserts that conceptual skills, multitasking and prioritizing, learning skills, leadership skills, interpersonal skills and self-discipline skills are also necessary in the workplace. Byrne (2022), also emphasises that entrepreneurial skills, self-reflection abilities, adaptability, confidence and self-brief are vital employable skills. According to Othman et al (2020), about 36% across all industries demand for problem solving-skills compared to 4% of physical abilities. All these scholars point to the fact that it is not a single skill set required by employers but a group of skills – employability skills.

Given the highlighted benefits of employability skills, literature indicate that employers still find gaps in graduates seeking employment (Kintu et al., 2019; Holidi & Seman, 2023), and their performance at workplaces is compromised (Othman et al., 2020). In the study conducted by Khirotdin et al., (2019), findings show that out of the 7969 TVET graduates who took part, 5541 were employed, 1369 enrolled for further studies, and 1061 were still looking for jobs. Although there seem to be other reasons why graduates fail to find jobs in the market, employers are more interested in in employability skills (Abdullahet al, 2022).

Literature suggests that employers and educational institutions need to work hand in hand to bridge the existing gaps between educational outcomes and employability skills (Bremner, 2018). From the literature reviewed, this study concluded that employability can be used interchangeably, and adapted the definition by Holidi and Seman (2023), which embraces all the skills holistically, and applied it to the Ugandan context.

2.3 Quality Assurance

Quality assurance (QA) aspects are understood differently by different people, and this affects its implementation. The concept "quality assurance" has two major terms "quality" and "assurance". The International Association for Quality Assurance in Pre-Tertiary & Higher Education (QAHE) emphasizes critical role of implementing QA practices to enhance learning experiences for students, and their overall academic excellence in training (QAHE, 2023). The Glossary of Terms for TVET Assessment and Verification (Wabha, 2013) defines quality in TVET as the level of satisfaction with the effectiveness of TVET systems and TVET institutions, their products and services, established through conformity with requirements set by clients and stakeholders.

Martin et al., (2020), acknowledges a widely accepted understanding of the concept of quality. They argue that the current and future societal needs require a broader, holistic perspective on quality that accommodates a range of stakeholders. Quality is separated into two dimensions of *scope* – quality defined as perceived by many levels, and *form* – quality defined in either an objective view (predefined criteria) or a subjective view constructed by the involved actors. According to Gebremeskel, (2019), quality is characterized by multifaceted dimensions that make it difficult to define precisely. This definition that is not precise, may be hard to apply to Ugandan situation where there is no QA framework for TVET to guide. Gebremeskel (2019), cites the African Union,

(AU, 2007) definition using the three dimensions of TVET products and services; input, processes, and output as the *yardstick* for quality in TVET. The three dimensions of quality are the starting point while assessing TVET quality (UNESCO (2017), in John & Yusri (2021)). The emphasis on quality inputs into training institutions, quality processes for training delivery and quality TVET outputs rhyme well with the aspirations of the Ugandan TVET Policy 2019, and hence it was applicable to this study.

Accordingly, Harvey (2004-23), defines assurance as a collection of policies, procedures, systems, and practices, internal and external to the organization designed to achieve, maintain, and enhance quality education delivery. Chisi (2018), asserts that quality assurance is a structured procedure for the evaluation and verification of dimensions, inputs, outputs, and outcomes against required benchmarks. Wafudu and Kamin (2021), refer to quality assurance in TVET institutions as planned and systematic processes that provide confidence in TVETs. They assert that QA is a rational and effective mechanism that addresses inequality, inequity and imbalances, and that there is need to deal with its realistic nature of QA in TVET. They also argue that realization of QA in TVET is hindered by politics, lack of public support, poor implementation of QA policies, poor infrastructure and learning facilities, and inadequate financial resources. However, Ghulam, (2014), brings in another dimension, and defines QA as a supervision technique defining all those designed and organised measures to ensure that a product or service satisfies given requirements for quality. Most of the literature emphasize QA as adhering to set policies, procedures, standards and processes, which enhance quality outputs. It can be concluded that TVET college leadership and employers can use QA as a supervision tool in public TVET colleges, to ensure that trainees, trainers and other stakeholders adhere to set policies, procedures, and practices within a specific college.

2.3.1 Quality Assurance Practices

According to (Gebremeskel, 2019), the practice of QA has concentrated on assessment and certification instead of monitoring the quality of training delivery. However, more literature reviewed, revealed that other different quality assurance practices are initiated by educational institutions, or recommended by QA bodies depending on their needs. Table 1, below summarises different viewpoints of some authors on practices for QA in education and training. The analysis in Table 1, gives what the authors may have

emphasized as key practices that enhance education and training. The scholars used different constructs of QA practices, which seem to emphasize common areas that stakeholders of TVET institutions need to take keen of:

Table 1: *Practices for Quality Assurance in Education and Training*

Author	**Practices for Quality Assurance**	**Emphasis**
Dei and De-Graft Johnson (2019)	Leadership and management effectiveness; talent, expertise and qualifications of staff (teaching staff, QA officers and support staff); clean and siren environment; curricula; teaching and methodology; available and accessible services and facilities (library and information services, internet facilities and technological facilities); continuous capacity building and support for staff (teaching and non- teaching staff); employability of graduates.	Leadership and management Clean and siren environment Qualified and experienced staff Available and accessible training facilities Continuous capacity building of staff Employability of graduates
QAHE (2023)	Governance (systems, structures, processes, policies and effective management); curriculum (supports effective teaching and learning, promotes relevance and alignment to social needs) development; teaching methods (innovative instruction technologies, learner-centred teaching approaches, continuous professional development for trainers); assessment (measuring student learning, providing meaningful feedback and continuous improvement of the teaching and learning process); student support services; and continuous improvement and enhancement of processes and practices.	Effective leadership Quality management systems Aligning curriculum to learning objectives Innovative teaching approaches Varied assessment methods Comprehensive student support services Continuous improvement and enhancement of processes Ongoing Professional Development
Kigozi (2020)	Continuous improvement; accreditation; self-evaluation; internal and external	Institutional quality audit, Accreditation,

	quality audits; external examinations; academic meetings; and student involvement in QA.	Continuous Assessment External examination Student evaluation of teaching Self-evaluation
Gebremeskel (2019)	From input, process and output approach, identifies: materials input; the supply of competent teachers; training delivery process and day-to-day workplace activities; quality management; infrastructure; and graduates' competence as an indicator of output quality of a TVET system.	Supply of materials, Supply of competent teachers Training process Quality management Infrastructure Graduates' competence
Ramasamy, *et al.* (2021)	Availability of facilities and resources; personnel competence, working environment and their continuous development; educational provision and curricula; Assessment practices; leadership and management effectiveness; learning and teaching effectiveness; student support services; effective industry engagements; learners' competences and employability.	Facilities and resources Competent personnel and their continuous development Curricula, and teaching/learning effectiveness Assessment practices Leadership and management Industry engagements Graduates' employability
IAG-TVET, (2014)	Student-teacher ratio; completion rate in TVET programmes; qualified teachers in TVET; investment in training of trainers; ICT training activities as a proportion of TVET; relevance of QA systems; and satisfaction of employers with graduates	Student – teacher ratio Completion rate of learners Continuous training of trainers ICT activities Relevance of QA systems Graduates' employability

Source: (Researcher: 2024)

This study integrated various ideas on good QA practices from different scholars in the context of TVET colleges in a developing economy, Uganda. The study categorized QA practices according to the main processes in the TVET environment to include; leadership and management practices, instruction and training practices, learning

practices, and the industry-employer involvement in TVET delivery as a good QA practice. Table 2, below highlights these categories and their emphasis.

Table 2: *Categories of Quality Assurance Practices*

QA Practices	**Emphasis on the practice**
Management Practices	Leadership and management effectiveness Self-assessment and evaluation of the institution Governance (systems, structures, processes, and policies) QA systems and competent QA personnel Quality management systems External quality and internal quality audits Continuous capacity building and support for staff Comprehensive trainee support services and systems Available and accessible services and facilities (library and information services, internet facilities and technological facilities) Continuous improvement and enhancement of processes and practices. Supply of competent trainers in the right ratios Accreditation of the institution, its trainers and programs External assessment of trainees
Instruction and Teaching Practices, and Learning experiences	Talent, expertise and qualifications of trainers Training delivery process and day-to-day workplace activities Undertaking continuous capacity building activities Curriculum (supports effective teaching and learning, promotes relevance and alignment to social needs) development and reviews Instruction and teaching methods (innovative instruction technologies, learner-centred teaching approaches, continuous professional development for trainers) Varied assessment methods (measuring trainees learning, providing meaningful feedback and continuous improvement of the teaching and learning process) ICT training activities as a proportion of TVET Clean and siren environment Employability of graduates

Learning Practices	Registration and taking examinations
	Trainee evaluation of teaching
	Trainee self-evaluation
	Trainee involvement in QA.
	Learning effectiveness
	Clean and siren environment
	ICT learning activities
Industry – Employer Involvement in TVET Delivery	Graduates' competence as an indicator of output quality of a TVET system.
	Effective industry engagements
	Trainees' competences and employability of graduates.
	Engagements with TVET institutions
	Satisfaction of employers with graduates
	Relevant Occupational profiles and standards for training programs

2.3.2 Quality Assurance Indicators

In order to assess TVET, the Interagency Group on TVET proposed various indicators for measuring quality (IAG-TVET, 2014). The proposed indicators include: student-teacher ratio; completion rate in TVET programmes; proportion of qualified teachers in TVET; investment in training of trainers; ICT training activities as a proportion of TVET; relevance of QA systems for TVET providers; utilization of acquired skills in workplace; and satisfaction of employers with graduates among others. The IAG-TVET has used these indicators for assessing TVET in developing countries like Jordan, and they are said to be handy for TVET policy design or improvement. Preliminary literature reviewed on QA indicators show that learners' behavioural characteristics, teachers and managers' experience and professional competencies, and quality output of the learning process are some of the QA indicators commonly used (Ayeni, 2012; Akhuemonkhan, 2014; Gasmelseed, 2021). The International Labour Organization (ILO, 2021) asserts that quality indicators vary by region and country, and cover key quality dimensions including governance and management, student services, teaching and learning, assessment standards and labour market relevance. This study adapted and used QA indictors proposed by different scholars and international organizations. Understanding these quality indicators suggested by scholars, helped the study to focus well on the

quality assurance practices in Ugandan TVET colleges to achieve the desired learning outcomes.

2.4 TVET System in Uganda

Technical Vocational Education and training in Uganda was like other countries in the EAC community such as Kenya and Tanzania, with uniform curriculum and examinations undertaken in TVET colleges. In the 1970s, because of political instability and other factors that saw the EAC by then collapse, each country in the region began developing its own TVET system with its structures, curriculum, and examinations. It is of recent that the harmonization of TVET across the region has been encouraged and embarked on.

2.4.1. Legal and Policy Provisions

The BTVET Act, 2008, was the legal instrument to guide the implementation of TVET reforms in the subsector (Okinyal, 2012), till of recent when government of Uganda embarked on TVET legal reforms. The BTVET Act 2008, proposed separation of training delivery from quality assurance functions. It established organs such as the Uganda Business and Technical Examination Board (UBTEB) and Directorate of Industrial Training (DIT) which were responsible for the regulation of qualifications (Mutebi & Ferej, 2023). The TVET Policy 2019, recognized the need to improve the quality of TVET, and provided for administrative strategies, and legal reforms including the establishment of a TVET Council as a regulator. However, the legal framework for QA, and other operating procedures and standards to guide TVET in Uganda were not in place at the time of the study.

2.4.2. Structure of TVET

Originally and before 1998, training delivery was offered by public institutions established and managed by the education ministry, and other different public sectors. The sectors included; health, agriculture, tourism, labour, forestry, and cooperatives, to train and produce skilled works from certificates to diplomas (Okinyal, 2012). Most of these public institutions have since then been transferred to MoES or are following policies and guidelines by the ministry. The Department of Technical Vocational Education and Training (DTVET) was licensing and registering private institutions, and workplaces for training skilled workers on behalf of MoES. Trainees who completed their training from TVET institutions were assessed and certified by UBTEB and DIT.

2.4.3. Category of TVET Institutions

The DTVET at the MoES, Uganda, overseas 142 public institutions and over 600 private providers offering TVET in different trades and occupations at the moment. The Uganda TVET Policy 2019, recommended categories of TVET institutions for both public and private providers, which will include national polytechnics and a technology university in future. Table 3 shows the categories, numbers of existing public TVET institutions under the purview of the DTVET and the awards. This study was limited to public TVET colleges as an apex of TVET at the commencement of the TVET Policy 2019.

Table 3: *Categories and Numbers of Institutions under MoES*

Category	No. of Institutions	Qualification for Award
Technical and Vocational Colleges	6	Higher and National Diplomas and Certificates Engineering Technology
Colleges of Commerce	5	National Diplomas and National Certificates in Business Education
Cooperative Colleges	2	National Diplomas and National Certificates in Cooperative Studies
Institute of Social Development	1	National Diplomas and National Certificates in Social development
Institute of Lands and Surveys	1	National Diplomas and National Certificates in Lands and Surveys
Vocational and Technical Institutes	80	National Technician and Craft Certificates in Engineering, Technology
Agriculture/Farm Institutes	4	National Technician and Craft Certificates in Agriculture Technology
Skills Development Centres	43	National Artisan Certificates in Basic engineering and Agriculture Technology
Totals	142	

Source: (Primary Data, 2023)

2.4.4. Quality Assurance in Uganda's TVET Institutions

The BTVET Strategic Plan, 2011/12- 22/23 code-named "Skilling Uganda Strategy", aimed at establishing a Skills Development Authority (SDA) for regulation and QA of the TVET system, but expired before the SDA was established. A review of QA practice in Uganda confirmed the fragmentation of TVET QA in different government ministries and agencies (Mutebi & Ferej, 2023). The National Council for Higher Education (NCHE) was responsible for the accreditation of institutions and programs for higher Education, and equating the higher qualifications. The examining body, the Uganda Business and Technical Examination Board (UBTEB), accredited TVET institutions, regulated, coordinated examinations, and awarded qualifications. The Uganda Vocational Qualifications Framework (UVQF) under the Directorate of Industrial Training (DIT), was not fully developed and expanded to cover all TVET institutions. Mutebi & Ferej (2023), agreed with earlier recommendations by the TVET Policy 2019, to quicken the enactment of the TVET law, and the establishment of a body to regulate TVET in Uganda.

Various studies done on TVET in Uganda, highlight general challenges affecting planned activities in TVET (GoU, 2019; Okware & Ngaka, 2017) . Research done by NCHE in the area of QA in higher education, resulted into a Quality Assurance Framework particularly for higher education (NCHE, 2014). This framework did not cover the entire TVET system. Relatedly, Malunda et al. (2021), examined the contribution of internal QA practices to andragogy in higher education in Uganda, and focused on staff development and student evaluations as key internal QA practices.
These findings in higher education, were important to consider while assessing QA in public TVET colleges in Uganda, since at the time of study colleges still fell under Universities and Other Tertiary Institutions Act (UOTIA).

2.5 Management Practices

The early simplicity paradigm definition of leadership is good management (Allio. (2013) in Nadzri, 2014). Adapting this definition, the study used leadership and management interchangeably or together.

2.5.1 Leadership Effectiveness

Leadership is a crucial driver of quality and competitiveness in TVET institutions. Effective leadership ensures the successful implementation of policies, maintains quality

assurance standards, and fosters an environment that promotes innovation and institutional accountability (Okumbe, 2021). Moreover, QA is a supervision technique (Ghulam, 2014), that institutional leadership can use to ensure quality education and training outcomes. Nadzri (2014), quoted the Journal of Leadership in Public Services as stating that "leadership is one of the critical success factors for continuous improvement for an organization". In addition, continuous improvement and effective leadership were among the good QA practices listed by various scholars (QAHE, 2023; Ramasamy et al., 2021; Dei, 2019). Ahmad & Ahamed (2023), asserts that personal attributes of leaders in understanding QA, their attitudes and practices, shape their leadership style. Ndambuki and Chege (2023). Moreover, strategic management plays a critical role in institutional performance by optimizing resource allocation, enhancing staff competencies, and supporting student achievement (Dube, & Matsika, 2022).

Strong institutional leadership ensures that training programs remain aligned with industry requirements (Joshua, 2023). Leadership is a key factor in standardizing institutional processes to ensure consistent educational quality (Rafi, 2023). In addition, transformational leadership among trainers was found to significantly influence students' employability (Omar, 2019). According to Wafudu and Kamin (2021), administrators of TVET institutions, not committed to their duties and responsibilities due to corruption tendencies, hindered implementation of QA policies. They assert that the managers of institutions are the custodians of QA, responsible for internal QA, self-assessment, and follow up procedure after accreditation exercise. Key leadership attributes—such as advocacy, continuous professional development, and fostering collaborative, result-driven teams, have proved to enhance institutional decision-making and strategic planning (Cabreros, 2023). In addition, Belimane and Chahed (2021), explored the role of leadership in quality assurance in Algeria. Finding show that lack of commitment from institutional leadership and restrictive governance structures, hindered effective quality assurance implementation. While the study identified barriers such as inadequate leadership involvement and restrictive governance, it did not explore potential solutions or strategies to address these challenges, a gap in the literature that future research could address. In Kenya, research show that leadership commitment—characterized by strategic direction, employee involvement, and informed decision-making—enhances the competitiveness of TVET institutions (Gachunga, 2020). Comparing these studies, the all demonstrate a strong correlation between leadership

styles and students' success, career readiness and employability. However, they may not be universally applicable, as different regions and countries have unique educational landscapes and economic conditions.

A study in Uganda's TVET institutions found out that managers who were supposed to supervise and guide trainers on real life projects, were most of the time absent, which compromised quality of the projects (Turyatemba et al, 2023). This implies that some extent, these managers were not committed to their leadership role, which poses a serious challenge to the quality of education and training offered.

2.5.2 Quality Assurance Systems

The integration of quality assurance (QA) management systems in TVET institutions has been widely recognized for its role in improving educational standards and ensuring alignment with industry demands (Odjo et al., 2024); Asiyai, 2022). These systems rely on structured assessment methods, rigorous monitoring processes, and continuous feedback mechanisms. Odjo et al. (2024), emphasize that QA in TVET is instrumental in bridging skill gaps, enhancing employability, and fostering economic growth, particularly within West African institutions. In addition, Korter (2023), investigated quality assurance practices in TVET institutions in Nigeria's North Central region with 50 participants, including lecturers, technologists, and instructors. Findings point to inconsistencies in the review process for Technical Education curriculum, which compromised quality to some extent. However, the study was limited in scope, as it only examined only one public TVET institution, and expanding the research to multiple institutions across diverse TVET programs would offer a more comprehensive understanding of quality assurance systems in the region.

A broader perspective on QA implementation is provided in Bhatta (2023), who examined best practices in Nepal's TVET system, advocating for strong policy frameworks to enhance workforce competitiveness. However, a critical gap remains in understanding the practical challenges of implementing QA at the institutional level, particularly in developing countries without established QA frameworks. The QA training manual for TVET institutions in Kenya (UNESCO, 2023), highlights various roles of leadership, management and governance in QA; the establishment of QA policy and objectives, ensuring that they are communicated and understood throughout the institution, availing resources for its implementation and periodic reviews for continuous

improvement of training. Despite the acknowledged benefits, implementing QA systems in resource-constrained settings presents significant challenges. Studies conducted in Ethiopia and Sudan (Gebremeskel, 2019; 2021), reveal that insufficient resources directly impact the quality of training, restricting the ability of institutions to achieve desired outcomes. While much of the existing literature focuses on governance structures and policy formulation, there is a pressing need for empirical research that explores how these frameworks translate into actionable quality assurance practices in diverse educational contexts.

2.5.3 Internal Assessment and Evaluation in TVET Institutions

Self-assessment reports play a crucial role in maintaining quality within institutions, serving as a reflective tool for institutional improvement (Ramachandran & Nayak, 2022). However, the self -assessment process is often criticized for being bureaucratic and complex (Čorejová et al., 2019), though they affirm that some institutions, have successfully implemented internal strategies and database systems to simplify the self-assessment process for its internal quality assurance. Regular self-assessments help TVET institutions identify areas for improvement within their quality management systems, and alignment with national standards (Vanpham & Dangnguyen, 2023). These practices not only increase institutional credibility but also ensure that graduates acquire skills relevant to industry needs (Čorejová et al., 2019).

In Algeria, Belimane and Chahed (2022), carried out a comparative study on self-assessment practices across higher education institutions. Through qualitative content analysis, they found both similarities and differences in how institutions approached the self-assessment process. However, the limited sample size restricted the generalizability of the results. Vesce et al. (2021), developed a self-assessment tool for professors in Italy to evaluate their alignment with accreditation standards. The study proposed a systematic approach for quality management in higher education institutions, emphasizing the need to build competency in accreditation procedures. The process included defining objectives, constructing a category framework, assigning weights, designing the questionnaire, summarizing results through a formula, and conducting a robustness analysis. This approach provided educators with a simpler means to assess their institution’s adherence to accreditation requirements, offering them valuable insights into quality assurance practices. Although the study was conducted in higher

education institutions, its approach is applicable to TVET institutions and in other region's contexts.

2.5.4 Staff Recruitment, Appraisals and Development

According to Wafudu and Kamin (2021), transparent staff recruitment process, their induction and professional development are among the approaches for realisation of QA in TVET. Staff include trainers who perform the function of training in TVET institutions or companies and workshops (UNESCO, 2022). UNESCO reveals that the educational levels of trainers, their recruitment in adequate numbers, employment status, their emoluments, and professional development are key for quality TVET. Another study done in Homabay County, Kenya, found that inadequacy of trainers was one of the challenges faced by TVET institutions (Anudo & Orwa, 2020), with 92% of the respondents mentioning inadequate trainers in some technical subjects as a constraint. These findings indicate that qualifications, experiences and adequate numbers of trainers are crucial for quality education and training, an issue quality leadership need to address.

2.6 Trainees' Learning Experiences and Practices

Quality assurance is designed to prove and improve the quality of TVET and the educational outcomes (John & Yusri, 2021). Trainees are the key stake holders of educational institutions and a sole reason why they exist. Their independent feedback on quality assurance practices in their institutions, whenever they are among respondents in such studies, is vital. Poor learning environment and practices may directly affect trainees' success and acquisition of adequate employability skills. The work of Kiplagat et al., (2018), affirms this assertion that institutional based factors highly influenced trainees' completion rate in vocational training centres in Kenya.

2.6.1 Availability, Adequacy, and Accessibility to Resources

In TVET, the quality of learning outcomes is largely influenced by the availability, sufficiency, and accessibility of resources and facilities (Bhatta, 2021). These elements serve as key indicators of institutional quality, ensuring that trainees receive adequate learning opportunities in well-equipped environments. Availability pertains to the presence of essential infrastructure such as classrooms, workshops, laboratories, and instructional materials, including tools and equipment necessary for effective learning (Bhatta, 2021). Furthermore, Wafudu and Kamin (2021), contend that quality of

infrastructure and learning facilities available in any TVET institution, impacts on the quality of the outputs. Adequacy, as highlighted by Alla-Mensah et al. (2021), refers to whether the available facilities and materials sufficiently meet the needs of both trainees and the curriculum. This aspect emphasizes the importance of ensuring that trainees have access to up-to-date industry-standard equipment and hands-on training. Quality assurance in TVET, therefore, should prioritize equitable access to resources to mitigate disparities that could result in unequal learning opportunities. Bano et al. (2022), explored six major challenges affecting TVET in Pakistan, including a shortage of skilled personnel, outdated equipment, weak industry partnerships, insufficient skill development, and high unemployment rates. Results from regression analysis indicated five key factors that significantly impacted TVET: the state of learning and physical facilities, employability, female participation, skill development, and teacher training. A limitation of this study was its focus on national-level trends, which could not cover variations across different regions and industry sectors. The current study builds on their findings and extends the research in Uganda's context.

2.6.2 Support Services to Trainees

Support services that are crucial and play a role in shaping the experiences and learning outcomes in TVET institutions, include resources to support social, emotional, and physical needs of a trainee (QAHE, 2023). Various forms of support, including psychological counselling, financial aid, career guidance, and emotional assistance, have been found to positively influence student retention, academic performance, and overall development (Buthelezi et al., 2024; Munyaradzi & Addae, 2019). Studies indicate that these services contribute to higher attendance and certification rates (Muchineripi, 2019). Similarly, Buthelezi et al. (2024), examined psycho-social support services at a South African TVET college, revealing that inadequate counselling, and the absence of peer tutoring negatively impacted student development. While the study offered valuable insights, its findings were constrained by the focus on a single institution, suggesting the need for further investigation across multiple TVET institutions.

Beyond academic guidance, inclusive education remains a critical area of concern. Research in Botswana suggests that the effectiveness of inclusion strategies depends more on the quality of student support, than on the institutional category (Mosalagae, 2021). Relatedly, Munyaradzi and Addae (2019), investigated the role of psychological

support services in TVET institutions, demonstrating their positive impact on students' academic success and retention. However, they advocated for expanding research to a wider range of institutions to ensure a more comprehensive understanding. In Kenya, Omondi et al. (2022), revealed a significant link between orientation services and course satisfaction ($r = .473$, $p = .000$), reinforcing the importance of structured student support systems. A related study by Omondi et al. (2023), again found a strong correlation ($r = .511$, $p = .000$) between appraisal guidance services and student satisfaction in TVET programs. Appropriate support services for both trainers and trainees are recommended as a crucial practice (Senyametor, 2020).

In Uganda, limited access to scholarships and bursaries has been identified as a key factor driving student dropout rates, emphasizing the importance of financial support mechanisms (Oviawe, 2019). In addition, Barigye (2024), explored career guidance practices within Ugandan TVET institutions, emphasizing the necessity for well-structured career services. The study found that effective career support depends on sufficient funding, trained personnel, and clear policy frameworks. However, the research was limited by a small sample size, highlighting the need for broader studies to capture diverse perspectives. Collectively, these studies affirm that comprehensive support services are essential for trainee success in TVET institutions. Strengthening these services can significantly improve learning outcomes, bridging the gap between education and employability in diverse contexts.

2.6.3 Greening, Safe, and Clean Environment

Recent studies emphasize the crucial role of environmental sustainability within TVET institutions, with a focus on adopting green practices across curricula and campus infrastructure (Jayaprakash, 2024; Ali-Ashgar et al., 2023; Muaddab, 2024). Jayaprakash (2024), asserts that eco-friendly infrastructure, energy-efficient systems, and efficient waste management in TVET campuses, demonstrate a commitment to environmental responsibility, and play a significant role in preparing future workers for green industries. In addition, sustainable campus infrastructure provides trainees with experience in sustainable practices (Ali-Ashgar et al., 2023). These initiatives benefit the campus community and foster responsible environmental behaviour (Muaddab, 2024). Incorporating environmental sustainability into TVET may help raise trainees' employability skills. Ali-Ashgaret al. (2023), further, explored the potential for

integrating green infrastructure at the Teluk Intan TVET campus in Malaysia, suggesting strategies like green roofs, rainwater harvesting, and agro-ecological approaches. Their study found that adopting green infrastructure could enhance campus management while offering practical learning opportunities to trainees. Despite emphasizing sustainability, the study identified a gap in research regarding the pedagogical approaches and teaching methods in vocational education. This study attempted to address this gap by proposing the integration of environmental sustainability into TVET curricula in Uganda, one of the focus areas.

Hussain (2021), assessed workplace safety and health awareness in Malaysian TVET polytechnics. The survey revealed that only 40% of respondents had adequate knowledge to address safety and health concerns. This study points to a significant gap in occupational safety and health education in TVET institutions and calls for further research in this area. The present study aimed at addressing this by evaluating safety practices in Uganda's TVET colleges.

Rodzi et al. (2019), investigated Malaysian TVET trainees' awareness and attitudes toward environmental issues, particularly solid waste management. Although the majority of trainees demonstrated environmental awareness, the study found a weak correlation between awareness and attitudes toward pro-environmental behaviors. The inconsistency suggests a gap in understanding the factors influencing environmental attitudes, which this study aimed at exploring in TVET Colleges in a Ugandan context.

2.7 Instruction and Teaching Practices

Innovative teaching, use of technology and collaborative learning coupled with other effective instructional strategies and approaches that support active engagement with trainees are good practices (QAHE, 2023).

2.7.1 Quality Teaching Methods

According to Kigwilu and Akala (2017), underutilization and inadequacy of physical facilities, hinder effective teaching and learning in TVET, yet these are the key quality indicators highlighted by ILO, (2021). Moreover, quality of instruction came out vividly as the most important motivating factor for students in higher education (Sogunro, 2017).

A study in Nigeria, revealed that the rural institutions in Delta State, had poor teaching methods employed by teachers, and provision of quality TVET was a challenge (Ayonmike et al, 2015). Ayonmike *et al*., concluded that poor teaching methods employed by teachers affected the quality of TVET in Nigeria. Related research show that pedagogical quality and quality evaluation are important dimensions which influence teaching and learning effectiveness (Senyametor et al., 2020). These findings affirm that quality teaching methods are core for educational institutions, though they were mostly from a higher education perspective and in other country contexts. Extending the research to TVET institutions would close the gap in a Ugandan context. Standard S27 of the Ugandan TVET Policy (GoU, 2019), requires all TVET programs to follow a training curricula framework approved by the world of work. Relatedly, Standard S32 of the policy states that "the training and instruction procedures in all TVET Institutions must emphasize practical and hands-on training which is integrated with flexible and work-oriented delivery methods. The policy expects trainers to continuously enhance their instruction methods by returning to industry for hands-on practices. This study examined trainers' involvement with industries in Uganda on training implementation related matters.

2.7.2 Professional Development, Qualifications, and Experiences

A study in Turkey, under the European Training Foundation (ETF), revealed that professional development improves the quality of teaching and learning sustainably (Durgun, 2016). Durgun, recommends that professional development should be addressed at multiple levels depending on the needs at that level. Research done on policies for effective continuous professional development (CPD) for TVET teachers in Kenya (Njenga, 2020), indicate a strong need for CPDs. These findings point to the importance of enhanced CPD of TVET trainers as a critical QA practice. In Kigali City, Rwanda, teaching experience in terms of years in 11 institutions was studied, and results showed that 74% of the teachers had more than 3 years of experience and delivered quality education and training (Nizeyimana, 2016). The analysis of the level of education of TVET teachers, in the same study, showed that the majority had the required qualifications and experience. The study concluded that both experience and qualifications are essential for quality teaching.

In Uganda, the share for TVET trainer management and development compared to general education is still low (MoES, 2023). The staffing levels are still less than 55% in most TVET institutions. According to the Policy implementation Standard S37, all TVET trainers must undergo CPDs to update their knowledge and practices (MoES, 2019). Relatedly, a study conducted in Uganda, found out that trainees were not satisfied with the practical skills of trainers during real-life projects (Turyatemba et al., 2023). Although this was trainees' perception, it reveals a gap in trainer competences. Despite all these assertions, there might be practices the trainers themselves can deploy to keep themselves relevant for quality education and training.

2.7.3 Trainers Self-Assessment and Evaluation

Self- assessment and evaluation are important aspects for individuals and institutions to remain relevant. In South Africa, a study by Holler et al. (2023), investigated how TVET lecturers assess their competencies in digital teaching and learning, alongside their need for additional training to improve digital teaching. The findings revealed that lecturers rated their digital skills highly, but there were significant variations depending on their educational background. In Pristina, Kosovo, Laska et al. (2023), examined teachers' self-evaluation practices. The study surveyed 983 teachers and analysed the data using SPSS 17.0 and Excel. The results indicated that over half of the teachers believed self-evaluation positively influenced their performance, with a few acknowledging only moderate or minimal effects. The study also explored the reasons why teachers engaged in self-assessment, revealing that most did so for the Inspection Sector. These findings underscore the role of self-assessment in fostering professional commitment and engagement with trainees. The findings also reveal that self-evaluation by trainers enhance the quality of teaching and improve performance.

2.7.4 Green, Health and Safe Environmental

Related to greening, Jebungei (2020), investigated the role of trainers' competencies in linking green skills to sustainable economic development in Kenya. The study revealed that attitudes, values, knowledge, and technical skills related to green practices significantly contributed to a sustainable economy. However, the regional scope of the study limits its generalizability to other areas of Kenya, highlighting the need for a broader investigation. This gap is addressed in the current study, which focused on Uganda's TVET colleges across the country. Li et al. (2023), examined the challenges

faced by vocational educators in China regarding the integration of green technologies into teaching. The study found that 68% of faculty members lacked essential knowledge about green technologies. The study also identified barriers such as lack of relevant courses, and low industry demand, which impede effective green technology integration. This limitation highlights the need for further research on quality assurance practices that enhance green skills in education institutions, which the current study in Uganda sought to explore.

2.8 Industry Employer Involvement in TVET

Employer participation in TVET is crucial for curriculum relevance and soliciting their support (Mohamed, 2023). This can be associated well with the results of an Internal Quality Assurance (IQA) survey done in Kenya, in six selected institutions with established Board Committees on QA, which identified limited curriculum delivery methods and scarce training resources to deliver the curriculum (TVETA, 2019). These findings reveal the importance of employer involvement in quality delivery of TVET.

In another study on the Practice of Quality Assurance in the TVET System in the State of Amhara, in two companies, revealed that TVET was not in a position to fulfil the goals of quality and this caused employability difficulties (Gebremeskel, 2019). Managers affirmed that often graduates failed to fulfil the minimum job requirements of their respective companies. In both companies, newly employed TVET graduates were never assigned a specific job permanently without ascertaining their competence to avoid damage to machines. The findings point to the role employers play in evaluating TVET graduates and giving useful feedback for institutions for continuously improvement. In Pakistan, the quality assurance infuence on TVET was examined through a study that collected data from 5000 staff and students from major cities (Ghulam, et al., 2014). Results showed a significant relationship between TVET and skills acquisition for self-employment. Ghulam et al., recommended an exchange program between Industry and TVET institutions as a good practice for effective TVET outcomes. This study further revealed that employers can play a mentorship role to TVET trainees while in institutions.

In Uganda, the TVET Policy 2019, emphasizes an employer-led TVET system and affirms the need for industry involvement (GoU, 2019). The Policy strategically puts employers at the forefront of defining occupational and competence standards for the development of TVET curricula. The policy clearly states that “the implementation of

TVET must promote industry engagement and engagement of all stakeholders to promote synergies, collaboration and appropriate partnerships for effective TVET delivery". This current study, basing on such policy provisions in Uganda, examined the kind of engagements employers have with TVET colleges, to enhance quality of teaching and learning outcomes.

2.9 Quality Assurance Practices and Educational Outcomes

Quality Assurance (QA) practices ensure that TVET institutions maintain high standards, and continuously improve their management, training and learning processes (Lasisi, 2025; Cabreros & Barbacena, 2024). Poor QA practices can be detected from insufficient infrastructure, lack of necessary knowledge, skills and ethical values, and lack of coherence in curriculum delivery for success (Cabreros & Barbacena, 2024). Previous studies have investigated the relationship between QA and educational outcomes, and mixed results and perceptions have been noted. Bamusi (2023), conducted a study in Malawi's TVET institutions, and the findings show that quality assurance enhance the learning outcomes attained. Relatedly, Nguyen and Tran (2022), indicate that institutions with well-structured support systems and strong quality assurance frameworks tend to achieve significantly higher completion rates, than those with weaker systems. Similarly, Otundo (2024) highlights a strong link between quality assurance measures and student success. Otundo, notes that institutions which conduct regular evaluations and provide adequate student support, consistently report completion rates exceeding 75%. These findings emphasize the essential role of institutional quality in fostering trainee retention and successful completion of the program.

In a related study, Abdullah et al. (2022), explored how prepared TVET trainers are to integrate employability skills into their training programs in Malaysia. Their research surveyed 34 experienced trainers of trainers and 137 trainee trainers at the Centre for Instructor and Advanced Skill Training (CIAST). The study found that both groups demonstrated a high level of readiness and competence in embedding employability skills into their teaching. The researchers concluded that the ability of trainers to incorporate employability skills, significantly contribute to the outcomes of the learning process, and improves their workplace performance. However, the lack of critique regarding the study's findings raises concerns about how universally applicable these results are, especially in different contexts such as Uganda. This underscores the need

for similar studies in diverse settings to evaluate the effectiveness of employability skills integration in various educational systems.

Bassah (2023), studied the employability skills that industry experts in Malaysia considered essential for TVET graduates. The study identified skills such as communication, critical thinking, problem-solving, and entrepreneurial skills as essential for employers. Despite the broad range of skills discussed, a deeper exploration of how these skills are applied differently across various industries within Malaysia was not explored. Understanding how the priorities for employability skills vary by sector could provide valuable insights into how TVET programs can be tailored to meet the specific demands of various industries. This highlights a need for more sector-specific research that could inform TVET curricula and improve graduates' preparedness for the workforce.

Musigwa and Andala (2020), explored the connection between the skills acquired in TVET institutions, and the employment outcomes of graduates in Rwanda. Their research, which surveyed 251 participants, found that TVET students gained a wide range of skills, including leadership, negotiation, creativity, entrepreneurship, and ICT. However, they did not assess how these skills matched the expectations of employers. While the study listed essential skills, it did not evaluate whether these skills were sufficient or appropriate for the labour market. This gap calls for further investigation to determine if TVET graduates' skills align with employer needs and to assess whether adjustments to curricula are necessary to bridge any gaps.

Rukundo and Sikubwabo (2021), assessed the impact of TVET programs on youth employment in Nyabihu District, Rwanda. They found that hands-on skills gained through TVET programs had a positive impact on job creation but noted that the full potential of entrepreneurship skills was not being utilized. The study did not delve into why these entrepreneurship skills were underused, leaving a gap in understanding the structural or contextual factors that may hinder the application of these skills. Further research into these factors could provide valuable insights into how TVET programs can better foster entrepreneurial abilities in graduates and improve their employment outcomes.

2.9 Summary of the Reviewed Literature and Knowledge Gap

This section summarises the reviewed literature and the related knowledge gap.

2.9.1 Knowledge Gap in the Reviewed Literature

Most studies done in the same area of this study, whose literature have been reviewed, are based on common QA practices proposed by various scholars and international organizations. The difference is that they are practiced in different environments, countries and regions with different legal frameworks and policies. Their findings are based on QA policies, standards practices and procedures applicable to their specific TVET system and context. Their methodologies were not necessarily applicable to this current study, and could not fully inform QA policies and strategies in Uganda. This study, benchmarked on good QA practices highlighted by various scholars to review the QA practices on outcomes in Uganda's public TVET colleges. For example, the research by Makochekanwa et al. (2018), on employer involvement was a descriptive one, this study employed quantitative and qualitative methods for further analysis of the role of employers in QA practices in TVET colleges in Uganda.

Mutebi and Ferej (2023), and other scholars discussed quality assurance entities and regulatory frameworks, in education and training in Uganda. This study utilised some of their findings, but was specific to QA practices on educational outcomes in public TVET colleges because of their apex position in the TVET system in Uganda. Understanding the Quality Assurance practices in public TVET colleges was key in executing the recommendations proposed by (Mutebi & Ferej, 2023) and (Turyatemba et al., 2023), respectively.

The legal and policy provisions discussed by (Okinyal, 2012), especially the BTVET Act 2008 and the Skilling Uganda Strategy, 2012, indicated gaps in guiding QA at TVET institutions. However, those two instruments had been overtaken by events. This study made use of provisions in the Ugandan TVET Policy 2019, but focused on the initiatives by public TVET colleges. The study assessed the internal quality assurance practices in the absence of a QA legal framework.

Most studies evaluated QA practices in TVET institutions based on external quality assurance by regulatory bodies, government ministries, agencies. This study conducted the assessment based on internal QA practices in the public TVET colleges. The approach, therefore, used in literature reviewed could not fully give assess QA practices and educational outcomes in Uganda's public TVET college and the contextual outcomes.

From literature reviewed, having policies and QA frameworks is not enough, other measures for implementing QA practices had been put in place by those countries. This study generated information and contributed knowledge on QA practices in public TVET colleges for future improvements of the outcomes, and decision making by different stakeholders.

It was also noted that limited empirical evidence has been noticed on the relationship between QA practices and educational outcomes in the developed economies like Uganda, especially in the context of TVET colleges. However, this study provides useful information to bridge the gap.

2.9.2 Summary of the Reviewed Literature

This chapter reviewed preliminary literature related to the research study area and specifically to the study variables. Most literature reviewed on other countries revealed that they have legally established quality assurance bodies and/or quality assurance frameworks in place, which was not the case with Uganda. The literature reviewed gave the perceptions of key stakeholders including trainees' experience or attitude on the QA practices. Literature reviewed on quality training practices showed that this aspect played a key role in effective learning and teaching. Good leadership and management practices in an institution also featured as one of the key QA practices recommended. Literature on employers' involvement in training practices, also showed that institutions which worked with industry, improved the quality of their TVET graduates and their employability. The gaps identified in literature, presented a number of areas for further research, however, this study limited itself to addressing those that were related to the study area, and within the specified means. The literature reviewed formed a platform on which this study best assessed QA practices and the educational outcomes in Uganda's public TVET colleges. The next Chapter highlights the research methodology and the design of this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter outlines the research design and methodology employed in reviewing the quality assurance practices and education outcomes in public TVET colleges in Uganda. The sections of the chapter, explore the philosophical research paradigm, research design, study area, target population, sampling procedure, sample size determination, study variables, data collection instruments, validity and reliability of instruments, data collection procedures, data analysis, ethical considerations, and the summary of the chapter.

3.2 Philosophical Research Paradigm and Design

3.2.1 Research Paradigm

The pragmatic philosophical research paradigm formed the foundation upon which the entire study was conceptualized, and executed. Research philosophy encompasses a set of beliefs and assumptions regarding the nature of reality (ontology), the nature of knowledge (epistemology), and the methods for acquiring knowledge (methodology). As illustrated by Saunders et al. (2009) in Kilani (2016), research philosophy sits at the outermost layer of the research onion, shaping decisions about research design and strategies. For this study, the pragmatic paradigm was adopted because of its optimal role for mixed methods in educational research (Dube et al., 2024). It allowed the researcher to focus on the utility of findings to solve real-world problems in the TVET sector. TVET colleges serve as dynamic service institutions, interfacing with industry and society, hence, pragmatism enabled the researcher to prioritize the outcomes over rigid adherence to a singular worldview. It supported the integration of both quantitative and qualitative data collection and analysis methods. This alignment between research philosophy and methodological choices made it possible to generate findings that were both theoretically grounded and practically useful. The pragmatic stance also supported a problem-centred inquiry, enabling the researcher to investigate the actual quality assurance (QA) practices in Ugandan public TVET colleges. This philosophical foundation influenced every phase of the research process—from

problem identification and formulation of objectives, through data collection and interpretation, to drawing conclusions and formulating actionable recommendations. The application of the pragmatic paradigm in this study is detailed below.

Philosophical Component	Application in the Study
Ontology	Reality was viewed as pluralistic and context-dependent, shaped by institutional practices and stakeholder experiences.
Epistemology	Knowledge was considered valid if it addressed practical issues in QA practices, and contributed to quality educational outcomes.
Axiology	The research was value-driven, aiming to foster improvement in TVET service delivery through ethical and socially responsible inquiry.
Methodology	A mixed-methods approach was adopted to gain a holistic understanding—combining the breadth of quantitative data with the depth of qualitative insights.
Methods	Structured questionnaires, semi-structured interviews, and document analysis were used to collect relevant and reliable data.
Data Interpretation	Quantitative data were statistically analysed, while qualitative responses were thematically analysed to capture nuanced perspectives.
Conclusion	Findings highlighted the extent and limitations of QA practices, providing a grounded basis for conclusions about institutional performance and outcomes.
Recommendations	Practical and context-specific recommendations were developed to improve QA mechanisms, and enhance quality training delivery that responds to industry needs.

By grounding the study in a pragmatic paradigm, the researcher was able to maintain methodological coherence while addressing complex, and multifaceted issues in Uganda's

TVET system. The paradigm enabled a thorough exploration of the problem, and also ensured that the outcomes were relevant to practitioners, policymakers, and other stakeholders in the TVET ecosystem.

3.2.2 Research Design

Research design refers to the structured framework or blueprint that guides the entire process of investigating research problems or answering research questions (Abosede & Onanuga, 2016). It outlines how data are to be collected, measured, and analysed in order to provide meaningful insights. In this study, the researcher sought to review QA practices and the outcomes in public TVET colleges in Uganda, and to identify potential gaps for improvement. The study adopted a cross-sectional survey design which involves the collection of data at a single point in time, offering a snapshot of the variables under investigation (Van der Stede, 2014). In this case, the researcher gathered data from participants in the selected TVET colleges only once, without conducting follow-up measurements or longitudinal tracking. This design was particularly suitable for the study due to its cost-effectiveness, simplicity in execution, and ability to capture data from a broad range of respondents within a relatively short timeframe (Cummings, 2018). It allowed the researcher to efficiently collect and analyse data without prolonged field engagement, which was important given logistical and time constraints.

3.3 Study Area

The study was conducted in five (5) public TVET Colleges across Uganda, for proper representation of every region in the country. Specifically, the 5 colleges were purposively selected from the fifteen (15) colleges that offer TVET programs under the Ministry of Education and Sports Uganda. In addition to their geographic representation, the five colleges specialize in engineering technology, and register high enrolment of trainees compared to other colleges. They also work with employers in a variety of sectors of economy. The map showing the geographical locations of the five selected colleges in their respective regions is attached as Appendix 1. The colleges for this study were; Uganda Technical College Lira (UTCL) in the Northern region, Uganda Technical College Elgon (UTCE) in the Eastern region, Uganda Technical College Bushenyi (UTCB) in South Western region, Uganda Technical College Kyema (UTCK) in Western region, and Institute

of Surveys and Land Management (ISLM) Entebbe in Central region. For each college, two (2) companies that take on the highest number of their graduates for employment or/and trainees for industrial attachment, were selected from the available data on each college.

In addition to the cross-sectional design, the study employed a mixed-methods approach that integrates both quantitative and qualitative research methodologies within a single study to gain a more comprehensive understanding of the research problem (Oranga, 2025). The approach enabled the researcher to explore the issue of quality assurance from both numerical and narrative perspectives, thereby enriching interpretation and enhancing applicability of the findings. According to Oranga (2025), the mixed-methods approach offers several advantages, including allowing the researcher to understand complex social phenomena in depth; flexibility and adaptability, accommodating diverse research tools and respondent types; ability to address complex research questions that cannot be fully explained using a single method. In this study, the mixed-methods approach enabled the researcher to conduct in-depth interviews, focus group discussions, and administer structured questionnaires to diverse participant. These tools provided a range of insights on the implementation of QA practices, stakeholders' experiences, and institutional challenges. They helped to contextualize and explain the patterns emerging from the quantitative data, leading to more nuanced conclusions and practical recommendations for strengthening QA systems in Uganda's public TVET colleges.

3.4 Target Population

The study targeted a population of 2,707 stakeholders who were directly involved in TVET in the five (5) selected public TVET colleges, and ten (10) companies, with two companies selected for each of the five colleges. This target population included fifteen (15) college managers, ten (10) industry managers, one hundred and thirty-four (134) trainers, and two thousand five hundred and forty-eight (2,548) trainees, drawn from the five colleges as in Table 4 below. The target population figures were extracted from available data at the Department of TVET in the ministry of Education Uganda, and the respective colleges.

Table 4: *Target Population of the Study*

College	Managers	Permanent Trainers	Year Two Trainees	Total Population
UTCB	3	26	728	757
UTCE	3	37	703	743
UTCL	3	30	628	661
UTCK	3	21	259	283
ISLM	3	20	230	253
Ten (10) Companies	10	N/A	N/A	10
Target Population	**25**	**134**	**2,548**	**2,707**

Source: (Researcher, 2024)

Since there were no officially appointed quality assurance officers in the colleges to participate in the study, the targeted college managers comprised of principals, deputies, and academic registrars. Only second-year trainees were targeted for the study. Targeted trainers were only those on the government payroll. For companies, only managers or heads of departments employing the highest number of graduates associated with each college were the target participants. Two companies were selected for each college, based on either their employment of a significant number of TVET graduates or their acceptance of many TVET trainees for industrial attachment.

For easy and quicker data collection, the target population of the study was further categorized into quantitative and qualitative study populations. The quantitative study population comprised of trainers and trainees who answered in a questionnaire. Qualitative study population comprised of college and industry managers who were interviewed, and purposely selected trainers and trainees' leaders for focus group discussions. Tables 5 and 6 below, show target population for quantitative and qualitative *study populations* respectively.

Table 5: *Target Population for Quantitative Study*

College	Trainers	Trainees	Total Population
UTCB	26	728	754

UTCE	37	703	740
UTCL	30	628	658
UTCK	21	259	280
ISLM	20	230	250
Target Population	**134**	**2,548**	**2,682**

Source: (Researcher, 2024)

In total, the quantitative study targeted 2,682 population, consisting of 134 trainers and 2,548 trainees across the five institutions. This population formed the basis for the survey component of the study, which aimed to assess and quantify the current quality assurance practices within the TVET colleges from the perspectives of both trainers and trainees. The table provides a clear representation of how the study ensured proportional and comprehensive coverage across the selected institutions, thus enhancing the reliability and representativeness of the quantitative findings. The qualitative component of the population is outlined in Table 6 below. It summarizes the categories of participants, their distribution across five selected public TVET colleges, and the total number of participants, sampling techniques employed, and the data collection methods used.

Table 6: *Target Population for Qualitative Study*

Category	**College**					**Target**	**Sampling**	**Data Collection**
	UTCB	**UTCE**	**UTCL**	**UTCK**	**ISLM**	**Popln**	**Technique**	**Method**
College managers	3	3	3	3	3	15	Purposive	Interview
Industry manager	2	2	2	2	2	10	Purposive	Interview
Trainees' Leaders	14 (2 groups of 7)	14 (2 groups of 7)	14 (2 groups of 7)	14 (2 groups of 7)	14 (2 groups of 7)	70	Purposive	Focus group Discussion
Trainers	7	7	7	7	7	35	Purposive	Focus group Discussion
Total						130		

Source: (Researcher, 2024)

Four distinct categories (15 college managers, 10 Industry managers, 35 Trainers and 70 Trainees' leaders) were purposively selected based on their roles and relevance to the implementation of quality assurance (QA) practices in TVET colleges. Two managers from each of the two partnering industries with each college, were selected totalling to (10). These industry representatives provided critical input on how QA practices at the colleges align with workplace expectations. Data from college and industry managers was collected through interviews. In addition, each college provided two focus groups, each comprising 7 participants, totalling to 14 trainees' leaders per college and 70 trainees overall. This group was selected purposively to include trainees in leadership positions who could articulate their perspectives on QA from a learner's viewpoint. A total of 7 trainers from each college were purposively selected based on their teaching roles, responsibilities, and familiarity with institutional QA practices, resulting in 35 participants. Data was collected from trainers and trainees through Focus Group Discussions (FGDs). Therefore, in total, 130 participants were involved in the qualitative data collection phase. The use of purposive sampling ensured that only those individuals with relevant knowledge, experience, and positions of influence in the QA process were selected to participate in interviews and FGDs. The combination of interviews and FGDs allowed for the gathering of in-depth, context-rich data to complement the quantitative results of the study.

3.5 Sampling Procedure

Sampling is referred to as the process of employing a portion of a population to represent the entire population in survey research (Adeoye, 2023). This study deployed purposive sampling to select public TVET colleges and companies to participate in the study. The selection of the participating colleges was based on geographic representation, specialization in engineering technology, and with large numbers of employers in a variety of sectors. Furthermore, quota sampling was deployed to divide the target population into subgroups (managers for colleges and companies, trainers and trainees) for proper representation. Due to the nature of the area of research, the participation of trainers was limited to academic staff who had at least three (3) years of working experience in TVET, and only those on government pay roll. Trainees' participants were limited to finalists (second years) who had studied for more than a year at the college, and have done their first industrial attachment. Participating employers were limited to companies that employ

trainees from different courses offered at a particular college, or take on the biggest number of graduates from a selected college. With purposive sampling technique, the quality and relevance of the data was of great importance than a specific sample size. The standard sampling techniques, therefore, were not considered to select colleges, managers and population groups for trainers and trainees because of time and cost constraints. The sample selection was mostly guided by the knowledge and expertise required for QA practices other than just the sample size. The researcher was aware that the purposive sampling technique is prone to observer bias. This was minimized by masking the research aim, and training the research assistants who acted as observers in one way or another. In addition to purposive and quota sampling, lottery sampling was used to recruit trainers from the selected colleges to participate in the study. Since trainees were the majority in the targeted population of the study, systematic sampling was used for their selection, to reduce on the biasness of purposive sampling.

3.6 Sample Size

The sample sizes for quantitative and qualitative study were selected from the same population of 2,707 participants but determined using different methods.

3.6.1 Sample Size for Quantitative Study

This study based on the "Sample-to-item ratio" to check the sample size picked, but it was not less than a 5-to-1, since what matters is to have an appropriate sizable sample, (Osborne & Castello, 2004). This then was verified using the Krejcie & Morgan (1970) sample determination table. All trainers on government payroll formed the targeted population from which the sample was drawn at each of the five (5) colleges. This was because quality teaching is part of their responsibilities, and they are accountable to the government of Uganda. Easy and timely access to trainers on government payroll was also an aspect the researcher considered important for time and cost saving. For consistency and proper representation, all trainees in their second year of study at each college participated. The total trainee sample ***n***, required was set above 12% of the total targeted trainees' population ***N*** (Approximately 2,548) in the five colleges. If ***R*** is the sampling interval, using the formula ***R*** = **N/n** (Singh & Masuku, 2014) the interval ***R***, was calculated.

$R = N/n$, where N = 2548, and n = 12% of N

This implies that $n > 2548 * 12/100$

Therefore, $n > 306$

Therefore, the sample size of trainees, ***n*** for the entire study, should be greater than 306 trainees.

Using $R = N/n$, $R = 2548/306$

Therefore $R = 8$, corrected to the nearest decimal.

The interval of eight (8) was therefore used for selecting trainee participants in the study at each college bearing in mind the minimum representation of the 12%. At each college, the trainees' list was arranged in alphabetical order, and starting with selecting a random trainee between the first on the list and 8^{th} trainee inclusive was selected, and thereafter others successively selected at the interval of *8*.

The percentage of trainers to participate in the study was deliberately put above 50% (above 67 trainers) of the total targeted trainer population of 134 trainers. This was done deliberately because, they are the ones directly conducting training and imparting skills to the trainees. Furthermore, the researcher wanted to have trainers from different departments who handle different training programs. Using a small percentage would yield a small number of trainers who would not represent various training programs and departments. A list of all trainers on government payroll for each of the five colleges was obtained, and using the lottery sampling, each trainer in the target population was assigned a unique number. The numbers were written on slips of paper and placed in a container, mixed thoroughly, and 103 were drawn at random as a sample to participate in the study representing 76.9 % of the targeted trainer population. Therefore, the research targeted at least 409 participants (103 trainers, and 306 trainees) as the sample size for the entire quantitative study. The selected sample from a population of 2,682 is 409 as in Table 7 below, and was further checked against the "Sample-to-item ratio". The average items (questions) to the participants to enable the researcher answer the four research questions for the study were 65 items.

Table 7: *Sample Size for the Quantitative Study*

Participants	Targeted Population	Sample Size	Percentage of sample to targeted population	Sampling Technique
Trainers	134	103	76.9	Lottery
Trainees	2,548	306	12.0	Systematic
Total	2,682	409	15.3	

Using a ratio of 5:1 to correspond to Sample size (S): 65,

5:1 ≡ S: 65, this implies that, $^{5}/_{1} \equiv {}^{S}/_{65}$

Therefore, $S = 65 * 5$

$S = 325$

This calculation using the "sample-to-item ratio" gave a sample size of 325, which was less than 409, the selected sample. Since the selected sample of 409 was checked against the "sample-to-item ratio" and found sufficient, the researcher went ahead to verify it using the Krejcie & Morgan (1970) sample determination table adopted in Table 8, below.

The population of 2,682 checked against the sample determination table, fell between 2600 and 2800, and this gave a sample size of 338. Therefore, the selected sample size of 409 was sufficient enough for this study, since it was greater than both the sample size calculated from the "sample-to-item ratio" and that given by the Krejcie & Morgan (1970) sample determination table.

3.6.2 Sample Size for Qualitative Study

The sample size for the study was determined by theoretical saturation. According to Alordiah and Oji (2024), theoretical saturation describes the point/time at which data collection and analysis have yielded adequate knowledge to create a thorough/cohesive theoretical framework.

Table 8: *Sample Determination Table*

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

N is population size. S is sample size. *Krejcie and Morgan (1970) Sample Determination Table.*

This is a point where the researcher feels all information (variety of viewpoints and experiences) concerning the study has been obtained and there is no need of any extra one (Ahmed, 2025; Braun & Clarke, 2017). When the interviewer reached the point, where respondents would give almost the same information, the interviews had to stop. At this point, the researcher was confident enough as theoretical saturation strengthens the validity and reliability of the study findings. In this study, the saturation point for college managers was reached at a sample size of 13 participants and 7 industry managers as illustrated in the Table 9 below. The table presents the total target population, the final sample size reached at the saturation point, the sampling techniques used, and the specific data collection methods applied to each category of participants. Due to the nature of qualitative research, where data collection continues until no new information is being obtained, the actual sample size was reduced to 120 respondents. At saturation point, 13 managers had been interviewed, and provided valuable insights into college leadership, decision-making, and internal QA practices. The 7 industry managers at saturation point, were key informants in understanding the expectations, involvement, and satisfaction levels of employers regarding the QA practices at the colleges, and the quality of TVET graduates. The third category in qualitative study were 69 trainee leaders who participated in focus group FGDs. Each college contributed two (2) FGDs with 7 participants each. These discussions were instrumental in capturing the perceptions, experiences, and challenges faced by trainees regarding QA practices in their colleges. Lastly, selected trainers also participated through FGDs. The target was 35 trainers, but 31 trainers participated in 5 FGDs, which was sufficient to reach thematic saturation. Trainers provided key insights into QA practices including curriculum implementation, instruction methodologies, trainees learning environment, and college support systems. In summary, Table 8 above, demonstrates a well-structured and methodologically sound approach to qualitative data collection. By combining purposive sampling with saturation-based determination of sample size, the study ensured the richness, depth, and relevance of the data collected.

Table 9: *Sample Size for Qualitative Data*

Category	**College**					**Target Population**	**Sample size at saturation point**	**Sampling Technique**	**Data collection method**
	UTCB	**UTCE**	**UTCL**	**UTCK**	**ISLM**				
College managers	3	3	3	3	3	15	13	Purposive	Interview
Industry managers	2	2	2	2	2	10	7	Purposive	Interview
Students Leaders	14 (each) group 7 participants	14 (each) group 7 participants	14 (each) group 7 participants	14 (each) group 7 participants	14 (each) group 7 participants	70	69 participants	Purposive	Focus group Discussion
Trainers	7	7	7	7	7	35	31 participants	Purposive	Focus group Discussion
Total						130	120		

Source: (Researcher, 2024)

3.7 Study Variables

Marudhar (2023), defines a variable as the characteristic or attribute of an individual, group, educational system, or the environment that is of interest in the research study. Given the research topic, "Review of the Quality Assurance Practices on the Education Outcomes in public TVET colleges in Uganda", the researcher identified the key study variables of interest as attributes of a quality TVET system in a college. The independent variable was identified as the Quality Assurances Practices in the colleges such as quality leadership, quality teaching and learning environment, and involvement of industry employers in TVET. The resultant measure that depends on the identified quality practices was the educational outcomes defined by completion rate of trainees and employable skills acquired.

3.8 Data Collection Instruments

Data collection methods are ways, techniques, instruments or tools which researchers use to gather data in their respective studies (Mwita, 2022). For this study, the researcher used a questionnaire survey, interviews, and focus group discussions to obtain data from respondents in all the five colleges. The use of questionnaire survey for quantitative data collection enabled the researcher to gather numerical data from the large population of trainers and trainees. The interviews and FGDs methods for qualitative data collection, allowed for a comprehensive understanding of QA practices from multiple stakeholder perspectives. All these methods were employed to ensure that they complement one another. Detailed description of these methods is presented in the subsections below.

3.8.1 Questionnaire Survey

In this method, a data collection tool known as a questionnaire is used to gather data from respondents. A questionnaire is a document containing a bundle of questions used to collect data from people in relation to the study area (Rathi & Ronald, 2022). The questionnaire used in this study was close-ended and was anchored on 5-point Likert scale, the least being one (1), and the highest five (5) representing strongly disagree, and strongly agree respectively. Respondents used the provided rating scale to circle, or tick the most appropriate alternative for the statements /items that were provided in the questionnaire. The items used in the questionnaire were adapted from previous scholars such as; Dei

(2019), QAHE (2023), Kigozi (2020), Gebremeskel (2019), Ramasamy, et al. (2021), IAG-TVET (2014), and modified by the researcher to fit the study. Close ended questionnaire aided collecting numerical data in the most valid and reliable way (Taherdoost, 2016) with the capacity to gather numerical data from a large population under study (Young, 2015). Close-ended questionnaire also minimizes the number of missing values compared to the open-ended questionnaire (Reja et al., 2003). In this study, self-administered closed-ended questionnaires were distributed to willing trainees and trainers to fill. However, the Research Assistants guided them on how to apply the rating scale, explained to them the purpose of the study to obtain quality data.

3.8.2 Interview Method

Interviews are normally conducted one on one between the interviewee and the respondent (Paradis, 2016) through word of mouth (Mwita, 2022). Alshenqeeti, (2014) stresses that interviews allow participants to speak in their own voice and express their own respective thoughts and feelings regarding a given phenomenon. This study adopted interview method to obtain rich views from the college and industry managers, on how they perceive and support QA practices in TVET Colleges. The data collection instrument used for interviews in this study, was the interview guide. The interview guide, comprises questions regarding the subject matter (Smulowitz, 2017). This method helped the researcher to understand whether quality assurance practices are present and implemented in the colleges under study.

3.8.3 Focus Group Discussions

Focus Group Discussion (FGD) refers to a data collection method in which data is collected from a small manageable group of participants through discussion of a particular topic (Wong, 2008). Wong (2008), acknowledges the importance of an interaction between the moderator and the group or between the group members to gain insights on the topic. The discussions are normally conducted in form of dialogue (Mwita, 2022). Focus Group Discussions are at times equated to interviews (Nyumba et al., 2018). In this study, several FGDs of 7 participants in each group, were used to interact with trainee leaders and trainers, to facilitate open discussions, uncover shared and divergent views on QA practices.

3.9 Validity and Reliability of Instruments

According to Kallio (2016), it is unethical to gather data which is completely unnecessary for the study/research. Checking validity of an instrument is vital for any scientific research. It was therefore important for the researcher to conduct validity and reliability for the data collection instruments.

3.9.1 Validity of the Instruments

According to Mugenda and Mugenda (2008), the validity of an instrument is crucial for ensuring the credibility of the research findings. In research, validity refers to the degree to which an instrument accurately measures what it is intended to measure, (McLead (2023). For the study to produce reliable and valid results, it was imperative to confirm that the instruments used were valid. Yusoff (2019), identifies five sources of validity evidence as content, response process, internal structure, relation to other variables, and consequences. This study considered content validity evidence and the instruments were subjected to a systematic content validity procedure by the review experts (Yusoff, 2019). The experts included the researcher's academic supervisors and other professionals with expertise in educational measurement and TVET. Each item in the instruments was evaluated for clarity, relevance, and appropriateness in relation to the research objectives. Relevant items were retained without modification, and the ambiguous or vague items were revised for clarity, and those found irrelevant, redundant, or misaligned with the study objectives were removed. This process helped refine the instruments, ensuring that each item contributed meaningfully to the measurement of the intended constructs. The Content Validity Index (CVI) is a statistical measure that indicates the proportion of items deemed relevant after expert review. It is computed using the formula:

$$CVI = {Number\ of\ Original\ items}/{Number\ of\ Retained\ Items}$$

This index provides a numerical value that reflects how well the instrument aligns with the intended content area. A CVI of 0.70 or above is generally considered acceptable in social science research, suggesting that the instrument is valid for data collection.

Content Validity of the Trainee Questionnaire

To quantify the extent of content validity, the Content Validity Index (CVI) was calculated for each objective in the trainee questionnaire. Table 10 below, presents the breakdown of original and retained items for each of the four objectives of the trainee questionnaire. The CVI for each individual objective ranged from 0.733 to 0.944, while the overall CVI for the entire questionnaire was 0.923. These values exceed the commonly accepted threshold of 0.70, indicating a high level of content validity. The high CVI values provided the researcher with confidence that the questionnaire could effectively be used to collect valid data from respondents.

Table 10: *Content Validity Index (CVI) for Trainee Questionnaire*

Variable	**Original Items**	**Retained Items**	**CVI Calculation**	**CVI**
Management practices	18	17	17/18 = **0.944**	0.944
Trainees' experiences and practices	71	56	56/71 = **0.789**	0.915
Instruction and teaching practices	15	11	11/15 = **0.733**	0.733
Industry employer involvement	13	12	12/13 = **0.923**	0.923
Educational outcomes	15	12	12/15=0.80	0.80
Total	**117**	**108**	108/117 = **0.923**	**0.923**

Source: Primary Data (Expert Review, 2025)

Content Validity Index for Trainers' Questionnaire

To ensure the accuracy and credibility of the data collected through the trainers' questionnaire, it was important to determine the content validity of the instrument. Content validity assesses how well the items in the questionnaire represent the subject matter they are intended to measure. According to Mugenda and Mugenda (2008), a valid instrument must measure the intended variables accurately and consistently. To achieve content validity in this study, the trainers' questionnaire was also subjected to expert review and validation. During this process, items were scrutinized for clarity, relevance, and

appropriateness in relation to the research objectives. Following the expert review, the Content Validity Index (CVI) was calculated as in Table 11, below.

Table 11: *Content Validity Index for Trainers' Questionnaire*

Variable	**Original Items**	**Retained Items**	**CVI Calculation**	**CVI**
Management practices	23	20	20/23 = **0.870**	0.870
Trainees' experiences and practices	73	58	58/73 = **0.795**	0.986
Instruction and teaching practices	14	12	12/14 = **0.875**	0.875
Industry employer involvement	16	13	13/16 = **0.813**	0.813
Educational outcomes	15	14	14/15=0.933	0.933
Total	**126**	**117**	117/126 = **0.929**	**0.929**

Source: (Primary Data (Expert Validation, 2025))

The Content Validity Index (CVI) for each of the four objectives in the trainers' questionnaire exceeded the minimum acceptable threshold of 0.70. Objective one scored a CVI of 0.870, indicating that 87% of the items were retained as relevant. Objective two had the highest CVI (0.986), showing nearly all items were validated as relevant. Objective three and Objective four had high CVI scores of 0.875 and 0.813 respectively, confirming the majority of the items were deemed appropriate after review. The overall CVI for the trainers' questionnaire was 0.929, suggesting a very high level of content validity. This confirms that the questionnaire was suitable for collecting valid data from trainers regarding the implementation and effectiveness of Quality Assurance (QA) practices in public TVET colleges in Uganda. These results justified the use of the validated questionnaire in the field, supporting the accuracy and trustworthiness of the study's findings.

Validity of the Interview and Focus Group Discussion Guides

Validity has to do with how accurately the data obtained in a study represents the variables of the study (Mugenda & Mugenda, 2008). Therefore, validity is achieved if the instrument

has indeed measured what is meant to measure. Hence, interview and focus group discussion questions were chosen carefully to reduce bias, and the instruments were reviewed by experts and the researcher's supervisors to enhance accuracy and correctness. The experts advised to modify some of the items so that they could easily be understood by the respondents. In addition, the interviewers employed in this study were skilled and experienced as well as trained thoroughly to ensure that they understand the study very well. The training emphasised discipline, seeking consent, taking right path to reach interviewees, relating well with interviewees and ensuring that they understand the purpose of the study, probing especially where interviewees are not able to articulate issues in line with the asked questions, among others. According to (Naz, et al., 2022) the quality and competences of the interviewers affect the validity and reliability of a data collection instrument. A combination of all the named approaches helped the researcher to obtain valid and reliable data from the intended groups of interviewees. This approach supports the argument of (Barriball, & While, 1994) who argue that interviewers' friendliness has to be friendly, approaches used and manner towards interviewees can significantly help to obtain valid and reliable data for a given qualitative study.

3.9.2 Reliability of the Instruments

According to (Mugenda & Mugenda, 2008) reliability refers to the consistency of the research study or measuring test after repeated trials. To ensure consistency, a careful piloting of questionnaire and interview schedules, was conducted in Uganda Technical College Kyema located in western Uganda.

Uganda Technical College Kyema (UTCK) was selected as a testing ground for pretesting because it had similar characteristics for colleges to participate in the study. Questionnaires were distributed to both trainers and trainees to respond to the items included in the respective questionnaires. Indeed, the exercise went on well and the researcher was able to obtain relevant feedback from respondents. After mobilizing the required data, the researcher sorted the data, cleaned and analysed it to generate reliability statistics.

The reliability results for all questionnaires yielded Cronbach's Alpha Coefficient values of greater that the threshold of 0.7 as shown in *Table 12 and 13.* According to (Amin, 2017) a data collection instrument that obtain Cronbach's Alpha coefficient of 0.7 is said to be

reliable. This implies that, the questionnaires used in this study were reliable and this gave the researcher confidence to move to the subsequent stages such as conducting final data collection exercise from the respective TVET colleges under study. The data collected from UTCK formed part of the study data, since it was found reliable and accurate.

Reliability results for trainees in *Table 12* below, presents the Cronbach's Alpha values and the number of items for each area of the trainees' questionnaire.

Table 12: *Reliability Results for Trainees' Questionnaire at UTC Kyema*

Variable	Cronbach's Alpha	Number of Items
Management practices	0.876	17
Trainees' experiences and practices	0.945	56
Instruction and teaching practices	0.872	11
Industry employer involvement	0.885	12
Educational outcome	0.808	12
Overall Questionnaire Items	0.958	108

Source: (Primary Data, 2025)

Table 12 above, reveals the internal consistency and reliability of the questionnaire items. Objective one (related to role of management in QA practices) has a Cronbach's Alpha of 0.876 with 17 items, indicating strong internal consistency. Objective two (focused on the trainees' perspectives of QA practices) shows a Cronbach's Alpha of 0.928 across 65 items, which demonstrates excellent reliability. Objective three (concerning strategies for QA practices by trainers) achieves a Cronbach's Alpha of 0.872 with 11 items, indicating a reliable assessment of the challenges faced by trainees. Objective four (on employer involvement in QA practices) has a Cronbach's Alpha of 0.885 with 12 items, showing high internal consistency. The overall Cronbach's Alpha of 0.958 for all 108 items suggested that the trainees' questionnaire had excellent overall reliability, meaning the items would work well together to measure the underlying constructs.

The results in *Table 13* below, indicate the internal consistency and reliability of the items across all objectives. Objective one (related to trainers' understanding of the role of managers in QA practices) has a Cronbach's Alpha of 0.944 with 20 items, which is excellent and indicates very reliable measurements.

Table 13: *Reliability Results for Trainers' Questionnaire*

Variable	Cronbach's Alpha	N of Items
Management practices	0.944	20
Trainees' experiences and practices	0.958	58
Instruction and teaching practices	0.891	12
Industry employer involvement	0.942	13
Educational outcomes	0.861	14
Overall Questionnaire Items	0.979	117

Source: (Primary Data, 2025)

Objective two (focusing on the trainees' perspectives of QA practices) achieves a Cronbach's Alpha of 0.958 with 72 items, demonstrating outstanding reliability and consistency. Objective three (strategies for QA practices by trainers) has a Cronbach's Alpha of 0.891 across 12 items, which is acceptable and reliable, and Objective four (on employer involvement in QA practices) shows a Cronbach's Alpha of 0.942 with 13 items, indicating high reliability. The overall Cronbach's Alpha of 0.979 for the 117 items across all the four objectives, suggests that the trainers' questionnaire was exceptionally reliable, meaning that the items collectively measured the intended constructs effectively.

3.10 Data Collection Procedures

The researcher sought necessary approvals and clearance from responsible bodies and persons, immediately after clearance by the University of Eldoret. Clearance was also sought for, from the Ethical Research Committee, and a research permit from the Uganda National Council for Science and Technology. Before embarking on data collection, permission was sought officially from the ministry of education and sports, as well as the principals of the selected colleges. The colleges in turn officially informed their collaborating companies of the study and requested for permission on behalf of the researcher.

In this study, four (4) research assistants were carefully identified, and trained by the researcher to make them familiar with the study. They were given a list of contacts (telephone and emails) as well as the addresses of where they were supported to go. To

access trainees, the principals of the respective colleges through dean of students and students' guild mobilized selected trainees of year two for a briefing about the ongoing study. The selected trainees were given the questionnaires to fill, but before any single attempt to answer the questionnaire, they were taken through the items and the rating scale so that they could have a better understanding of the respective items and how to rate the respective items. This action significantly enabled the researcher to obtain quality data for this study.

The second category, the trainers, were approached through the college principals and or dean of students of the respective colleges. This category was also briefed about the study and its purpose and later guided on how to answer the questionnaires using the rating scale provided. Trainers were positive about the study and voluntarily accepted to participate in it. Completed questionnaires were received as they were checked for completeness. Since large numbers are not easy to manage in terms of time management, during Focus Group Discussions, few participants of groups of seven (7) were selected to participate. Indeed, the selected participants voluntarily accepted to participate and this made the exercise a success. College principals played a great role in introducing research assistants to deputy principals and the academic registrars. They were also positive about the study and voluntarily accepted to be interviewed and recorded. This was possible in all the colleges.

The fourth category was that which comprised industry managers. These were also subjected to interviews. To meet the industry managers, the principals of the respective colleges wrote to them and accompanied with telephone calls introducing the research team and also requesting them to take part in the study as well as providing all the necessary support that the research team required. Indeed, the industry managers were supportive through obtaining permission from the top management and also taking part in the study.

Collecting data through a combination of self-administered questionnaires, structured interviews, and focus group discussions enabled the researcher to obtain quality data that included views from all the concerned categories. The data collected from the various colleges were filed and then kept in a safe custody for security and confidentiality reasons up to the time for data analysis.

3.11 Data Processing and Analysis

3.11.1 Quantitative Data

Quantitative data collected was sorted to remove questionnaires which were incomplete for purposes of maintain only quality data. To ease data capturing and analysis, data was coded using SPSS software because of its capability to recognize numbers upon which it generates statistics. The coding was based on the items used and the corresponding Likert Scale. Data entry which is the process of inputting data and updating information into electronic database (Pahor et al., 1994) was done. In this study, data was input into the computer using SPSS software version 25. The researcher was careful when inputting data into the computer, and this contributed significantly on maintaining the quality of data that were used in the study. To tress errors easily, the researcher wrote questionnaire numbers on the first page of each and every questionnaire.

Data Cleaning

(Pahwa et al., 2011) define data cleaning as the processes of eliminating errors (e.g., use of non-uniform abbreviations, duplication, missing values, among others) from the dataset before actual analysis is done. Data cleaning is vital for any study as it helps the researcher to mitigate challenges that may occur during data analysis and reporting, hence leading to quality output (Xu, 2015). In this study, double entry was checked through generating frequencies for the items contained in the questionnaire. The missing values were also populated using series mean method in SPSS. After data cleaning, the researcher proceeded to data analysis and organisation of results.

Analysis of Quantitative Data

Data was analysed using both descriptive and inferential statistics. Under descriptive statistics, frequencies for demographic data were generated as well as Means and standard deviations for the study objectives and items in the respective questionnaires. Under inferential statistics, correlations and regression analyses were performed. Correlations were basically generated to determine the associations between the study variables that included QA practices and educational outcomes. On the other hand, regressions analysis was performed to determine the causal effect of the predictor variables (QA practices). Under regression analysis, collinearity tests were run to confirm whether the regression

models are free from multi-collinearity problems. Fortunately, the results confirmed that the regression models for both trainees and trainers did not experience multi-collinearity problems as evidenced with the variance inflation factor (VIF) and Tolerance values that were below 10. For this reason, no single QA practice was deleted from the regression model. According to O'brien (2007), VIF and Tolerance value of less than 10, signifies absence of multi-collinearity problems. The Collinearity statistics is presented in the regression tables under chapter four of the thesis. The generated results were organized and presented in Table form for easier interpretation and drawing of meaningful conclusions.

3.11.2 Qualitative Data

In-depth interviews and Focus Group Discussions were conducted in each and every College. Information was obtained from respondents through recording. After each and every interview and Focus Group Discussion, the information was saved there and then before interviewing another respondent. This helped to differentiate information for different respondents and also keep the quality of data. After the data collection exercise, the recorded information was transcribed as it was narrated by the respondents. This was done by directly typing the information in Microsoft word. The transcribed data was then organized based on the category of respondents and interview questions, and later populated in NVIVO software version 15 for analysis using thematic data analysis technique. Thematic data analysis is a technique used to identify, analyse, and interpret patterns of meaning (themes) within qualitative data (Clarks & Braun, 2017).

3.12 Ethical Consideration

The study designs and practices adhered to ethical principles and guidelines which included: Informed consent - Participants in the study were given full information about what it meant to take part in the research, and they consented before they participated; Voluntary participation – participants were informed of their freedom to withdraw from the study at any time during the research.

Confidentiality – access to any information about the participants was restricted to the researcher and her supervisors if needed, and the research assistants on a need-to-know basis. There was limited access to any identifiable information so that it could not be linked to an individual participant.

Respect for the rights and privacy of participants – all participants had a right to privacy before, and throughout their enrolment into the study, and this was protected accordingly.

Communication of study results was planned to be communicated in an honest, reliable and credible manner to avoid ethical issues.

Potential to harm – the researcher ensured that all possible sources of harm (psychological, social, physical and legal) were considered and discussed with supervisors before data collection for appropriate mitigations.

Ethical approvals - all required approvals, clearances, and permissions for this study secured accordingly from the respective authorities and offices. Specifically, ethical clearance was got from University of Eldoret, the Research Ethical Committee of Mbarara University of Science and Technology for accepted ethical standards, and a research permit secured from Uganda National Council for Science and Technology before data collection.

3.13 Summary

This chapter has outlined the research design and methodology, which included the pragmatic philosophical paradigm, and mixed methods research design. The study area concentrated in five colleges with managers, trainers and trainees forming the target population. Appropriate sampling procedures were followed and a sample size determined appropriately. The study variables have been explained and data collection instruments used discussed. The validity and reliability measures, data collection procedures, data analysis approach are also presented. Ethical considerations, and a summary of the entire methodology is presented. The next chapter will present the data collected, its analysis and interpretation and discuss the findings based on this robust methodological framework.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the results on the demographic characteristics of respondents and study objectives that include: examining the role of management practices on educational outcomes; establishing the trainees' learning experiences and practices on educational outcomes; determining teaching practices employed by trainers to improve educational outcomes; and determining the industry employer involvement to improve educational outcomes in public TVET colleges in Uganda.

4.2 Response Rate and Demographic Characteristics

4.2.1 Response Rate

This section presents the response rate achieved in the study. The purpose of the study was to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement. *Tables 14 and 15* below, summarize the number of complete responses received, and the corresponding response rates for each respondent category in the questionnaire survey, and interviews and FDGs respectively. The data in *Table 14* below, indicates a high overall response rate of 92.4%, which is significantly above the acceptable survey response rate of 70% (Holtom et al., 2022). This robust response rate enhanced the reliability and validity of the findings. The trainers recorded a response rate of 99%, reflecting strong engagement and possibly a high level of interest in QA and related outcomes. Trainees had a response rate of 90.2%, which, while slightly lower than that of trainers, still indicates a commendable level of participation.

The response rate in qualitative research refers to the proportion of targeted participants who took part in interviews or provided relevant data out of the total number initially selected (Chigbu, 2021). In *Table 15* below, the overall response rate was 94.6%, indicating a very high level of participation from the targeted respondents. College Managers had a response rate of 87%, which may reflect a strong commitment to quality assurance practices. Industry Managers registered a slightly lower response rate of 80%. While still acceptable,

this may reflect challenges in availability or competing priorities in industry settings. Trainers and Trainees' leaders, registered the highest response rate of 97.1%, indicating enthusiasm in quality practices for better teaching and learning outcomes.

Table 14*:* *Response Rate for Questionnaire Survey Respondents*

Category	Sample size (SS)	Complete Responses	Response rate
Trainers	103	102	99%
Trainees	306	276	90.2%
Total	**409**	**378**	**92.4%**

Source: (Primary Data: 2025)

The high response was facilitated by effective mobilization efforts and a strong interest in the research topic among participants.

Table 15: *Response Rate for interviews and FGDs Respondents*

Category	Sample size (SS)	Complete Responses	Response Rate
College managers	15	13	87%
Industry managers	10	8	80%
Trainees Leaders	70	68	97.1%
Trainers	35	34	97.1%
Total	**130**	**123**	**94.6%**

Source: (Primary Data: 2025)

The high response rates across all respondent categories, provided strong evidence of stakeholder interest and involvement in quality assurance matters within Uganda's public TVET colleges. This implied that the data collected was representative, and could be reliably used to assess quality assurance practices and educational outcomes in public TVET colleges in Uganda.

4.2.2 Demographic Characteristics of Respondents

This section presents the demographic characteristics of trainees and trainers' respondents in *Tables 16* and *17* respectively.

Table 16: *Demographic Characteristics of Trainee Respondents (n = 276)*

Item	Frequency	Percent (%)
Sex		
Male	180	65.2%
Female	96	34.8%
Total	**276**	**100%**
Age		
16 – 20	60	21.7%
21 – 25	138	50.0%
26 – 30	48	17.4%
31 – 35	18	6.5%
>36	12	4.4%
Total	**276**	**100%**
Entry Educational Qualification		
Craft Certificate	84	30.4%
Advanced Craft	48	17.4%
Diploma	36	13.0%
Bachelor's Degree	12	4.3%
UACE (A' Level)	72	26.1%
Others	24	8.7%
Total	**276**	**100%**
Duration of Programme/Course		
2 Years	168	60.9%
More than 2 Years	42	15.2%
Total	**276**	**100%**

Source: (Primary Data: 2025)

This demographic information helped to contextualize the respondents' profiles in relation to their experiences and views on quality assurance practices and educational outcomes in Uganda’s public TVET colleges.

Table 17: *Demographic Characteristics of Trainer Respondents (n = 102)*

Item	Frequency	Percent (%)
Sex		
Male	78	76.5%
Female	24	23.5%
Total	**102**	**100%**
Age		
25 – 30	12	11.8%
31 – 40	33	32.4%
41 – 50	36	35.3%
>50	21	20.5%
Total	**102**	**100%**
Highest Academic Qualification		
Diploma	21	20.6%
Bachelor's Degree	54	52.9%
Master's Degree	24	23.5%
PhD	3	2.9%
Total	**102**	**100%**
Years of Teaching Experience		
Less than 5 Years	18	17.6%
5 – 10 Years	33	32.4%
11 – 15 Years	27	26.5%
More than 15 Years	24	23.5%
Total	**102**	**100%**

Source: (Primary Data: 2025)

The information in *Table 17* above, shows that trainers in Uganda's public TVET colleges, have strong academic qualifications that can be utilised to improve educational outcomes. The information in tables shows that there is still gender imbalance in both categories of respondents.

4.2.3 Interpretation and Analysis of Data

The analysis was structured according to the objectives of the study. To interpret quantitative data, the researcher utilized a five-point Likert scale, where responses ranged from 1 (strongly disagree), 2 (disagree), 3 (not sure), 4 (agree), to 5 (strongly agree). Due to the presence of decimal values in the results, the scale was categorized as follows for clarity: 1.0–1.4 represented "strongly disagree," 1.5–2.4 indicated "disagree," 2.5–3.4 denoted a "neutral" or "not sure" response, 3.5–4.4 signified "agree," and 4.5–5.0 reflected "strongly agree." Themes emerging from the qualitative data were organized in line with the study objectives and provided nuanced understanding of the gaps, strengths, and opportunities within QA practices and educational outcomes in these colleges. Qualitative data provided grassroots views on the effectiveness and challenges of QA practices and the educational outcomes in public.

4.3 Role of Management Practices on Educational Outcomes

This section presents the analysis of management practices in implementing Quality Assurance (QA), communicating institutional quality policies, provision of adequate materials, staff development, teaching and learning support services, and resource availability. By examining these variables through the lens of respondents, the study sought to capture perspectives of how management efforts to influence educational outcomes are experienced by different stakeholders in these colleges. These insights were essential for identifying strengths, gaps, and opportunities for enhancing management's contribution to quality educational outcomes.

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The descriptive statistics on management practices, based on 276 trainees' and 102 trainers' responses, are summarized in *Tables 18* and *19* below, and educational outcomes in *Tables 20* and *21* respectively. The interpretation was done using the predetermined 5-Likert scale.

Table 18: *Trainees' Responses on the Role of Management Practices on Educational Outcomes (N=276)*

Item	Mean	SD
Relevant Policies, strategies and regulations to trainees are well known	3.3141	1.22087
The vision, mission, objectives and values of the college are well known to trainees.	3.2326	1.23494
Management makes informed decisions that align college mission and vision to the needs of trainees	3.2183	1.17034
There is effective collaboration between the college and community members involving trainees.	3.2113	1.19926
There are mechanisms in place for effective maintenance of equipment	3.1803	1.17645
There is effective collaboration among trainees and trainers	3.1581	1.17941
There are mechanisms in place for effective management of human resources	3.1542	1.09801
There are mechanisms in place for effective maintenance of infrastructure	3.1538	1.20853
There are mechanisms in place for effective time management.	3.0850	1.14427
There are mechanisms in place for effective management of financial resources	3.0648	1.23273
There is a strong management structure that ensures quality learning	3.0645	1.23537
The college has financial management system with good record keeping that meets trainees' needs.	3.0385	1.24774
There are mechanisms in place for effective management of technology.	3.0275	1.16571
There is effective collaboration between the college and policymakers known to trainees.	3.0238	1.20630

Source: (Primary Data: 2025)

The findings in *Table 18* above, indicate that most trainees' responses fell within the neutral range (mean between 3.02 and 3.49), suggesting that trainees neither strongly affirmed nor denied the effectiveness of QA-related management practices in their colleges. The highest-rated item was "Relevant policies, strategies and regulations to trainees are well known"

with a mean of 3.3141, indicating a moderate awareness among trainees. The overall pattern of neutral trainee responses may point to a lack of strong visibility or effective of management practices to communicate QA mechanisms in relation to the expected education outcomes.

On the other hand, trainers' views on the role of management practices on educational outcomes in *Table 19* below, suggest that management plays a significant and positive role in supporting educational outcomes in public TVET colleges. Key item that scored the highest mean value, indicating strong agreement, was the vision, mission, and values of the college are well known (Mean = 4.1528). This implies clarity and awareness of institutional identity and purpose among trainers which points to ensuring quality outcomes to maintain such identity. Collaboration among trainees and trainers (Mean = 3.9861), and college collaboration with policymakers (Mean = 3.9861) were other aspects that were strongly agreed upon by trainer respondents. These suggest strong internal and policy-level coordination, and management's decisions aligning with both trainee and trainer needs (Mean = 3.9722), according to trainers' perspectives. Other items as indicated in *Table 19*, also scored relatively high, suggesting that trainers operate within recognised administrative guidelines, and well-disseminated governance structures in these colleges. Overall, the findings from trainers' perspective underscore the generally positive role of management practices in quality assuring outcomes across public TVET colleges in Uganda. Effective communication of institutional vision, supportive leadership decisions, collaboration among stakeholders, and operational management systems all contribute significantly to better educational outcomes.

Table 19: *Trainers' Perspectives on the Role of Management Practices in Educational Outcomes (N= 102)*

Item	Mean	SD
The vision, mission, objectives and values of the college are well known.	4.1528	.92933
There is effective collaboration among trainees and trainers	3.9861	.74101
There is effective collaboration between the college and policymakers.	3.9861	.75978
Management makes informed decisions that align college mission and vision to the needs of trainees	3.9722	1.00663
Management makes informed decisions that align college mission and vision to the needs of trainers.	3.9722	.85534
Trainers adhere to procurement procedures in the college when requisitioning for materials.	3.9298	.86983
Policies, strategies and regulations in the college are well known	3.9167	.94571
Trainers embrace mechanisms for effective time management.	3.9014	.63145
There is effective collaboration between the college and community members initiated by trainers.	3.7917	.74941
The college has financial management system with good record keeping that meets stakeholders' needs.	3.7639	.91148
There is a strong management structure that ensures quality assurance in learning	3.6944	.95886
Trainers initiate mechanisms for effective management of technology.	3.6806	.85294
There is effective engagement among trainees, trainers and community members and policymakers.	3.6761	.68740
Trainers initiate mechanisms for effective management of infrastructure	3.6620	.80393
Trainers encourage mechanisms for effective management of human resources	3.6528	.79007
There are mechanisms in place for effective management of financial resources	3.6389	.95395
The procurement management procedure is adequate and well known by stakeholders.	3.5915	.97255

Source: (Primary Data: 2025)

The findings on educational outcomes from trainees' responses are presented in *Table 20* below. A grand mean of 3.1167 and SD of 0.71682 from trainee respondents, signifies neutral response. These responses show that trainees had limited knowledge regarding the indicators of good educational outcomes under completion rate and employability skills. A low average score was observed in the completion rate component (Mean = 2.7946; SD = 0.85114), indicating widespread unawareness. A moderate score was also observed in employable skills (Mean = 3.4360; SD = 0.85266). Trainees agreed with some statements that point to acquisition of employable skills which included; the availability of industrial training opportunities, clarity on duration of industrial training, and training tasks with hands-on, indicating that workplace exposure is a recognized aspect of holistic skills development, beyond practical skills acquired at college. Nonetheless, neutral responses to items such as real-life project opportunities and training for diverse learning styles, revealed limited skills exposure which indicates a gap in management practices.

Management could have emphasised real-life projects as another opportunity to equip trainees with skills such as; team work and communication, interpersonal skills, entrepreneurial skills and green skills. The low rating noted on the "graduate employment", also points to potential issues with the alignment of training content and job market demand, suggesting a need for management to explore more tailored skills acquisition, and career support practices.

Table 20: *Trainees' Responses on Educational Outcome*

Items	Mean	SD
Completion Rate of Trainees	**2.7946**	**0.85114**
There is a system about trainees including tracer studies of graduates.	3.0804	1.21240
There is an increase in completion rates in the last five years	3.0374	1.22815
Information about financial support services such as bursary and scholarships are readily available to trainees.	2.7251	1.30631
There are mentorship programs implemented to promote trainee success	2.7043	1.19491
There are mentorship programs to facilitate trainee-trainer relationships	2.6325	1.22393
Information about opportunities like exchange visits is readily available.	2.5878	1.28548
Trainees' Employability Skills	**3.4360**	**0.85266**
The college has clear plans and information about duration of industrial training for trainees.	3.6158	1.16904
The college have clear plans and information about tasks performed by trainees during industrial training.	3.5672	1.20694
There are opportunities for industrial training/internship during college to trainees.	3.5426	1.25881
The college provide opportunities for trainees to apply their learning through real life projects.	3.4934	1.27081
Training programs cater for different learning styles for trainees.	3.2976	1.26553
Graduates from the college find easily paid employment	3.0993	1.26314
Grand mean and SD	**3.1167**	**.71682**

Source: (Primary Data: 2025)

Findings in *Table 21* below, indicate that trainer respondents agreed with the statements under educational outcomes as reflected in a grand mean of 3.7514 and SD of 0.54999. In particular, findings indicate that trainees' employability skills (mean=4.1037; SD=0.52795) scored higher than completion rate of trainees (mean=3.3991; SD=0.74242). While there was agreement on increased completion rates over the past five years (Mean = 4.1528), neutral responses on items like availability of financial support, mentorship, and tracer systems point to systemic barriers that may hinder better education outcomes. The

implication is that despite institutional progress, more deliberate efforts by management are needed to support at-risk trainees, and strengthen mechanisms that track graduate outcomes. Respondents agreed that trainers support learning through real-life projects, industrial training, and diverse instruction practices. This alignment with labour market implies a positive influence on graduate readiness and employability. However, the relatively lower mean for the item “graduates find easily paid employment” points to a potential mismatch between training and actual job market absorption, that need to be addressed.

Table 21: *Trainers' Responses on Educational Outcome*

Item	Mean	SD
Completion rate of trainees	**3.3991**	**.74242**
There is an increase in completion rates in the last five years	4.1528	.74417
Trainers engage in mentorship programs implemented to promote trainee success	3.4085	.95795
Information about financial support services such as bursary and scholarships are readily available to trainees.	3.3472	1.08977
There are mentorship programs implemented to facilitate trainee-trainer relationships	3.2639	1.03452
There is a system with all information about trainees including tracer studies of graduates.	3.2361	1.23896
Information about opportunities such as exchange visits is readily available.	2.9859	1.02769
Trainees' Employability Skills	**4.1037**	**.52795**
Trainers provide opportunities for trainees to engage in real life projects.	4.4861	.64988
Trainers look out for opportunities for industrial training for the trainees	4.2639	.69187
Trainers have clear plans and information about duration of industrial training.	4.2254	.73537
Trainers have clear plans and information about trainees tasks by during industrial training.	4.1944	.72460
Trainers employ different methods to cater for different learning styles by trainees.	4.1250	.69073
Training programs cater for different learning styles for trainees.	4.0417	.81253
Trainers are available and give support to trainees during industrial training.	4.0000	.93447
Graduates from the college find easily paid employment	3.4930	.94754
Grand mean and SD	**3.7514**	**.54999**

Source: (Primary Data: 2025)

Inferential statistics for this study included correlation analysis for the trainees and trainers' datasets to determine the association between the two study variables (QA practices and Education Outcomes) as in *Tables 22* and *23* below. Regression analysis of the same datasets, to determine the contribution of QA practices to educational outcomes in public TVET colleges in Uganda, is presented in *Tables 24* and *25* respectively.

Correlation Analysis: The correlation results were interpreted using a scale; 0-0.19 signified very low correlation, 0.2-0.39 for low correlations, 04-0.59 meant moderate correlations, 0.6-0.79 signified high correlation, and 0.8-1.0 for very high correlation.

Table 22: *Correlation Results from Trainees' Dataset*

Variable	**Mean**	**SD**	**1**	**2**	**3**	**4**	**5**	6
Quality Assurance Practices (1)	3.161	.668	1					
Management Practices (2)	3.101	.7760	.873**	1				
Learning Experiences and Practices (3)	3.226	.616	.902**	.798**	1			
Instruction and Teaching Practices (4)	3.323	.825	.865**	.635**	.726**	1		
Industry Employer Involvement (5)	2.996	.844	.862**	.645**	.686**	.651**	1	
Educational outcomes (6)	3.117	.717	.787**	.697**	.751**	.664**	.654**	1

****. Correlation is significant at the 0.01 level (2-tailed).**

The findings on the management practices from trainees' dataset in *Table 22* above, indicate that, there is high, significant and positive association between management practices and educational outcomes ($r=0.697$, $P<0.01$). This implies that changes in management practices are associated with changes in educational outcomes. Correlation analysis for the second dataset (trainers), was also performed, and results are presented in *Table 23* below. The findings from trainers' dataset also indicate high, significant and positive associations between management practices and educational outcomes ($r=0.764$, $P<0.01$), implying that changes in management practices are associated with changes in educational outcomes.

Table 23: *Correlation Results from Trainers' Data*

Variable	Mean	SD	1	2	3	4	5	6
Quality Assurance Practices (1)	3.753	.483	1					
Management Practices (2)	3.769	.592	.887**	1				
Learning Experiences and Practices (3)	3.855	.424	.933**	.832**	1			
Instruction and Teaching Practices (4)	3.917	.540	.829**	.687**	.766**	1		
Industry Employer Involvement (5)	3.473	.687	.818**	.578**	.685**	.479**	1	
Educational outcomes (6)	3.751	.550	.823**	.764**	.773**	.706**	.623**	1

****. Correlation is significant at the 0.01 level (2-tailed).**

Regression Results: Since correlations show only the direction and strength of the relationship between variables, regression analysis was performed to determine the contribution of the predictor variables (QA practices) on the output variable (educational outcomes). Regression findings indicate a variance inflation factor values (VIF) of 2.908, and tolerance value of 0.344 for management practices, confirming absence of multi-collinearity problems. Therefore, management practices predict educational outcomes in these colleges. The findings further show that management practices (Beta=0.196, P<0.01), contribute significantly and positively to educational outcomes as reflected in the standardised coefficient (Beta value). This implies that every unit change in management practices, results into an increase in educational outcomes by those units reflected in the corresponding standard coefficient value.

Table 24: *Multiple Regression Results Obtained from Trainees' Dataset*

		Unstandardized Coefficients	Standardized Coefficients			Collinearity Statistics	
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
1(Constant)	.299	.077		3.874	.000		
Management Practices	.181	.032	.196	5.715	.000	.344	2.908
Trainees' Learning experiences and practices	.408	.045	.350	9.045	.000	.269	3.713
Instruction and Teaching Practices	.149	.027	.171	5.562	.000	.427	2.344
Industry Employer Involvement	.150	.025	.177	5.983	.000	.462	2.163
R		.793					
R Square		.628					
Adjusted R Square		.627					
Std. Error of the Estimate		.43792					
F		389.784					
Sig		.000					

a. Dependent Variable: Educational Outcomes

The findings from trainers' dataset, indicate that management practices (0.347, $p<0.01$), influence educational outcomes significantly and positively as reflected in the Beta value and P-value. Both datasets analysed were in agreement on the contribution management practices make on the educational outcomes.

Table 25: *Multiple Regression Results Obtained from Trainers' Dataset*

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
1(Constant)	.198	.359		.552	.583		
Management Practices	.322	.116	.347	2.787	.007	.302	3.310
Trainees' Learning Experiences and practices	.203	.203	.157	.998	.322	.190	5.255
Instruction and Teaching Practices	.261	.110	.256	2.372	.021	.401	2.493
Industry Employer Involvement	.154	.076	.192	2.040	.045	.525	1.903
R		.829					
R Square		.687					
Adjusted R Square		.668					
Std. Error of the Estimate		.31693					
F		36.705					
Sig		0.000					

a. Dependent Variable: Educational outcomes

The findings from qualitative themes on management practices to improve educational outcomes in public TVET colleges are presented in this section. Respondents revealed a strong alignment with key dimensions of strategic, supervisory, and developmental management practices that contributed to high completion rates and attainment of employability skills by trainees. A number of managers, emphasized various management practices in promoting educational outcomes (trainee completion and attainment of employability skills). These practices included flexible attendance, parent engagement, payment plans, continuous assessment, counselling and trainee-centred management, supportive learning environment and improved career guidance and admission procedures.

Various managers noted that dropout rates were very minimal, and in some cases, temporary. Some trainees returned to colleges after taking a dead year due to various challenges including financial. One manager explained: *"I have seen at least we have 90% students complete their studies... very few cases where students drop. And even if they drop... they come back."* This suggests strong institutional retention, with many colleges actively tracking trainees' progress. Another manager noted: *"…… the admission process is also another very good thing... we also do career guidance. We tell them that now we have this job opportunity after completing..."*

Trainees strongly acknowledged the existence of functional administrative structures within the colleges. One trainee leader explained: *"The Academic Registrar took the responsibility and contacted examining body... within a few hours, she got registered and she is going to do her exams."* Another trainee noted: *"We raised a concern about the library… at first it wasn't functioning, but now it is active and functioning."* These experiences demonstrate that when management is responsive, there is positive influence on trainees' learning experiences and outcomes. It also shows that some members of the management teams in colleges are committed to addressing both learning and welfare-related challenges faced by trainees. Respondents described a range of supervisory mechanisms implemented at their colleges, including routine classroom visits, checks on lesson planning and delivery, regular attendance audits, and strict adherence to institutional timetables. Tools such as teaching trackers, lecture monitoring forms, and structured feedback from students were commonly cited as part of QA mechanisms.

One manager explained: *"I go and sit behind the class, and then thereafter guide that… you need to do A, B, C… teaching should be learner-centred."*

Trainers' respondents noted management efforts to ensure that physical facilities are available and accessible. This supportive environment fosters quality teaching and learning, and reduces trainee stress, enhancing retention, completion and better outcomes. One trainer stated: *"We are looking at the relevancy of the skills that we are giving in connection to the demand in the world of work."*

Another one noted: *"We encourage them to form groups of discussion... and we also make sure that the environment is conducive. No noise around when it is time for lectures..."*

These findings reveal that while public TVET colleges in Uganda generally report high completion rates influenced by the responsiveness of college management, they are sometimes affected by external challenges. The interplay of effective trainee support, quality training, and institutional flexibility is critical in sustaining and improving completion rates over time. Some colleges had established environmental committees and initiated policy development to formalize environmental protection strategies. *"Well, we were so much passionate about our environment. And one, we had... a committee which was concerned with the environmental issues in the college."* Noted by one of the college managers. This meant that these colleges institutionalized environmental governance. These findings underscore the crucial role of adaptive management practices in quality assurance. They also show that QA is not limited to academic rigor but includes social and financial support mechanisms. College managers also described their role in moderating assessments, enforcing examination rules, and communicating academic standards to both staff and trainees. These actions aimed to prevent malpractice and enhance the credibility of internal evaluations, which are fundamental components of quality assurance (QA) practices. One college manager stated: *"We follow the prescribed standards set by the examining body... we try to moderate the kind of tests the lecturer has set to ensure that they meet the curriculum standards."* This statement underscores the proactive measures taken by leaders to align assessment practices with official curriculum standards, ensuring that both trainers and trainees follow the same rules and expectations for academic conduct. Moderation of assessments, in particular, is portrayed as a key management practice to ensure fairness and consistency in evaluation. These findings reflect the importance of management practices in ensuring quality and equity in TVET outcomes.

The role of management practices cannot be ignored. The institutional change that responds to institutional pressures, require strong leadership and management to influence the educational outcomes for productivity and economic growth. This is in line with normative institutionalism as emphasised by Shand (2015), and supported by Adu-Yeboah (2022), assertations on human capital development. These findings are comparable with other studies by other scholars such as; Ahmad & Ahamed (2023), who emphasized a strong management role as instrumental in enhancing learning outcomes in institutions, Odo (2023), who asserted that while leadership of TVET institutions exhibited certain

managerial competencies, they often failed to involve trainers in policy formulation and decision-making processes, which affected outcomes. This shortfall highlighted by Odo (2023), point to the prevailed management practices in those institutions which may have not been sufficient enough to drive improvement in TVET outcomes and needed adjustments. The present study also aligns the role of management practices with the study by Turyatemba et al., (2023), who investigated the use of real-life, project-based learning as a strategy for building competence among TVET trainees in Uganda. Their study revealed that many TVET managers did not fulfil their roles as expected.

4.4 Trainees' Learning Experiences and Practices

This objective of the study, focused on understanding trainees' learning experiences as far as QA practices for their education outcomes, in the public TVET colleges in Uganda are concerned.

The analysis focused on key areas central to teaching and learning process that would contribute to better educational outcomes. These included; i) curriculum implementation and evaluation, ii) availability and adequacy of materials, equipment and facilities, iii) support services to trainees, iv) staff recruitment and retention, v) QA systems, and vi) greening and safe learning environments. Items on the same key areas were included in the trainers' questionnaire to compare responses from trainers and trainees on different items constituting each area. Trainees and trainers, views, provided an in-depth understanding of their experiences and perspectives across the key six (6) areas of quality teaching and learning practices. The detailed findings on all items in each key area under objective two of the study, are attached in *Appendix 16*, but a summary of means of each key area is presented in *Table 26* below. The findings offer valuable reflections into how trainees view the effectiveness and responsiveness of QA practices in their respective colleges, highlighting areas of strength as well as those requiring attention. According to the rating scale used in this study, majority of the scores reflected a neutral response, indicating that, on average, trainees neither agreed nor disagreed with the items presented to them. This suggests a general sense of uncertainty or lack of awareness among trainees regarding the QA practices in their colleges.

Table 26: *Trainees' Views on Key Areas Central to QA Practices (N=276)*

Key Area of QA Practices	**Mean**	**Standard Deviation**
Support Services to Trainees	3.4493	0.71876
Curriculum Implementation and Evaluation	3.3969	0.70418
Greening, Safe and Clean Environment	3.2410	0.83615
Staff Recruitment and Retention	3.1450	0.85575
Presence of Quality Assurance Systems	3.0352	0.83448
Availability and accessibility of Materials, Facilities and Equipment	3.0056	0.74552
Grand mean and SD	**3.2256**	**0.61552**

Source: (Primary Data, 2025)

This neutrality raises concerns about the effectiveness of communication and involvement of trainees in QA practices, which could affect the quality of educational outcomes. Low scores on items like greening practices, and community-led environmental activities, point to minimal integration of environmental sustainability and social engagement in training programs. This lack of emphasis could limit trainees' employability in environmentally conscious and community-oriented workplaces. The lack of visibility and understanding of QA practices among trainees, indicated that QA is not sufficiently discussed or emphasised in public TVET colleges. This detachment reduces opportunities for trainee feedback, which is crucial for continuous improvement in TVET outcomes. While trainees acknowledged the presence of ICT labs, and library services, they rated other critical aspects such as adequacy of equipment and materials, and accessibility poorly. These findings imply disparities in resource availability and accessibility, and raises concerns on the quality of practical instruction, a core driver of TVET outcomes. Over all, the responses by trainees under objective two of this study, suggest that, while certain QA practices, especially administrative support and industrial training are visible and appreciated by trainees, there are significant knowledge gaps and low levels of awareness across most QA practices and educational outcomes. The implication is that trainees in public TVET colleges in Uganda, may not be aware of QA practices and how they influence their educational outcomes

Trainer's insights on the learning experiences and practices provided a deeper understanding of the effectiveness, implementation, and challenges of QA mechanisms within the TVET colleges. The analysis of findings is detailed in *Appendix 17*, and the summary is presented in *Table 27* below. The findings reveal that, on average, trainers agreed with the overall set of items concerning objective two of the study.

Table 27: *Trainer's Perspective on the Key Areas of QA Practices (N=102)*

Key Area of QA Practices	Mean	Standard Deviation
Support Services to Trainees	4.2274	0.41251
Curriculum Implementation and Evaluation	4.0764	0.50802
Greening, Safe and Clean Environment	3.7722	0.64864
Staff Recruitment and Retention	3.7181	0.58117
Materials, Facilities and Equipment	3.7069	0.58921
Quality Assurance Systems	3.6280	0.63659

*Source: (*Primary Data: 2025)

This average level of agreement suggests that the key dimensions of QA practices, are generally being implemented across colleges. The relatively low average standard deviation further reflects a consensus among respondents across colleges, showing limited variation in their responses. Specifically, the data highlights a strong endorsement of several components of QA practices, with notable agreement in areas such as Support Services to Trainees, and Curriculum Implementation and Evaluation. These components reflect core aspects of trainees' success and skills development, suggesting that the colleges are enhancing trainee completion and employability. These findings from trainers' responses have significant implications for quality assurance in Uganda's TVET sector. The strong performance in areas like support services, curriculum implementation reflects institutional commitment to trainee development and industry alignment. However, the mixed results in QA systems and resource adequacy and availability, signal critical areas for intervention. Ultimately, reinforcing these areas will contribute to improved training outcomes.

Correlation Analysis: The correlation results in *Tables 22* and *23* in Section 4.3 above, revealed that trainees' learning experiences and practices highly, significantly and

positively associate with educational outcomes (r=0.751, P<0.01), and (r=0.773, P<0.01) for trainees and trainers' datasets respectively.

Regression Analysis: The findings in *Tables 24* and *25* in Section 4.3 above, revealed that trainees' learning experiences and practices highly contribute significantly and positively to educational outcomes as reflected in the standardised coefficients (Beta value) (Beta=0.350, P<0.01), and (Beta=0.157, P<0.01) for trainee and trainer datasets respectively. This implies that every unit change in trainees' experiences and practices, results into an increase in educational outcomes by the same units reflected in their corresponding standard coefficient value.

Qualitative Themes on Trainees' Experiences and Practices

"The workshop has machines but again no one to operate those machines, so you can't give quality education when you don't know how to operate them."

"In electrical department, we have many materials... but we are not using them, we don't know why. Even if you complain, nothing happens."

Findings also revealed that some trainees faced logistical and financial barriers, when attempted to pursue off-campus training. They sometimes needed to arrange and pay for themselves, without institutional support. A trainee observed: *"We don't have the transport means... they request us to contribute some money from our personal basis."*

outcomes. They cited financial constraints, high student–teacher ratios, outdated curricula,

Another pointed out: *"It [illegible] has supported us to look for places for industrial training."* This challenge may affect trainees in programs requiring fieldwork or practical industrial attachment for skills development, hence a hindrance to meaningful employable skills.

It doesn't have a [illegible] phone, so that affects people when it comes to outside training." These findings

The results from this study on trainees' learning experiences and practices, are consistent with those of prior studies by scholars such as (Kalua, 2020) and (Shahzad, & Lodhi, 2023). Kalua's study revealed that the absence of quality assurance committees in TVET institutions to quality assure the learning environment, significantly impairs educational outcomes. Similarly, (Shahzad, & Lodhi, 2023), in their research on QA themes in secondary schools in Punjab, identified curriculum, institutional environment, quality management and improvement, as well as institutional mission, objectives, and vision, as foundational elements for enhancing educational quality. These components therefore are equally essential for elevating the standard of learning within TVET institutions

4.5 Instruction and Teaching Practices to Improve Educational Outcomes

This research objective aimed at determining the instruction and teaching practices employed by trainers to improve educational outcomes in public TVET colleges in Uganda. This section presents both qualitative and quantitative findings reflecting the views of respondents. The responses highlighted the extent to which various practices are adopted and perceived as effective in ensuring continuous improvement of training quality, completion, assessment scores and employability skills. The analysis helped to identify which practices are widely employed and which areas may require further reinforcement.

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Understanding the views and reflections of trainees and trainers on instruction and teaching practices was essential, since they are the key stakeholders in the teaching and learning processes. The findings are presented in *Tables 28 and 29* below, for trainees and trainers' datasets respectively.

Findings in *Table 28,* on trainees' dataset revealed the mean scores between 3.21 and 3.47 on a five-point Likert scale, suggesting a moderate level of agreement among trainee respondents. The Standard Deviations (SD) for all items lies between 1.13 and 1.22, indicating a reasonable spread of responses, with some variability across the respondents. This implies that trainee respondents across the five (5) colleges were not necessarily viewing instruction and teaching practices using the same lenses. These may vary from college by college, and course by course since QA is not necessarily standardised across colleges. The findings reflect positive efforts by trainers to align instruction and teaching

with workplace relevance, an important feature of quality outcomes. They also suggest that trainees perceived trainers, as reliable and committed to their instruction duties, contributing to consistency in training outcomes. While findings show a growing adoption of modern teaching tools, the mean scores reflect potential underutilization of digital resources and inconsistencies in feedback provision—two critical components of effective instruction and teaching practices. This may hinder achieving quality outcomes in the digital era. In addition, while trainers are generally committed to instructional responsibilities and contextualization of learning, their participation in strategic and forward-looking QA practices such as CPDs, research, and innovation is relatively weak. This has implications on the sustainability of quality educational outcomes, and the capacity of trainers to adapt to evolving labour market and technological demands. The moderate standard deviations (around 1.17–1.22) indicate that perceptions of QA practices vary between colleges or respondent groups. This further implies inconsistency in implementation, perhaps due to varying institutional resources, leadership commitment, or access to training opportunities. Capacity development is an urgent need to strengthen trainers' engagement in structured CPDs, research and innovation. National and institutional QA policies and strategies must prioritize investment in CPD, research and innovation, pedagogy training, and digital literacy to ensure trainers remain competent and adaptive to the changing world of work.

Table 28: *Trainees' Views on the Instruction and Teaching Practices (N=276, Min = 1.00, and Max = 5.00*

Item	Mean	SD
Trainers relate teaching concepts and skills to real-life scenarios	3.4663	1.12560
Trainers handle tools and equipment appropriately	3.4332	1.17515
Trainers are always available when it is their time to engage in training activities.	3.4088	1.19119
Trainers use ICT and blended learning approaches in teaching	3.3742	1.17675
Trainers are able to conduct practical lessons	3.3676	1.21192
Trainers give feedback and support to trainees	3.3256	1.16908

Trainers evaluate effectiveness of training and learning programs	3.2649	1.14614
Trainers relate teaching concepts and skills to practical examples	3.2396	1.21932
Trainers engage in continuous professional development programs to enhance implementation of best practices	3.2322	1.16221
Trainers engage in research and innovations to cope up with emerging technologies.	3.2257	1.17477
Trainers engage in continuous professional development programs to enhance teaching effectiveness	3.2108	1.16033

Source: (Primary Data: 2025)

Findings from Trainers' dataset, reflected trainers' self-assessment of their efforts to uphold and improve educational outcomes. The responses provided insights into how actively trainers employ certain teaching practices, and neglect others. The findings revealed that trainers are involved in educational outcomes improvement and highlighted areas where strategic support or capacity-building may be required as indicated in *Table 29*, below.

Table 29: *Trainers' Responses on Instruction and Teaching Practices (N=102, Min = 1.00, Max = 5.00)*

Items	Mean	SD
Trainers are always available when it is their time to engage in training activities.	4.1667	0.75059
Trainers relate teaching concepts and skills to real-life scenarios	4.1528	0.66417
Trainers are able to conduct practical lessons	4.1528	0.72500
Trainers give feedback and support to trainees	4.1250	0.62658
Trainers handle tools and equipment appropriately	4.0282	0.73104
Trainers relate teaching concepts and skill to practical examples	4.0000	0.65003
Trainers use ICT and blended learning approaches in teaching	3.8750	0.78610
Trainers evaluate effectiveness of the training and learning programs	3.8472	0.76287
Trainers engage in continuous professional development programs to enhance teaching effectiveness	3.8194	0.87736
Trainers engage in research and innovations to cope up with emerging technologies.	3.7639	0.83063
Trainers engage in continuous professional development programs to enhance implementation of best practices	3.7083	0.89502
Trainers return to industry for new skills at least once a year	3.3611	1.02511
Grand Mean and Standard Deviation	**3.9167**	**0.53971**

Source: (Primary Data: 2025)

The findings suggest that trainers are actively promoting learner-centred teaching approaches and are responsive to the practical needs of trainees—critical elements for TVET outcomes.

The practices highlighted in *Table 29* above, are essential in ensuring that training remains current, relevant, and aligned with industry needs. However, the findings also revealed a notable gap in trainers return to industry for new skills. This was the only item with a neutral mean response by trainers (mean = 3.3611, SD = 1.02511). This suggests limited industry engagement for up skilling among trainers, which may pose a risk to the alignment of

training content with evolving industry standards and practices. The overall results highlight a proactive stance among trainers toward strategies to improve their QA practices. Nonetheless, the limited engagement in industry-based skill refreshment, points to an area requiring policy action. Strengthening linkages between trainers and industry through structured exchange or attachment programs could further enhance the employable skills and industry-readiness of graduates.

Correlation Analysis: The correlation results in *Tables 22* and *23* in Section 4.3 above, revealed high, significant and positive association between trainers' instruction and teaching practices, and educational outcomes ($r=0.664$, $P<0.01$), and ($r=0.706$, $P<0.01$) for trainees and trainers' datasets respectively.

Regression Analysis: The findings presented in *Tables 24* and *25* in section 4.3 also show that instruction and teaching practices (Beta=0.171, $P<0.01$), and (Beta=0.256, $P<0.01$), contribute significantly and positively to educational outcomes as reflected in the standardised coefficients (Beta value) for trainee and trainers' datasets. This implies that every unit change in instruction and teaching, results into an increase in educational outcomes by those units reflected in their corresponding standard coefficient value.

Qualitative Themes on Instruction and Teaching Practices

To determine the practices employed by trainers to enhance educational outcomes in public TVET colleges, qualitative data were obtained through interviews and focus group discussions. Respondents provided critical insights into how trainers approach the implementation of QA measures within their colleges to improve educational outcomes. The findings revealed various practices adopted by trainers to ensure effective teaching and learning, compliance with institutional standards, and continuous improvement the training outcomes. The common practices aligned with the third research objective, were; structured planning, timetabling and instructional scheduling, use of technology, monitoring and evaluation mechanisms, learner-centred approaches, practical pedagogy approaches, and collaboration for resource optimization.

Trainers consistently reported employing structured planning tools—such as work plans, activity schedules, and timetables—to guide and monitor curriculum delivery.

One trainer noted: *"We usually have work plans, performance plans… so that it acts as a guide towards the work. Then [the trainer] can follow this plan to see whether he achieves*

either 90% or 50% or 100%." "To ensure that the syllabus is followed, I always develop what we call the work plan… I also develop what is called activity plans that I now use whenever I'm going to class." This reflects a proactive and systematic approach to curriculum implementation, where planning serves both instructional and evaluative functions.

Trainers' resource-conscious approaches highlight their adaptive capacity and commitment to maintaining instructional quality despite material limitations. *"I look at the available resources in terms of equipment and materials, and I work along that line to ensure that they have obtained [competencies] to the best of my delivery." "Learners are encouraged to participate in groups, discussions… we also ensure that the curriculum is reviewed in time."* A trainer elaborated.

While some trainees appreciated the strategy of using ITC as a teaching and learning tool by trainers, many reported limited access to digital platforms due to poor infrastructure, lack of training, or connectivity issues and availability of software and internet-based learning tools. *"We heard that there is an e-library, but we don't know how to use it. And sometimes there's no network."* A trainee said.

This suggests that while digital tools are introduced, their utilization is uneven and not available for all trainees. This points to a digital divide that limits the full potential of ICT integration in curriculum delivery, which management and trainers need to address.

Lack of skilled trainers and technicians, was also a recurring concern to trainees. In some colleges, the trainees revealed that some of the available trainers had limited or no technical know-how on operating the machines, leading to missed learning opportunities. *"Even when machinery is available, it remains unused due to the lack of skilled facilitators"* Asserted one of the trainees. Another trainee revealed: *"We have everything… But they are inactive. We have no trainer to take us through the circuits." "They just tell you this is the machine, it works like this… but even if power is there, you say let's try to run the machine, it's like they also don't know."* This knowledge and skills gap among trainers directly affect the education outcomes and breeds frustration among trainees. These statements by trainees affirmed some of the neutral responses in the questionnaire survey.

While instruction and teaching practices employed by trainers are commendable, also point to areas for further enhancement. For instance, institutional support for resource mobilization, capacity building in modern instructional techniques and QA, and integration of formal industry feedback loops are needed. Moreover, strengthening linkages between trainers, administrators, and external quality assurance bodies could reinforce system-wide coherence in curriculum implementation and evaluation. These findings point to a need for institutional policies and support systems that further empower trainers as key agents of curriculum transformation and quality learning outcomes.

The results of the study on practices by trainers, highlighted some challenges that negatively impact on educational outcomes in public TVET colleges. These may be beyond managers, and trainers. This situation aligns with the findings of (Mutebi & Ferej, 2023), who reviewed quality assurance practices in Uganda's TVET sector and identified several weaknesses. They noted the lack of a regulatory framework to comprehensively guide quality assurance across the entire TVET system in Uganda. Similarly, a study conducted by (Kalua, 2020), on quality assurance mechanisms for managing competency-based education and training in community technical colleges in Malawi revealed issues such as the lack of capacity.

4.6 Industry-Employer Involvement in QA Practices and Educational Outcomes

The fourth research objective aimed to explore the ways in which industry employers are involved in QA of the educational outcomes in public TVET colleges in Uganda. Industry engagement is a critical component for quality in TVET. The findings revealed the extent to which employers are actively participating in shaping, supporting, and evaluating teaching and learning outcomes in public TVET colleges, as perceived by key stakeholders involved in the training and learning process.

Descriptive Statistics on Industry-Employer Involvement

The trainees and trainers' perspectives on the level of industry employer involvement in QA practices in public TVET colleges in Uganda, is presented in *Table 30* and *31* below. Trainees' views on employer participation in areas such as curriculum design and review, industrial training, skills assessment, and overall program quality were analysed. The findings in *Table 30* below, provide insights into the perceived strength or gaps in collaboration between TVET colleges and industry stakeholders from the viewpoint of

trainees. The findings revealed a neutral response according to the study's rating scale. This suggests that, on average, trainees neither agreed nor disagreed with the statements regarding industry employer involvement, indicating limited awareness or uncertainty about the extent and nature of employer involvement in quality activities within their colleges.

The implication of these findings is that while there may be frameworks or policies advocating for industry-employer engagement, their implementation appears limited or inadequately communicated to trainees. This lack of visible involvement may hinder efforts to align training with labour market expectations and reduce opportunities for practical, hands-on experience for trainees. Strengthening collaboration between public TVET colleges and industry partners, through clearer communication, formal partnerships, and increased employer involvement, could enhance the quality and relevance of TVET in Uganda.

Table 30: *Trainees' Responses on Industry Employer Involvement in QA Practices (N = 276, Min. = 1.00, Max. = 5.00)*

Item	Mean	SD
The college have linkages with enterprises and companies that foster skilling of trainees.	3.1317	1.19583
Employers are fully involved in training delivery when trainees go for workplace-based training.	3.1110	1.23251
Employers (industry and companies) participate in assessing curricular implementation.	3.0914	1.27457
Employers are fully involved in development of curriculum for training delivery.	3.0573	1.18076
Employers are fully involved in the review of curriculum to meet the needs of the labour market.	3.0511	1.21038
Employers provide occupational profiles and standards for training in specific sectors.	3.0294	1.18130
Employers are fully involved in training delivery in the college.	3.0163	1.24995
The college gather information on future needs regularly for training.	2.9869	1.25214
Employers are on advisory committees for training in specific sectors.	2.9167	1.20728
Employers usually provide exchange programs for trainees between the college and the industry.	2.8811	1.20436
There are employers who provide their workplaces and equipment for learners to practice while at college.	2.8779	1.27251
Employers contribute funding resources to TVET training delivery such as scholarships and bursaries.	2.7980	1.23975

Source: (Primary Data: 2025)

Understanding the views of trainers regarding industry employer involvement in QA practices and educational outcomes within public TVET colleges, was essential. The views of trainers provided critical insights into how effectively industry actors participate in

shaping, supporting, and evaluating the quality of public TVET colleges. The analysis offers a clearer picture of existing linkages, areas of employer contribution, and potential industry engagements that could impact the relevance and effectiveness of TVET colleges. Based on responses from trainers, the findings are presented in *Table 31* below.

Table 31: *Trainers' Responses on Industry Employer Involvement in Quality Assurance Practices (N=102)*

Items	Mean	SD
Employers are fully involved in development of curriculum to meet the needs of the labour market.	3.8056	.98780
Employers are fully involved in review of curriculum to meet the needs of the labour market.	3.7222	1.064434
Employers are fully involved in training delivery in the workplace.	3.6806	.85294
Trainers ensure that the college have linkages with enterprises and companies.	3.6250	.84649
Trainers gather information on future needs of the industry regularly.	3.5833	.91544
Employers (industry and companies) participate in assessing curricular implementation.	3.5278	1.08734
Employers provide occupational profiles and standards for training in specific sectors.	3.4722	.91885
Employers are on advisory committees for training in specific sectors.	3.4225	.98813
Employers are fully involved in training delivery in the college.	3.4028	1.05697
There are employers who provide their workplaces and equipment for learners to practice while at college.	3.3611	1.12970
Trainers seek for exchange programs for trainees between the college and the industry.	3.3194	1.01851
Employers contribute funding resources to TVET training delivery such as scholarships and bursaries.	3.1667	1.19859
Employers usually provide exchange programs for trainers	3.0563	1.03308

Source: (Primary Data: 2025)

According to the rating scale used in this study, on average, trainers agreed with the statements related to industry employer involvement in QA practices, though there were variations in their level of agreement. A moderate to high level of perceived engagement of employers in supporting and enhancing the quality of TVET in public TVET colleges is suggested by these findings. Analysing individual items, trainers reported strong agreement with several key areas of industry involvement. These particular findings could imply that there may be lack of information flow within colleges or indeed the employers are less involved. Over all, findings highlighted a recognizable level of industry engagement in some key QA aspects. However, the lower awareness or agreement on some items suggested gaps in deeper, more sustainable partnerships, such as infrastructure sharing, financial support, and long-term collaborative planning. This further implies a need for enhanced coordination mechanisms between public TVET colleges and industry to broaden the scope of employer participation, ensuring that QA practices are holistically supported and better aligned with evolving labour market demands.

Inferential Statistics on Industry Employer Involvement

Correlation Analysis: The findings in *Table 22* and *23* in Section 4.3 above, indicate that industry-employer involvement has a high, significant and positive correlations with educational outcomes ($r=0.654$, $P<0.01$) and ($r=0.623$, $P<0.01$) - trainees and trainers' datasets respectively. These results show that Industry-employer involvement and educational outcomes move to the same direction and are related to each other.

Regression Analysis: The findings in *Table 24* and *25* in Section 4.3, show that the predictor variable - Industry Employer Involvement (Beta=0.177, $P<0.01$) and (Beta=0.1192, $P<0.01$) contribute significantly and positively to educational outcomes as reflected in the standardised coefficient (Beta values).

Qualitative Themes on Industry Employer Involvement

Based on interviews and FDGs conducted, several themes emerged regarding industry employer involvement. These included: Industrial Training and Placement; Curriculum implementation and Evaluation; Formal Partnerships with Professional Bodies and Colleges; Collaborative Community-Based Training Projects; Awareness Creation and Outreach Engagement; Industrial Liaison Offices and Committees; Use of Industry Feedback and Tracer Studies.

College managers revealed that collaborations with industries and construction sites through Memoranda of Understanding (MOUs), allowed trainees to access additional training resources and industry-based experiences. *"We also had outside sites… the students went there to do their training, and the client provided the materials… so that was also another avenue";* stated by one of the managers. This meant that the partnerships extended the learning environment beyond college boundaries. Industry managers' responses also confirmed partnerships with public TVET colleges in Uganda. *"We didn't just admit them for trainings. First of all, we looked at the projects we had because we could not admit students when we didn't have running projects"; Stated by* an Industry managers. This practice ensured both the availability and adequacy of facilities by embedding learning within real-time work environments. It allows trainees to interact directly with current tasks and tools.

Industry managers' responses also revealed that training was consistently supported through structured supervision, where each trainee is assigned a dedicated mentor or supervisor. These supervisors ensured that the necessary tools were made available and that trainees operated within clearly defined safety and quality parameters. Importantly, only calibrated, in-house tools were used, excluding external equipment that might not meet internal standards. One of the Industry managers had this to say; *"They used our tools from here. Our tools were calibrated, they were measured to standard... we didn't allow tools from outside."* This approach demonstrated how accessibility was institutionalized through direct oversight and regulated access to standardized tools, thereby safeguarding training quality.

Rotation and holistic exposure to work departments, was another approach the industry managers revealed. An intentional strategy involved rotating trainees across various departments, to expose them to a broad range of tasks and workplace scenarios. In this case industry managers deliberately structured these rotations to ensure that trainees received comprehensive, cross-functional training. One of the Industry managers revealed; *"We kept rotating them... so by the end of their training period, at least they had a 360-degree understanding of what we did."* This enhanced the adequacy of the training by allowing access to a wide variety of facilities and learning contexts, while also encouraging a more holistic appreciation of the work environment. The findings revealed a strong sense of Vocational Pride and Commitment to mentorship among industry supervisors, particularly

those who had themselves come through the TVET system. These individuals viewed training not only as a professional duty but as a personal responsibility to pass on knowledge and sustain the vocational tradition. One of the Industry managers said; *"Me, a man from vocation, I had to ensure they got what I got… we always needed them… they always supported us."* This personal investment enhanced both access and quality, as trainers and managers often went beyond formal roles to guide, support, and mentor trainees with genuine care.

The industry respondents were further asked about strategic distribution and program design. They revealed that the industry also ensured the strategic distribution of trainees across departments to prevent overcrowding and optimize learning. Program schedules were carefully designed to avoid conflicts and to ensure efficient use of time and resources.

*"We split them depending on the number that came. Then we had them go through different circles or departments so that they didn't get clashing programs. "*This reinforced both the adequacy and accessibility of training by balancing trainee numbers with available resources, ensuring all trainees had meaningful engagement and exposure. The findings indicated that the availability, adequacy, and accessibility of training facilities in Uganda's public TVET colleges were safeguarded through partnerships with industry, a deliberate blend of practices including project-based learning, use of standardized tools, structured mentorship, and thoughtful program design. Industry managers demonstrated a strong commitment to ensuring readiness and relevance of training environments - by aligning them with live projects, rotating trainees for holistic exposure, and maintaining rigorous equipment standards. The findings revealed that workplace culture, strategic planning, and vocational identity played pivotal roles in shaping the quality and accessibility of experiential learning for TVET trainees.

Findings revealed that industry and local community stakeholders engage with public TVET colleges in collaborative projects. These included construction and service-oriented assignments supervised by local authorities, which provided authentic, real-life learning contexts for students. One trainer explained: *"We usually take students to construct schools… we bought materials and then took students there to construct some of the structures."* The implication of these findings is that these industry-community-linked projects served dual functions. They meet community development needs, but also provide

applied learning experiences to trainees. Trainees also benefited from mentorship by both trainers and industry players, thus reinforcing quality and accountability in training delivery. Industry practitioners also reported engaging in post-training evaluations to determine whether trainees had met learning expectations and developed the competencies required for the workplace. These assessments not only served as tools for evaluating performance but also informed future improvements in training design and delivery. One industry partner explained: *"We normally assessed them after the training program to know… whether they had met their expectations."* This approach reflected a commitment to accountability and continuous improvement, aligning well with principles of quality assurance in vocational education. Feedback from such evaluations was sometimes used to inform decisions regarding trainee retention, placement recommendations, or areas for additional training.

Overall, the findings revealed that industry employers working with public TVET colleges in Uganda, adopted a multidimensional and structured approach to ensure that trainees successfully completed and acquired employability skills. By integrating structured supervision, hands-on training, work ethics development, and systematic assessments, industry employers contributed meaningfully to education outcomes in public TVET colleges. The alignment of these practices with real-world demands and expectations reinforced the critical role of industry in shaping competent, work-ready graduates. These insights point to the need for sustainable collaboration and partnerships between institutions and industry to maintain the relevance, responsiveness, and effectiveness of TVET programs. These study results on employer involvement in TVET, align with those of (Kalua, 2020), who emphasized the persistent gap between industry and TVET institutions. Kalua noted that the lack of structured follow-up and coordination between supply and demand sides, often results in outcomes that fall short of industry expectations. Strengthening partnerships and improving alignment between curriculum and industry needs, remain critical for enhancing the quality of training and employability of graduates. Findings on curriculum relevance, implementation and evaluation also align with (Shahzad, & Lodhi, 2023), who asserted that curriculum relevance is a vital determinant of quality education and student outcomes.

4.7 Discussion Summary

The chapter has presented response rate (92.4-94.6%), demonstrating showing a high response rate. The demographic statistics of respondents show moderately young, experienced and male-dominated respondents which reveal a gender disparity, but an energetic and keen group. Findings indicated that overall QA practices have high and significant positive correlations with educational outcomes ($r=0.787$, $P<0.01$) and ($r=0.823$, $P<0.01$) for trainees and trainers' datasets respectively. This implies that changes in overall QA practices are associated with changes in educational outcomes in TVET colleges in Uganda. This implies that changes in QA practices are highly associated with changes in educational outcomes represented by completion rates and trainees' employability skills in the current study.

The findings also show that the multiple regression models are good enough to predict educational outcomes as indicated by the F-statistics value of (389.784 and Sig=0.000) and (36.705 and Sig=0.000). The findings also indicate absence of multi-collinearity problems as indicated with variance inflation factor values of ((2.908 and 3.310), (3.713 and 5.255), (2.344 and 2.493) and (2.163 and 1.09)) for management practices, trainees' learning experiences and practices, Instruction and teaching practices for quality outcomes, and industry employer involvement respectively. Collinearity statistics also indicate Tolerance values of (0.344 and 0.302), (0.269 and 0.190), and (0.427 and 401) and (0.462 and 0.525) for management practices, trainees' learning experiences and practices, Instruction and teaching practices for quality outcomes, and industry employer involvement respectively. It is observed that both the VIF values and Tolerance values are below 10. This confirmed the absence of multi-collinearity problems and therefore, all QA practices were maintained in the regression model to predict educational outcomes in TVET colleges in Uganda.

The findings further show that all the predictor variables [management practices (Beta=0.196, $P<0.01$); Trainees' learning experiences and practices (Beta=0.350; $P<0.01$), Instruction and teaching practices for quality outcomes (Beta=0.171, $P<0.01$) and Industry Employer Involvement (Beta=0.177, $P<0.01$)] contribute significantly and positively to educational outcomes as reflected in the standardised coefficients (Beta values). This implies that every unit change in each and every practice results into an increase in

educational outcomes by those units reflected in their corresponding standard coefficient values. The models explained (63-67%) of variation in educational outcomes, and the remaining (33- 37%) could be explained by other factors that were never included in this current study. This clearly spells out the power of synergy where if more practices and strategies are combined, greater educational outcomes in TVET colleges are likely to be achieved.

Interview and FGDs confirmed active management role in QA practices that influenced educational outcomes; Trainees were broadly neutral on QA practices and educational outcomes and their overall understanding was modest, but acknowledged receiving support services. Trainers employed structured planning, with activity schedules and time tables to deliver curriculum and the teaching practices were linked to educational outcomes. Some areas like return to industry and technology use in teaching were limited. Perceptions on employers' involvement diverged by respondents, however, employers were willingness to formally get involved in shaping the educational outcomes TVET colleges. The overall findings of this study, support those of earlier scholars. For instance, Mwangi and Muchanje (2025), revealed that QA practices significantly relate to educational outcome in terms of trainees' completion rate and employability skills. These findings also support those revealed by Almuhaideb and Saeed (2020), and Bamusi (2023) on the importance of quality assurance in the TVET institution, and associated educational outcomes.

In general, it can be observed that though contradicting results have been revealed on the trainees' learning experiences and practices, implementing QA practices in TVET colleges in Uganda has great benefits in enhancing educational outcomes. This becomes a responsibility of TVET college managers to ensure that the current QA practices are fully enhanced, and sensitised to trainees given that they seem not to be aware of most of them, based on their responses from the descriptive statistics presented earlier in this report

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the study, presents the final conclusions, and offers evidence-based recommendations for improving QA practices and educational outcomes in public TVET colleges in Uganda. It outlines the study's contribution to academic knowledge and practical application within the field of education technology.

The recommendations offered, aim to guide institutional reforms, strengthen stakeholder engagement, and foster a culture of continuous improvement of educational outcomes. Finally, this study contributes to knowledge by bridging gaps between theory and practice in QA within TVET systems, particularly in low- and middle-income countries. It enriches existing literature and provides practical recommendations that TVET colleges can adapt easily for quality enhancement and better TVET outcomes.

5.2 Summary of Findings

The summary of findings is presented in line with the study purpose and objectives. The objectives included: examining the role of management practices on educational outcomes, establishing the trainees' learning experiences and practices in QA and educational outcomes, determining instruction and teaching practices employed by trainers to improve educational outcomes, and determine the industry employer involvement in QA practices, and education outcomes in public TVET colleges in Uganda. Finds show a well-qualified and experienced workforce with 91.2% trainers having Bachelor's degrees and above, and majority with experience of more than 5 years in TVET. The findings also revealed a predominantly male population of both trainers (87.3%) and trainees (76.8%), indicating a gender disparity across the colleges that reflect barriers to female participation in technology education. From the findings, it was established that all QA practices assessed, have high, significant, and positive correlations with educational outcomes ($r=0.787$, $P<0.01$) and ($r=0.823$, $P<0.01$) based on trainees and trainers' datasets respectively. The models also explained how QA account for 62.7% and 66.8% variations in educational outcomes from trainees and trainers' data sets respectively. The remaining 33.2-37.3% is attributed to other factors that were never included in this current study.

5.2.1 Role Management in QA Practices and Education Outcomes

The study revealed divergent perspectives between trainees and trainers regarding the role of management practices within public TVET colleges in Uganda. Overall, findings revealed that colleges which are well managed, with good learning environment, and working closely with industry have better education outcomes. While trainees' experiences and practices matter, their awareness of QA practices is very limited, hence could not easily comprehend relevant practices that required management's attention. However, trainers generally acknowledged most of the practices. Despite this contrast, insights obtained from interviews and focus group discussions with different respondents affirmed inferential statistics which revealed that management practices (Beta=0.196, P<0.01), contribute significantly and positively to educational outcomes. Management enforced practices such as; flexible attendance requirements, parent engagement and provision for payment plans, focus on continuous assessment to support trainees through to graduation amidst financial or personal hardships, supportive learning environment, improved admission procedures and career guidance, student-centred management, counselling and emotional support services, and policy incentives. Other key areas where management was key to ensure quality and greater educational outcomes include: fostering formal partnerships with industry to align training with their demands, support to Continuous Professional Development (CPDs) of staff and trainees, rigorous monitoring and supervision of instruction activities, initiating some QA procedures and ensuring that they are adhered to, ensuring availability of resources in their reachable means, and maintaining academic integrity and discipline among staff and trainees.

However, challenges such as limited resources, less participation of stakeholders in quality assurance of training in colleges, and ineffective communication, particularly, lack of sensitization among trainees regarding quality practices were evident. This underscores the imperative for TVET college management to proactively improve stakeholder participation, engage and inform trainees about their institutional roles in ensuring quality learning outcomes.

5.2.2 Trainees' Learning Experiences and Practices, and Educational Outcomes

Findings indicated that, on average, trainees maintained a neutral stance regarding their understanding of QA practices and educational outcomes in public TVET colleges in Uganda. However, trainees' learning experiences and practices contributed significantly and positively to educational outcomes (Beta=0.350, P<0.01), and (Beta=0.157, P<0.01) for trainee and trainer datasets. Findings indicated that, on average, trainees maintained a neutral stance regarding their understanding of quality assurance (QA) practices in public TVET colleges in Uganda. Findings revealed that trainees' awareness is limited, but their overall understanding was modest. Trainers and trainees agreed on some statements pertaining to QA practices and educational outcomes. Support services to trainees received the highest level of agreement, signalling commitment to successful completion of trainees. Other practices agreed upon by respondents as key in the colleges included; the development of employability skills by incorporating real-life and industry-based training in the study programs, curriculum implementation and evaluation, promotion of a clean and green environment. The findings further revealed that trainees actively participated in environmental management initiatives such as tree planting, waste management, cleanliness campaigns, and awareness creation, a good practice for greening and environmental sustainability.

Findings revealed trainees' acknowledgment of institutional support to their learning experiences, but highlighted associated barriers to effective use of available facilities and equipment resources. These included, limited accessibility to equipment, insufficient skilled trainers, overcrowded learning environments, inadequate off-campus support, and an overemphasis on theoretical instruction. Trainees expressed concern about their preparedness for the labour market and employability.

5.2.3 Trainers' Instruction and Teaching Practices to Improve Educational Outcomes

The findings show that instruction and teaching practices (Beta=0.171, P<0.01), and (Beta=0.256, P<0.01), contribute significantly and positively to educational outcomes as reflected in the standardised coefficient (Beta value) for trainee and trainers' datasets. The

findings also revealed that trainers are always available during their scheduled training sessions, relate teaching concepts and skills to real-life scenarios, conduct practical lessons, provide feedback and support to trainees, handle tools and equipment appropriately, use practical examples in teaching, incorporate ICT and blended learning approaches though on a limited scale, evaluate the effectiveness of training and learning programs, engage in continuous professional development to enhance teaching effectively, and undertake research and innovation to keep up with emerging technologies, as well as implement best practices. On contrary to trainers, trainees perceived limited engagement of trainers in CPDs, research and innovation, and relating teaching concepts to practical solutions, a concern that TVET college managers need to follow up. Trainees also revealed insufficient modern technology skills by trainers and technicians in their colleges.

Findings in general revealed, that trainers employ various quality practices in instruction and teaching, such as; role modelling and mentorship of trainees, structured planning and documentation of instruction activities, integration of ICT and digital learning tools in teaching, monitoring, assessment and evaluation mechanisms, and equitable resource allocation and optimization. Furthermore, findings show that, though trainers are committed to quality instructional activities, they are constrained by inadequate resources and bureaucratic procurement processes that hinder timely access to the necessary resources for demonstrating learning activities to trainees. These shortcomings of inadequate resources, render colleges ineffective and ultimately compromise the quality of teaching and learning. Considering this, the management of TVET colleges in Uganda need to seek alternative funding sources to enable the procurement of adequate teaching and learning resources.

5.2.4 Industry Employer Involvement in QA practices and Educational Outcomes

The findings revealed that closer industry employer involvement aligns with better educational outcomes. Findings indicated that industry employer involvement has a high, significant and positive correlations with educational outcomes ($r=0.654$, $P<0.01$). and ($r=0.623$, $P<0.01$); and industry employer involvement (Beta=0.177, $P<0.01$) and (Beta=0.1192, $P<0.01$) contribute significantly and positively to educational outcomes.

Trainers and trainees had diverging perceptions. Trainers acknowledged employers involvement participate in curriculum development and review to align with labour market demands. In contrast, most trainees lacked awareness of employer involvement, apart from their industrial training and internship. Trainers acknowledged linkages with industries.

The findings also revealed that a significant number of companies have entered partnerships with public TVET colleges to foster quality education outcomes. The role of industry in trainers and trainees' mentorship was one way they advanced demand driven training. In addition, the study found out that industry played an important role in training, as guest speakers in colleges during on-campus training. Industry employers also provided valuable feedback and tracer studies to the colleges.

Findings revealed associated challenges of big numbers of trainees from colleges and universities, who folk industries in Uganda, at the same time. This was reported to impose a lot of pressure to the relatively small number of willing companies to take trainees on. High cost of technical equipment, that hinder sustainable collaboration with industries was another challenge revealed by respondents. As a result, employers tend to accept trainees primarily during active project periods only. Another major challenge identified by employers themselves, was the gap between the curriculum and technological tools used in TVET colleges and the fast-evolving technologies adopted by industries.

5.3 Conclusions of the Study

This study aimed at assessing the QA practices on educational outcomes in public TVET colleges, with the view of making recommendations for continuous improvement of educational outcomes.

The study concludes that effective management is foundational, and a significant factor for QA practices and educational outcomes; Trainers' professional development improve educational outcomes; good learning facilities and environment enhance trainees'

experiences and practices, and motivates them to finish and gain useful skills; and real industry involvement, improve TVET outcomes. However, combining all the practices together yields better educational outcomes. Therefore, improving college management and governance, classroom and workshop practices, improving trainees' learning environment, and enhancing employer involvement is likely to improve outcomes in Uganda's public TVET colleges.

5.4 Recommendations of the Study

The study makes a number of recommendations based on the findings and conclusions. The recommends are made for college managers to implement, however in the absence of a national TVET QA framework, a specific recommendation is made for the policy makers at the ministry of education and sports, Uganda. Other TVET institutions with similar set-up can adapt these recommendations for improving educational outcomes in their respective institutions.

The college managers to;

i. Enhance communication, collaboration and participatory engagements with all college stakeholders, especially trainees, parents, policymakers and industry.
ii. Establish effective institutional based quality assurance mechanisms and frameworks and fully publicise them to all stakeholders, but also periodically conduct self-assessment and evaluation.
iii. Enhance Trainers' QA professional development trainings and return to industry programs.
iv. Promote and foster strong formal partnerships that involve industry in all aspects of instruction and learning, beyond industrial attachments for trainees.

Government of Uganda;

v. The Ministry of Education and Sports in Uganda, should fast track the development and implementation of a national TVET Quality Assurance Framework to enhance the QA initiatives by public TVET colleges, but also ensure its effective dissemination to all TVET stakeholders in Uganda for compliance.

5.5 Suggested Further Research

The current study suggests further studies, to strengthen quality assurance in TVET institutions, particularly within the Ugandan context.

The study considered only public TVET colleges, due to resource constraints. A replication of this current study to include private TVET colleges and other lower level TVET institutions across the country, to compare and contrast the findings of this study is suggested. Expanding the evidence base to cover post-2024 legislation analysis is also suggested to enhance the TVET Act 2025, Implementation.

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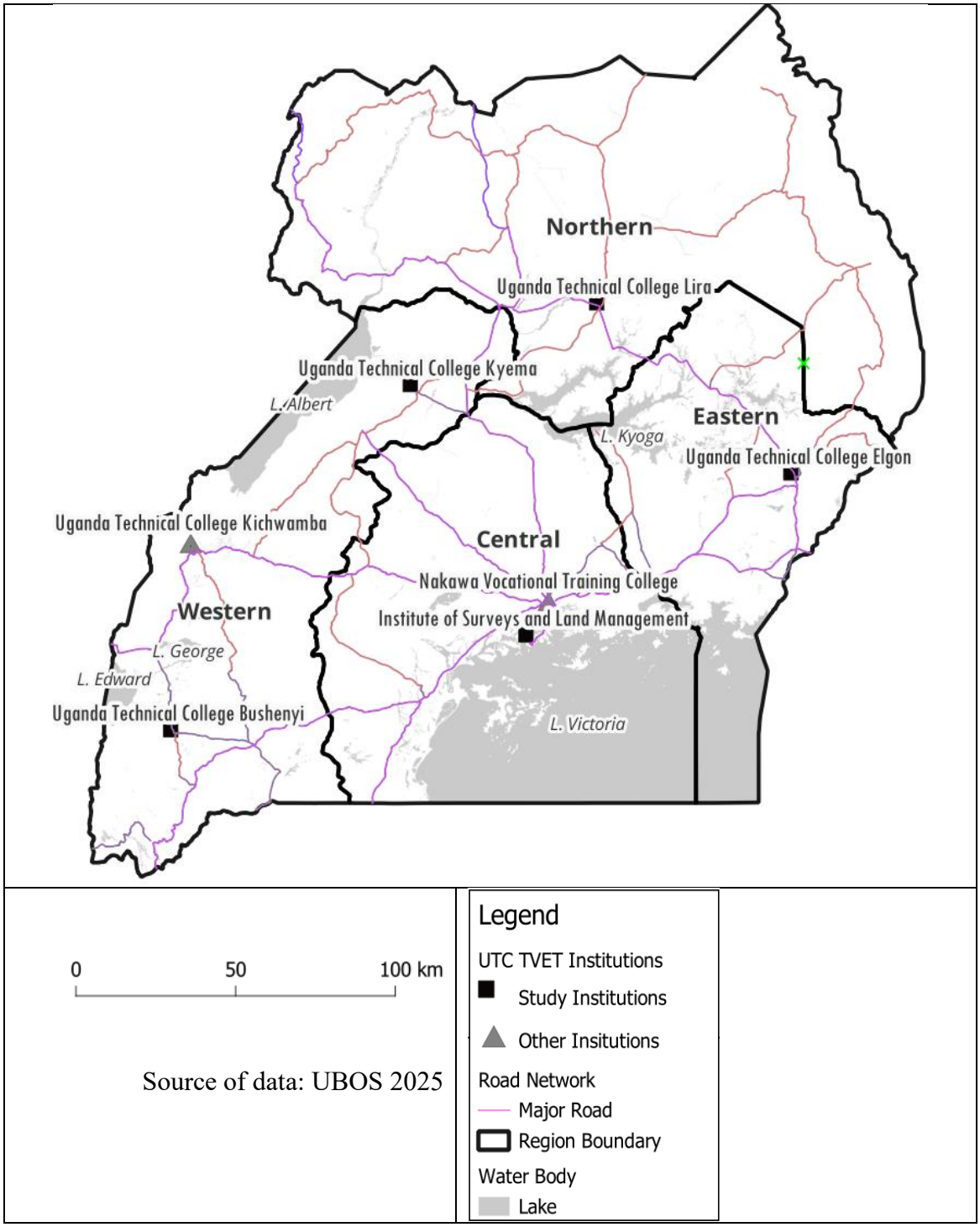
APPENDICES

Appendix 1: Map of Uganda Showing the Study Areas



Appendix 2: Letter of Introduction

Dear Participant,

My name is **Muhwezi Abaine Kakuri Loy**, and I am pursuing a **Degree of Doctor of Philosophy (Ph.D.) in Technology Education (TVET Option)** at the **University of Eldoret**, Kenya, reseachin on **Quality Assurance Practices and Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda.** The purpose of the study is to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement.

You have been identified as a participant in this research due to your valuable experience, knowledge and expertise in the Technical Vocational Education and Training sector, and the related industry. Your perspective and insights will contribute significantly to the overall understanding and achievement of the objectives of the study.

The information collected will be kept confidential and only used for academic research purposes. No personally identifiable information will be disclosed in any published material.

I am kindly requesting for your participation, and by signing the attached consent form, you indicate your voluntary agreement to participate in the study. Your involvement is entirely voluntary, and you are free to withdraw from the study at any time. The data collected will be stored securely, and your identity will remain confidential.

If you have any questions or concerns about the study, you are encouraged to contact me at my email: loy.muhwezi@gmail.com

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Name of the Researcher Date

Signature

Appendix 3: Informed Consent

Dear Participant,

My name is **Muhwezi Abaine Kakuri Loy**, and I am pursuing a **Degree of Doctor of Philosophy (PhD) in Technology Education (TVET Option)** at the **University of Eldoret**, Kenya. My research is on reviewing the **Quality Assurance Practices on Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda**. The study is purely for academic purposes, and the information provided will be treated with confidentiality. The purpose of the study is to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement.

Please sign and date this form to indicate your informed consent to participate in the research study. A copy of this signed consent form will be provided to you for your records.

Thank you for considering participation in this important research. Your contribution is highly valued, and I look forward to the insights your involvement will bring to the study.

I, ……... have read and understood the above, and voluntarily agree to participate in the PhD research on the review of Quality Assurance Practices on Education Outcomes in Public Technical and Vocational Colleges in Uganda.

Participant's Signature: _____

Date: _____

Appendix 4: Questionnaire for Trainees in Public TVET Colleges

QUESTIONNAIRE FOR TRAINEES IN PUBLIC TVET COLLEGES

Department of Technology Education,

University of Eldoret, Kenya,

P. O. Box 1125-30100,

Eldoret, Kenya.

November, 2024

Dear Respondent,

I am pursuing a **Philosophy Doctorate (PhD) in Technology Education (TVET Option)** at the **University of Eldoret**, Kenya. My research is on the **"Review of Quality Assurance Practices on Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda."** The study is for academic purposes and the information provided will be treated with confidentiality. The purpose of the study is to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement.

This questionnaire will help to get your opinion and the strategies towards improving quality assurance practices in Technical and Vocational Colleges in Uganda. Your honest and thoughtful responses are highly valuable for this study. The questionnaire is purely anonymous, and do not indicate your name anywhere. Kindly provide your answers honestly and to the best of your knowledge, and at will. You are provided optional scales, to follow and tick the most appropriate according to your experience and knowledge.

Thank you for participating in this survey.

Section 1: Demographic Information

Sex: Male ☐ Female ☐

Age: 16-20 ☐ 21-25 ☐ >36 ☐

26-30 ☐ 31-35 ☐

Educational Qualifications you had completed on admission to this TVET College

Craft Certificate ☐ Diploma ☐

Advanced Craft ☐ Bachelor's Degree ☐

UACE (A' Level) ☐ Others ☐

Course of Study: _____

Duration of Course: < 2 years ☐ 2 years ☐ >2 years ☐

Section 2: Trainee Perspective on Quality Assurance Practices in Public TVET Colleges

Strongly Disagree (**SD**), Disagree (**D**), Neutral (**N**), Agree (**A**), Strongly Agree (**SA**)

Management practices		**Rating Scale**				
LM	Leadership and Management	**SD**	**D**	**NS**	**A**	**SA**
LM1	The vision, mission, objectives and values of the college are well known to trainees.	**1**	**2**	**3**	**4**	**5**
LM2	Relevant Policies, strategies and regulations to trainees are well known	**1**	**2**	**3**	**4**	**5**
LM3	Management makes informed decisions that align college mission and vision to the needs of trainees	**1**	**2**	**3**	**4**	**5**
LM5	There is effective collaboration among trainees and trainers	**1**	**2**	**3**	**4**	**5**

LM6	There is effective collaboration between the college and community members involving trainees.	**1**	**2**	**3**	**4**	**5**
LM7	There is effective collaboration between the college and policymakers known to trainees.	**1**	**2**	**3**	**4**	**5**
LM8	There is effective engagement among trainees, trainers and community members and policymakers.	**1**	**2**	**3**	**4**	**5**
LM9	There is effective engagement with our parents by the college.	**1**	**2**	**3**	**4**	**5**
LM12	There is a strong management structure that ensures quality learning	**1**	**2**	**3**	**4**	**5**
LM13	There are mechanisms in place for effective management of financial resources	**1**	**2**	**3**	**4**	**5**
LM14	There are mechanisms in place for effective maintenance of infrastructure	**1**	**2**	**3**	**4**	**5**
LM15	There are mechanisms in place for effective maintenance of equipment	**1**	**2**	**3**	**4**	**5**
LM16	There are mechanisms in place for effective management of human resources	**1**	**2**	**3**	**4**	**5**
LM17	There are mechanisms in place for effective management of technology.	**1**	**2**	**3**	**4**	**5**
LM18	There are mechanisms in place for effective time management.	**1**	**2**	**3**	**4**	**5**
LM19	The college has financial management system with good record keeping that meets trainees' needs.	**1**	**2**	**3**	**4**	**5**
LM20	The procurement management procedure is adequate and well known by all stakeholders.	**1**	**2**	**3**	**4**	**5**

Learning Experiences and Practices		**Rating Scale**				
CIE	**Curriculum Implementation and Evaluation**	**SD**	**D**	**N**	**A**	**SA**
CIE 1	The curriculum content and learning objectives meets my expected knowledge, understanding, and practice in the world of work.	**1**	**2**	**3**	**4**	**5**
CIE 2	The curriculum contributes to quality skills training	**1**	**2**	**3**	**4**	**5**
CIE 3	The curriculum allows me to build upon my prior learning	**1**	**2**	**3**	**4**	**5**
CIE 4	The curriculum facilitates my smooth transitions between levels of TVET	**1**	**2**	**3**	**4**	**5**
CIE 5	The curriculum encourages me to be innovative and embraces new emerging technologies	**1**	**2**	**3**	**4**	**5**
CIE 6	The curriculum adequately prepares me to meet the needs of the society and the communities around.	**1**	**2**	**3**	**4**	**5**
CIE 7	The curriculum adequately prepares me to meet the needs of the employment world.	**1**	**2**	**3**	**4**	**5**
CIE 8	The training methodologies encourage active participation and engagement of trainees in learning process.	**1**	**2**	**3**	**4**	**5**
CIE 9	A combination of instructional methods and hands on exercises is used for training.	**1**	**2**	**3**	**4**	**5**
CIE 10	Continuous assessment to monitor trainees' progress is implemented in the college	**1**	**2**	**3**	**4**	**5**
CIE 11	Trainers provide timely feedback to trainees in the college	**1**	**2**	**3**	**4**	**5**

CIE 12	Trainees' learning is assessed through practical demonstrations	**1**	**2**	**3**	**4**	**5**
CIE 13	Trainees' learning is assessed through workplace projects	**1**	**2**	**3**	**4**	**5**
CIE 14	Trainees are offered opportunities to reflect on their learning.	**1**	**2**	**3**	**4**	**5**
Materials, Facilities and Equipment		**SD**	**D**	**N**	**A**	**SA**
MFE1	Learning materials and consumables are available in the college for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE2	Learning materials and consumables are accessible in the college for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE3	Learning materials and consumables are adequate for trainees	**1**	**2**	**3**	**4**	**5**
MFE4	Training Facilities are available in the college for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE5	Training Facilities are adequate and accessible in the college for trainees' learning	**1**	**2**	**3**	**4**	**5**
MFE6	Training Facilities are accessible to trainees outside the college for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE7	Equipment is available in the college for curriculum delivery to us	**1**	**2**	**3**	**4**	**5**
MFE8	Equipment is adequate and accessible in the college for trainees' learning	**1**	**2**	**3**	**4**	**5**
MFE9	Equipment is accessible for trainees outside the college for curriculum delivery	**1**	**2**	**3**	**4**	**5**

MFE10	The college offers library services for comprehensive support services to trainees	**1**	**2**	**3**	**4**	**5**
MFE11	The college offers ICT laboratories facilities for comprehensive support services to trainees	**1**	**2**	**3**	**4**	**5**
Support Services to Trainees		**SD**	**D**	**N**	**A**	**SA**
SST1	The college provides pre-training orientation to trainees	**1**	**2**	**3**	**4**	**5**
SST2	The college provides information to trainees on program expectations	**1**	**2**	**3**	**4**	**5**
SST3	The college provides information to trainees on available support services.	**1**	**2**	**3**	**4**	**5**
SST4	Guidance and counselling services to trainees throughout the program are available.	**1**	**2**	**3**	**4**	**5**
SST5	There are established procedures for admissions and enrolment in the college.	**1**	**2**	**3**	**4**	**5**
SST6	There are established procedures for course registration.	**1**	**2**	**3**	**4**	**5**
SST7	There are established procedures for exam registration	**1**	**2**	**3**	**4**	**5**
SST8	There are established procedures for feedback and complaints by trainees.	**1**	**2**	**3**	**4**	**5**
SST9	There are established procedures for graduation in the college.	**1**	**2**	**3**	**4**	**5**
SST10	There is a system with all information about available job opportunities.	**1**	**2**	**3**	**4**	**5**
Quality Assurance Systems		**SD**	**D**	**N**	**A**	**SA**
QAS1	There are established quality assurance policies and procedures known to trainees	**1**	**2**	**3**	**4**	**5**

QAS2	There is an established committee on Quality Assurance in the college.	**1**	**2**	**3**	**4**	**5**
QAS3	The college collects feedback from trainees immediately after the end of a course/program for continuous improvement.	**1**	**2**	**3**	**4**	**5**
QAS4	There is compliance with ethical principles, legal requirements and frameworks within the college.	**1**	**2**	**3**	**4**	**5**
QAS5	There is respect for human rights within the college.	**1**	**2**	**3**	**4**	**5**
QAS6	There is a culture for continuous improvement through feedback mechanisms.	**1**	**2**	**3**	**4**	**5**
QAS7	There is a culture for continuous improvement through stakeholder engagement.	**1**	**2**	**3**	**4**	**5**
Greening, Safe and Clean Environment		**SD**	**D**	**N**	**A**	**SA**
GSCE1	Training programs address greening.	**1**	**2**	**3**	**4**	**5**
GSCE2	Training programs address sustainable development.	**1**	**2**	**3**	**4**	**5**
GSCE3	Training programs address workplace health and safety issues.	**1**	**2**	**3**	**4**	**5**
GSCE4	Training programs address environment issues.	**1**	**2**	**3**	**4**	**5**
GSCE5	There are healthy, safety and environmental awareness signs well placed in the college.	**1**	**2**	**3**	**4**	**5**
GSCE6	There is a plan for conducting trainee activities for environment involving the communities and society.	**1**	**2**	**3**	**4**	**5**
GSCE7	There is a plan for conducting trainee sports activities involving the communities and society.	**1**	**2**	**3**	**4**	**5**

GSCE8	There is a plan for conducting trainee activities in creative arts and culture involving the communities and society.	**1**	**2**	**3**	**4**	**5**
Staff Recruited and Retained		**SD**	**D**	**N**	**A**	**SA**
SRR1	The ratio of trainers to the number of trainees in my course is adequate	**1**	**2**	**3**	**4**	**5**
SRR2	My trainers have practical experiences with industry of their specialization.	**1**	**2**	**3**	**4**	**5**
SRR3	Qualifications of my trainers are in accordance with course content	**1**	**2**	**3**	**4**	**5**
SRR4	Employers participate in recruitment of staff of the college.	**1**	**2**	**3**	**4**	**5**
SRR5	Staff performance is monitored regularly	**1**	**2**	**3**	**4**	**5**
SRR6	Staff performance appraisals are regularly done	**1**	**2**	**3**	**4**	**5**
Practices by trainers to improve Educational Outcomes		**Rating Scale**				
SQA	**Trainers' Strategies for Quality Assurance**	**SD**	**D**	**N**	**A**	**SA**
SQA1	Trainers relate teaching concepts and skill to practical examples	**1**	**2**	**3**	**4**	**5**
SQA2	Trainers relate teaching concepts and skills to real-life scenarios	**1**	**2**	**3**	**4**	**5**
SQA3	Trainers are always available when it is their time to engage in training activities.	**1**	**2**	**3**	**4**	**5**
SQA4	Trainers are able to conduct practical lessons	**1**	**2**	**3**	**4**	**5**
SQA5	Trainers handle tools and equipment appropriately	**1**	**2**	**3**	**4**	**5**

SQA6	Trainers use ICT and blended learning approaches in teaching	**1**	**2**	**3**	**4**	**5**
SQA7	Trainers give feedback and support to trainees	**1**	**2**	**3**	**4**	**5**
SQA8	Trainers engage in research and innovations to cope up with emerging technologies.	**1**	**2**	**3**	**4**	**5**
SQA9	Trainers evaluate effectiveness of the training and learning programs	**1**	**2**	**3**	**4**	**5**
SQA10	Trainers engage in continuous professional development programs to enhance teaching effectiveness	**1**	**2**	**3**	**4**	**5**
SQA11	Trainers engage in continuous professional development programs to enhance implementation of best practices	**1**	**2**	**3**	**4**	**5**
Industry employer involvement in QA practices		**Rating Scale**				
IEI	**Industry Employer Involvement**	**SD**	**D**	**NS**	**A**	**SA**
IEI1	Employers are fully involved in development of curriculum for training delivery.	**1**	**2**	**3**	**4**	**5**
IEI2	Employers are fully involved in the review of curriculum to meet the needs of the labour market.	**1**	**2**	**3**	**4**	**5**
IEI3	Employers are fully involved in training delivery in the college.	**1**	**2**	**3**	**4**	**5**
IEI4	Employers are fully involved in training delivery when trainees go for workplace-based training.	**1**	**2**	**3**	**4**	**5**
IEI5	The college have linkages with enterprises and companies that foster skilling of trainees.	**1**	**2**	**3**	**4**	**5**
IEI6	The college gather information on future needs regularly for training.	**1**	**2**	**3**	**4**	**5**

IEI7	Employers usually provide exchange programs for trainees between the college and the industry.	**1**	**2**	**3**	**4**	**5**
IEI8	There are employers who provide their workplaces and equipment for learners to practice while at college.	**1**	**2**	**3**	**4**	**5**
IEI9	Employers contribute funding resources to TVET training delivery such as scholarships and bursaries.	**1**	**2**	**3**	**4**	**5**
IEI10	Employers are on advisory committees for training in specific sectors.	**1**	**2**	**3**	**4**	**5**
IEI11	Employers provide occupational profiles and standards for training in specific sectors.	**1**	**2**	**3**	**4**	**5**
IEI12	Employers (industry and companies) participate in assessing curricular implementation.	**1**	**2**	**3**	**4**	**5**
EO	**Educational outcomes**	**Rating scale**				
CR	**Completion Rate of Trainees**	**SD**	**D**	**NS**	**A**	**SA**
CRT1	There are mentorship programs implemented to facilitate trainee-trainer relationships	**1**	**2**	**3**	**4**	**5**
CRT2	There are mentorship programs implemented to promote trainee success	**1**	**2**	**3**	**4**	**5**
CRT3	Information about financial support services such as bursary and scholarships are readily available to trainees.	**1**	**2**	**3**	**4**	**5**
CRT4	Information about opportunities such as exchange visits is readily available.	**1**	**2**	**3**	**4**	**5**
CRT5	There is an increase in completion rates in the last five years	**1**	**2**	**3**	**4**	**5**

CRT6	There is a system with all information about trainees including tracer studies of graduates.	**1**	**2**	**3**	**4**	**5**
ES	**Trainees' employability skills**	**SD**	**D**	**NS**	**A**	**SA**
TES1	The college provide opportunities for trainees to apply their learning through real life projects.	**1**	**2**	**3**	**4**	**5**
TES2	Training programs cater for different learning styles for trainees.	**1**	**2**	**3**	**4**	**5**
TES3	There are opportunities for industrial training/internship during college to trainees.	**1**	**2**	**3**	**4**	**5**
TES4	The college have clear plans and information about tasks performed by trainees during industrial training.	**1**	**2**	**3**	**4**	**5**
TES5	The college have clear plans and information about duration of industrial training for trainees.	**1**	**2**	**3**	**4**	**5**
TES6	Graduates from the college find easily paid employment	**1**	**2**	**3**	**4**	**5**

End

Thank you for participating in the study

Appendix 5: Questionnaire for Trainers in Public TVET Colleges

QUESTIONNAIRE FOR TRAINERS IN PUBLIC TVET COLLEGES

Department of Technology Education,

University of Eldoret, Kenya,

P. O. Box 1125-30100,

Eldoret, Kenya

November, 2024

Dear Respondent,

I am pursuing a **Philosophy Doctorate (PhD) in Technology Education (TVET Option)** at the **University of Eldoret**, Kenya. My research is on the **"The Review of Quality Assurance Practices on the Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda."** The study is for academic purposes and the information provided will be treated with confidentiality. The purpose of the study is to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement..

This questionnaire will help to get your opinion and the strategies towards improving quality assurance practices in Technical and Vocational Colleges in Uganda. Your honest and thoughtful responses are highly valuable for this study. The questionnaire is purely anonymous, and do not indicate your name anywhere. Kindly provide your answers honestly and to the best of your knowledge, and at will. You are provided optional scales, to follow and tick the most appropriate according to your experience and knowledge.

Thank you for participating in this survey.

Section 1: Demographic Information

Sex: Male ☐ Female ☐

Age: 20-29 ☐ 30-39 ☐ 60 & Above ☐

40-49 ☐ 50-59 ☐

Highest Educational Qualifications

National Diploma ☐ Higher Diploma ☐

Bachelor's Degree ☐ Master's Degree ☐ PhD ☐

Specialisation _____

Years of work experience in TVET

3 - 6 ☐ 7-10 ☐ 11-14 ☐ > 14 ☐

Section 2: Quality Assurance Practices for Training & Learning Process

Strongly Disagree (**SD**), Disagree (**D**), Neutral (**N**), Agree (**A**), Strongly Agree (**SA**)

Management practices		**Rating Scale**				
LM	Leadership and Management	**SD**	**D**	**N**	**A**	**SA**
LM1	The vision, mission, objectives and values of the college are well known.	**1**	**2**	**3**	**4**	**5**
LM2	Policies, strategies and regulations in the college are well known	**1**	**2**	**3**	**4**	**5**
LM3	Management makes informed decisions that align college mission and vision to the needs of trainees	**1**	**2**	**3**	**4**	**5**

LM4	Management makes informed decisions that align college mission and vision to the needs of trainers.	**1**	**2**	**3**	**4**	**5**
LM5	There is effective collaboration among trainees and trainers	**1**	**2**	**3**	**4**	**5**
LM6	There is effective collaboration between the college and community members initiated by trainers.	**1**	**2**	**3**	**4**	**5**
LM7	There is effective collaboration between the college and policymakers.	**1**	**2**	**3**	**4**	**5**
LM8	There is effective engagement among trainees, trainers and community members and policymakers.	**1**	**2**	**3**	**4**	**5**
LM9	There is effective engagement with parents by the trainers.	**1**	**2**	**3**	**4**	**5**
LM10	There is effective engagement with policymakers by trainers.	**1**	**2**	**3**	**4**	**5**
LM11	There is a strong management structure that ensures quality assurance in training	**1**	**2**	**3**	**4**	**5**
LM12	There is a strong management structure that ensures quality assurance in learning	**1**	**2**	**3**	**4**	**5**
LM13	There are mechanisms in place for effective management of financial resources	**1**	**2**	**3**	**4**	**5**
LM14	Trainers initiate mechanisms for effective management of infrastructure	**1**	**2**	**3**	**4**	**5**
LM15	Trainers encourage mechanisms for effective management of human resources	**1**	**2**	**3**	**4**	**5**
LM16	Trainers initiate mechanisms for effective management of technology.	**1**	**2**	**3**	**4**	**5**

LM17	Trainers embrace mechanisms for effective time management.	**1**	**2**	**3**	**4**	**5**
LM18	The college has financial management system with good record keeping that meets stakeholders' needs.	**1**	**2**	**3**	**4**	**5**
LM19	The procurement management procedure is adequate and well known by stakeholders.	**1**	**2**	**3**	**4**	**5**
LM20	Trainers adhere to procurement procedures in the college when requisitioning for materials.					
Learning experiences and practices		**Rating Scale**				
CIE	**Curriculum Implementation and Evaluation**	**SD**	**D**	**N**	**A**	**SA**
CIE1	The curriculum content and learning objectives define trainees' expected knowledge, understanding, and practice in the world of work.	**1**	**2**	**3**	**4**	**5**
CIE2	Trainers ensure that curriculum contributes to quality skills training	**1**	**2**	**3**	**4**	**5**
CIE3	The curriculum I deliver allows trainees to build upon their prior learning	**1**	**2**	**3**	**4**	**5**
CIE4	The curriculum I deliver facilitates smooth transitions between levels of TVET	**1**	**2**	**3**	**4**	**5**
CIE5	In handling the curriculum, I encourage innovation and adoption of new emerging technologies	**1**	**2**	**3**	**4**	**5**
CIE6	The curriculum delivery adequately prepares trainees to meet the needs the society.	**1**	**2**	**3**	**4**	**5**
CIE7	The curriculum adequately prepares trainees to meet the needs of the employment world.	**1**	**2**	**3**	**4**	**5**

CIE8	The training methodologies encourage active participation and engagement of trainees in learning process.	**1**	**2**	**3**	**4**	**5**
CIE9	A combination of instructional methods and hands on exercises is used for training by trainers.	**1**	**2**	**3**	**4**	**5**
CIE10	Continuous assessment to monitor trainees' progress is implemented by trainers	**1**	**2**	**3**	**4**	**5**
CIE11	Trainers provide timely feedback to trainees in the college	**1**	**2**	**3**	**4**	**5**
CIE12	We assess Trainees' learning through practical demonstrations	**1**	**2**	**3**	**4**	**5**
CIE 13	We assess Trainees' learning through workplace projects	**1**	**2**	**3**	**4**	**5**
CIE 14	We offer Trainees opportunities to reflect on their learning.	**1**	**2**	**3**	**4**	**5**
Materials, Facilities and Equipment		**SD**	**D**	**N**	**A**	**SA**
MFE1	Trainers ensure that learning materials and consumables are available for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE2	Trainers ensure that learning materials and consumables are accessible to trainees for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE3	Trainers ensure that learning materials and consumables are adequate for trainees	**1**	**2**	**3**	**4**	**5**
MFE4	Trainers ensure that Training Facilities are made available to trainees in the college	**1**	**2**	**3**	**4**	**5**

MFE5	Trainers ensure that Training Facilities are adequate in the college for trainees' learning	**1**	**2**	**3**	**4**	**5**
MFE6	Trainers ensure that alternative outside college Training Facilities are available and accessible to trainees in the event of scarcity	**1**	**2**	**3**	**4**	**5**
MFE7	Equipment is available in the college for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE8	Equipment is adequate in the college for trainees' learning	**1**	**2**	**3**	**4**	**5**
MFE9	Trainers ensure that trainees can access Equipment outside the college for curriculum delivery	**1**	**2**	**3**	**4**	**5**
MFE10	Trainers support trainees to access facilities for comprehensive support services such as library services, ICT laboratories and stores.	**1**	**2**	**3**	**4**	**5**
Support Services to Trainees		**SD**	**D**	**N**	**A**	**SA**
SST1	Trainers support pre-training orientation to trainees	**1**	**2**	**3**	**4**	**5**
SST2	Trainers provide information to trainees on program expectations	**1**	**2**	**3**	**4**	**5**
SST3	Trainers provide information to trainees on available support services.	**1**	**2**	**3**	**4**	**5**
SST4	Trainers provide Guidance and counselling services to trainees throughout the program are available.	**1**	**2**	**3**	**4**	**5**
SST5	There are established procedures for admissions and enrolment in the college.	**1**	**2**	**3**	**4**	**5**

SST6	There are established procedures for course registration.	**1**	**2**	**3**	**4**	**5**
SST7	There are established procedures for exam registration	**1**	**2**	**3**	**4**	**5**
SST8	There are established procedures for feedback and complaints by trainees.	**1**	**2**	**3**	**4**	**5**
SST9	There are established procedures for graduation in the college.	**1**	**2**	**3**	**4**	**5**
SST10	There is a system with all information about available job opportunities.	**1**	**2**	**3**	**4**	**5**
QAS	**Quality Assurance Systems**	**SD**	**D**	**N**	**A**	**SA**
QAS1	There are established quality assurance policies and procedures in the college	**1**	**2**	**3**	**4**	**5**
QAS2	There is an established committee on Quality Assurance in the college.	**1**	**2**	**3**	**4**	**5**
QAS3	Trainers ensure that feedback is collected from trainees immediately after the end of a course/program for continuous improvement.	**1**	**2**	**3**	**4**	**5**
QAS4	Trainers comply with ethical principles, legal requirements and frameworks within the college.	**1**	**2**	**3**	**4**	**5**
QAS5	Trainers have respect for human rights within the college.	**1**	**2**	**3**	**4**	**5**
QAS6	The college conducts regular self-assessment exercises on quality assurance to meet established standards.	**1**	**2**	**3**	**4**	**5**

QAS7	There is a culture for continuous improvement through feedback mechanisms.	**1**	**2**	**3**	**4**	**5**
QAS8	There is a culture for continuous improvement through stakeholder engagement.	**1**	**2**	**3**	**4**	**5**
Greening, Safe and Clean Environment		**SD**	**D**	**N**	**A**	**SA**
GSCE1	Training programs address greening.	**1**	**2**	**3**	**4**	**5**
GSCE2	Training programs address sustainable development.	**1**	**2**	**3**	**4**	**5**
GSCE3	Training programs address workplace health and safety issues.	**1**	**2**	**3**	**4**	**5**
GSCE4	Training programs address environment issues.	**1**	**2**	**3**	**4**	**5**
GSCE5	There are healthy, safety and environmental awareness signs well placed in the college.	**1**	**2**	**3**	**4**	**5**
GSCE6	Trainers have plans and conduct trainee activities for environment involving the communities and society.	**1**	**2**	**3**	**4**	**5**
GSCE7	Trainers have plans and conduct trainee sports activities involving the communities and society.	**1**	**2**	**3**	**4**	**5**
GSCE8	Trainers have plans and conduct trainee activities for creative arts and culture involving the communities and society.	**1**	**2**	**3**	**4**	**5**
Staff Recruited and Retained		**SD**	**D**	**N**	**A**	**SA**
SRR1	The ratio of trainers to the number of trainees per course is adequate	**1**	**2**	**3**	**4**	**5**
SRR2	Trainers have work and practical experiences with industry practices.	**1**	**2**	**3**	**4**	**5**

SRR3	Qualifications of trainers are in accordance with course content	**1**	**2**	**3**	**4**	**5**
SRR4	Employers participate in gaps identification of staff for the college.	**1**	**2**	**3**	**4**	**5**
SRR5	Trainers seek attachment with employers to fill gaps identified.					
SRR6	Employers participate in recruitment of staff of the college.	**1**	**2**	**3**	**4**	**5**
SRR7	Staff performance is monitored regularly	**1**	**2**	**3**	**4**	**5**
SRR8	Staff performance appraisals are regularly done	**1**	**2**	**3**	**4**	**5**
Practices employed by trainers to Improve Outcomes		**Rating Scale**				
TSQA	**Instruction and Teaching Practices**	**SD**	**D**	**N**	**A**	**SA**
TSQA1	Trainers relate teaching concepts and skill to practical examples	**1**	**2**	**3**	**4**	**5**
TSQA2	Trainers relate teaching concepts and skills to real-life scenarios	**1**	**2**	**3**	**4**	**5**
TSQA3	Trainers are always available when it is their time to engage in training activities.	**1**	**2**	**3**	**4**	**5**
TSQA4	Trainers are able to conduct practical lessons	**1**	**2**	**3**	**4**	**5**
TSQA5	Trainers handle tools and equipment appropriately	**1**	**2**	**3**	**4**	**5**
TSQA6	Trainers use ICT and blended learning approaches in teaching	**1**	**2**	**3**	**4**	**5**
TSQA7	Trainers give feedback and support to trainees	**1**	**2**	**3**	**4**	**5**

TSQA8	Trainers engage in research and innovations to cope up with emerging technologies.	**1**	**2**	**3**	**4**	**5**
TSQA9	Trainers evaluate effectiveness of the training and learning programs	**1**	**2**	**3**	**4**	**5**
TSQA10	Trainers engage in continuous professional development programs to enhance teaching effectiveness	**1**	**2**	**3**	**4**	**5**
TSQA11	Trainers engage in continuous professional development programs to enhance implementation of best practices	**1**	**2**	**3**	**4**	**5**
TSQA12	Trainers return to industry to acquire new skills at least once a year	**1**	**2**	**3**	**4**	**5**
Industry employer involvement in QA practices		**Rating Scale**				
IEI	Industry Employer Involvement	**SD**	**D**	**N**	**A**	**SA**
IEI1	Employers are fully involved in development of curriculum to meet the needs of the labour market.	**1**	**2**	**3**	**4**	**5**
IEI2	Employers are fully involved in review of curriculum to meet the needs of the labour market.	**1**	**2**	**3**	**4**	**5**
IEI3	Employers are fully involved in training delivery in the college.	**1**	**2**	**3**	**4**	**5**
IEI4	Employers are fully involved in training delivery in the workplace.	**1**	**2**	**3**	**4**	**5**
IEI5	Trainers ensure that the college have linkages with enterprises and companies.	**1**	**2**	**3**	**4**	**5**
IEI6	Trainers gather information on future needs of the industry regularly.	**1**	**2**	**3**	**4**	**5**

IEI7	Trainers seek for exchange programs for trainees between the college and the industry.	**1**	**2**	**3**	**4**	**5**
IEI8	Employers usually provide exchange programs for trainers	**1**	**2**	**3**	**4**	**5**
IEI9	There are employers who provide their workplaces and equipment for learners to practice while at college.	**1**	**2**	**3**	**4**	**5**
IEI10	Employers contribute funding resources to TVET training delivery such as scholarships and bursaries.	**1**	**2**	**3**	**4**	**5**
IEI11	Employers are on advisory committees for training in specific sectors.	**1**	**2**	**3**	**4**	**5**
IEI12	Employers provide occupational profiles and standards for training in specific sectors.	**1**	**2**	**3**	**4**	**5**
IEI13	Employers (industry and companies) participate in assessing curricular implementation.	**1**	**2**	**3**	**4**	**5**
ED	**Educational outcomes**	**Rating scale**				
CRT	**Completion rate of trainees**	**SD**	**D**	**NS**	**A**	**SA**
CRT1	There are mentorship programs implemented to facilitate trainee-trainer relationships	**1**	**2**	**3**	**4**	**5**
CRT2	Trainers engage in mentorship programs implemented to promote trainee success	**1**	**2**	**3**	**4**	**5**
CRT3	Information about financial support services such as bursary and scholarships are readily available to trainees.	**1**	**2**	**3**	**4**	**5**

CRT4	Information about opportunities such as exchange visits is readily available.	**1**	**2**	**3**	**4**	**5**
CRT5	There is an increase in completion rates in the last five years	**1**	**2**	**3**	**4**	**5**
CRT6	There is a system with all information about trainees including tracer studies of graduates.	**1**	**2**	**3**	**4**	**5**
TES	**Trainees' Employability Skills**	**SD**	**D**	**NS**	**A**	**SA**
TES1	Trainers provide opportunities for trainees to apply their learning through real life projects.	**1**	**2**	**3**	**4**	**5**
TES2	Training programs cater for different learning styles for trainees.	**1**	**2**	**3**	**4**	**5**
TES3	Trainers employ different methods to cater for different learning styles by trainees.	**1**	**2**	**3**	**4**	**5**
TES4	Trainers look out for opportunities for industrial training for trainees during the course of study.	**1**	**2**	**3**	**4**	**5**
TES5	Trainers have clear plans and information about tasks performed by trainees during industrial training.	**1**	**2**	**3**	**4**	**5**
TES6	Trainers have clear plans and information about duration of industrial training.	**1**	**2**	**3**	**4**	**5**
TES7	Trainers are available and give support to trainees during industrial training.					
TES8	Graduates from the college find easily paid employment	**1**	**2**	**3**	**4**	**5**

End

Thank you for participating in the study

Appendix 6: Interview Schedule for College Managers

Title of the Study: The Review of Quality Assurance Practices on Educational Outcomes in Public Technical Vocational Education Training Colleges in Uganda

I am pursuing a **Philosophy Doctorate (PhD) in Technology Education (TVET Option)** at the **University of Eldoret**, Kenya. My study is on **the "Review of Quality Assurance Practices on Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda."** You were purposively selected to provide information on the study because of your experience, knowledge and expertise in leadership and management of TVET institutions, but also because of your strategic position in assurance of quality TVET.

The study is for academic purposes and the information provided and discussed will be treated with confidentiality. The purpose of the study was to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement.

Thank you for accepting to participate in this study.

Date:

Category of Participant (**tick the appropriate**): (Principal, Deputy Principal, and Academic Registrar).

Are you substantively appointed in the Position? Yes/No. ……Years in the Position: ……

If NO, state the substantive appointed Position: …….

Years in substantive Position: ……

Section 1: Demographic Information

Sex:	Male	☐		Female	☐		
Age:	20-29	☐	30-39	☐	60 & above	☐	
	40-49	☐	40-59	☐			

Highest Educational Qualifications

National Diploma ☐ Higher Diploma ☐

Bachelor's Degree ☐ Master's Degree ☐ PhD ☐

Specialisation _____

Years of work experience in TVET

3 - 6 ☐ 7-10 ☐ 11-14 ☐ > 14 ☐

Section 2: Institutional Information

Year when it became a college…… No of Academic Programs…….

No of Female Students……. No of Male Students…… Total No of Students…….

No of academic staff on Govt ……. No of academic staff on Council…….

Total No of academic Staff…….

No of Non-academic staff on Govt …….

No of Non-academic staff on Council…….

Total No of Non-academic Staff…….

Section 3: Quality Management Practices

1. What leadership do you provide in this institution to ensure quality of teaching and learning?
2. Today the world is focusing on greening, safe and clean environment. In your capacity as ***Principal/Deputy Principal/Registrar*** how do you ensure that this is attained in this college?
3. What is your role in ensuring that the training facilities are available, adequate and accessible for skills acquisition in this college?
4. What is your role in ensuring that the training materials are available and adequate for skills acquisition in this college?

5. As management, what continuous capacity building programmes have you initiated and implemented for staff?
6. Do you have a quality assurance policy in place? If yes, do you have a quality assurance committee constituted?
7. If there is a quality assurance committee in place, what quality management systems have you implemented in this college?
8. In your capacity, how do you ensure that the curriculum is implemented and evaluated as planned?
9. As management, what support services to trainees have you put in place in this college?
10. Self-assessments for quality assurance are different from performance appraisal management, as a college management do you carry out self-assessment on quality in this college? If yes, how regularly?
11. As management, how do you ensure that the recruitment processes attract quality staff are in this college?
12. As management, how do you ensure that the staff are recruited are retained in this college for at least five years?
13. What is your role in managing performance of staff in this college?
14. In your capacity how do you engage with industry in skilling trainees in this college?
15. What is the completion rate of trainees for the last five years in this college? *(Management provides evidence of the completion rates for the last five years)*
16. What are some of the reasons behind the completion rates in the last five years?
17. In your capacity, how do you ensure that the trainees attain employability skills before they leave the college?

THANK YOU FOR YOUR VALUABLE TIME!

Appendix 7: Interview Schedule for Industry Managers

Title of the Study: The Review of Quality Assurance Practices on Educational Outcomes in Public Technical Vocational Education Training Colleges in Uganda

Introduction:

I am pursuing a Philosophy **Doctorate (PhD) in Technology Education (TVET Option)** at the **University of Eldoret,** Kenya. My research study is on the "**Review of Quality Assurance Practices on Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda.** You were purposively selected to provide information on the study because of your experience, knowledge and expertise in TVET, but also your strategic position in quality assurance of trainee work place attachments, and employment of TVET graduates. The study is for academic purposes and the information provided and discussed will be treated with confidentiality. The purpose of the study was to review the Quality Assurance (QA) practices on the educational outcomes.in public TVET colleges in Uganda, to promote continuous improvement.

Date:

Category of Participant:(**Training Manager/Heads of Departments or Units in industry**)

Current position Held: Years in the Current Position:

Section 1: Demographic Information

Sex: Male ☐ Female ☐

Age: 20-29 ☐ 30-39 ☐ 60 & above ☐

40-49 ☐ 50-59 ☐

Highest Educational Qualifications

National Diploma ☐ Higher Diploma ☐

Bachelor's Degree ☐ Master's Degree ☐ PhD ☐

Specialisation _____

Years of work experience in industry

< 3 ☐ 3-6 ☐ 7-10 ☐ > 10 ☐

Section 2: Company Background Information

Year of Establishment …… Industry/Business of specialisation……

No of Departments/units …….

No of Female Employees……. No of Male Employees…… Total Employees……

Average No of Diploma Trainees per year (only from Uganda Technical Colleges) …….

Names of the most three (3) popular courses/programs whose trainees seek attachment in your company: (beginning with one with the highest number of trainees attached)

1st most popular Course/Program …… ……

2nd popular Course/Program ……

3rd popular Course/Program ……..……

Section 3: Industry Employers Involvement in Quality Assurance Practices of TVET

1. How do you ensure that training facilities are available, adequate and accessible by trainees from TVET colleges?
2. Do you avail adequate training materials to college trainees who come for industry experience in your company? Please elaborate.
3. What is your company's role in support continuous capacity building programmes for staff of TVET colleges?
4. Does your company participate in skills anticipation and curriculum design for TVET trainees?

5. How are you involved in ensuring that the curriculum is implemented and evaluated in a manner that meet the industry needs?
6. What support services do you have in place to ensure that trainees learn effectively in the process of acquiring skills?
7. Does your company offer some grants of scholarships to colleges or individual TVET trainees? If yes specify.
8. How do you rate the quality of the trainees from TVET colleges who come for industrial training at the company?
9. How are you involved in the entire skilling process for trainees in the TVET colleges?
10. What is the completion rate of trainees attached to this industry/company for the last five years? *(Industry provides evidence of the completion rates for the last five years)*
11. What are the reasons behind the completion rates for the last five years?
12. How do you ensure that the trainees on industrial attachment attain employability skills?

Thank you for your Valuable Time.

Appendix 8: Focus Group Discussion Guide for Trainees

Title of the Study: The Review of Quality Assurance Practices on Education Outcomes in Technical Vocational Education Training Colleges in Uganda

I am pursuing a **Philosophy Doctorate (PhD) in Technology Education (TVET Option)** at the **University of Eldoret**, Kenya. My research is on the "**Review of Quality Assurance Practices on Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda."** You were purposively selected to provide information on the study because of your experience, knowledge and expertise in TVET delivery but also your role in quality assurance implementation. The purpose of the study is to assess the impact of quality assurance practices education outcomes in public TVET colleges with the view of making recommendations for continuous improvement.

The study is for academic purposes and the information provided during the discussion will be treated with confidentiality. The discussion will be recorded upon your consent, and shared with you on request. It will be a free discussion with participants contributing and giving information at will and with ease. It will last for one hour at most.

Thank you for accepting to participate in this study

Background Information

Name of Facilitator: ……. Place/Location: …….

Time: …… Date: ……

Name of Recorder: …….

No of Female Participants. …… No of Male Participants. …… Total Participants. ……..

Appendix 9: Focus Group Discussion Guide for Trainers

Title of the Study: Review of Quality Assurance Practices on Education Outcomes in Technical Vocational Education Training Colleges in Uganda

Introduction:

I am pursuing a **Philosophy Doctorate (PhD) in Technology Education (TVET Option)** at the **University of Eldoret**, Kenya. My research is on **the Review of Quality Assurance Practices on Educational Outcomes in Public Technical and Vocational Education and Training Colleges in Uganda**. You were purposively selected to provide information on the study because of your experience, knowledge and expertise in TVET delivery, and your role in quality assurance implementation. The purpose of the study is to assess the impact of quality assurance practices on educational outcomes in public TVET colleges with the view of making recommendations for continuous improvement.

The study is for academic purposes and the information provided during the discussion will be treated with confidentiality. The discussion will be recorded upon your consent, and shared with you on request. It will be a free discussion with participants contributing and giving information at will and with ease. It will last for one hour at most.

Thank you for accepting to participate in this study.

Background Information

Name of Facilitator: ……. Place/Location: …….

Time: …… Date: ……

Name of Recorder: …….

No of Female Participants. …… No of Male Participants. …… Total Participants. ……..

Trainers Quality Assurance Practices

1. In your capacity as trainers, how do you provide effective leadership to trainees in this college? Let's discuss your role as trainers.
2. What strategies have you put in place as individual trainers to ensure that you attain appropriate industry experience to cope up with changing technology in industry? Please elaborate.
3. As a trainer, what are your strategies to ensure that trainees are attaining a green, safe and clean environment in this college? How do you participate yourselves?
4. Let us discuss the strategies you have put in place to ensure that relevant training facilities are available or accessible to trainees in your area of specialization.
5. Kindly elaborate on how you have ensured that training materials are adequate for trainees in your specialization? Are there innovative strategies you are employing?
6. What essential continuous capacity building programmes have you undertaken, and how helpful has it been to you? Please elaborate.
7. Do you have any knowledge on quality assurance (QA) management systems in TVET? Have you ever participated or being a member of any QA committee? Let's discuss anything you know about QA systems or frameworks.
8. What strategies have you put in place to ensure that the curriculum is implemented and evaluated as planned? Let's discuss the strategies initiated by you as trainers.
9. As trainers, what kind of support services do you provide to trainees to ensure that they learn effectively and successfully? Elaborate on the support services to trainees.
10. As trainers how do you engage the industry practitioners of your specialization in skilling process in this college? Let's discuss the strategies you have put in place to involve industry employers in the training process as trainers.
11. What are the completion rates of learners in your area of specialization? What strategies have you put in place to ensure successful completion of trainees in your course?

12. As trainers what strategies do you have to ensure that trainees attain employable skills before they graduate? Let's discuss the strategies you employ as trainers.
13. Do you have general strategies you have initiated as trainers to ensure quality training and learning in this college that we have not discussed and you may wish to add on? Please go ahead and highlight them.

Thank you for your Valuable Time.

Appendix 10: Research Workplan

S/No	Activity	Time
1	Concept development	January – May 2023
2	Research proposal development	June – October 2023
3	Proposal Presentation	December 2023 – June 2024
4	Ethical approvals and Data collection	July 2024 – March 2025
5	Data interpretation and analysis	March 2025
6	Final Thesis Development	April – July 2025
7	Final thesis Presentation	September 2025
9	Thesis Review and Correction	October 2025
10	Thesis Publication	October 2025

Appendix 11: Research Permit Letter

University of Eldoret
flame of knowledge and innovation

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School of Education
Department of Technology Education

Our Ref: UOE/B/TED/PGR/065 **DATE: 6th June, 2024**

The Director of Research and Ethics Committee
Mbarara University of Science and Technology,
P. O BOX 1410,
MBARARA, UGANDA

Dear Sir/Madam,

SUBJECT: RESEARCH PERMIT FOR LOY A. K. MUHWEZI-SEDU/TED/P/013/21

This is to confirm that the above named student has done coursework for her Doctor of Philosophy in Technology Education: Technical and Vocational Education and Training Option.

She is currently preparing for her field research work on the thesis entitled: ***"Quality Assurance Practices in Public Technical and Vocational Education and Training Colleges in Uganda. "***

She successfully presented her proposal on **22nd March 2024** and has been approved by the university.

Any assistance accorded to her to facilitate the successful conduct of the research and the publication will be highly appreciated.

Yours faithfully,

HEAD
DEPARTMENT OF TECHNOLOGY EDUCATION
UNIVERSITY OF ELDORET
P.O. BOX 1125 - 30100, ELDORET

DR. ISAAC NANGENDO
HOD, TECHNOLOGY EDUCATION

Appendix 12: Research Ethical Committee Approval

MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY
P.O. Box 1410, Mbarara Uganda. Tel: +256 485433795; Fax: +256 4854 20782
RESEARCH ETHICS COMMITTEE
E-mail: sec.rec@must.ac.ug

14/08/2024

To: Loy Muhwezi

+256 785805001

Type: Initial Review

Re: MUST-2024-1638: ASSESSING THE IMPACT OF QUALITY ASSURANCE PRACTICES ON THE QUALITY OF PUBLIC TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING COLLEGES IN UGANDA

I am pleased to inform you that at the **170** convened meeting on **11/07/2024**, the MUST Research Ethics Committee meeting voted to approve the above referenced application.
Approval of the research is for the period of **14/08/2024** to **14/08/2025.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **14/08/2025** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by MUST Research Ethics Committee:

No.	Document Title	Language	Version Number	Version Date
1	REC forms	English	2	2024-08-02
2	Protocol	English	2	2024-08-02
3	FGD guide	English	1	2024-06-15
4	Data collection tools	English	1	2024-06-15
5	Informed consent form for the recruitment of research participants	English	1	2024-06-15
6	Informed Consent forms	English	1	2024-06-15
7	Protocol	English	1	2024-06-15

Yours Sincerely

Dr. Paul Alele
For: MUST Research Ethics Committee

Appendix 13: Research Clearance Letter from MoES, Uganda

0417 893 600 (General)
0417 893 602 (Permanent Secretary)
permasec@education.go.ug
www.education.go.ug
For any correspondence on this subject, please quote: **ADM/203/235/01**

The Republic of Uganda
Ministry of Education and Sports

Ministry of Education and Sports
P.O. Box 7063
Kampala, Uganda
Embassy House
King George VI Way

22nd October 2024

Loy K. Abaine Muhwezi
PhD Student
University of Eldoret

PERMISSION TO CONDUCT RESEARCH

Reference is made to your letter dated 14th August 2024 requesting the Ministry of Education and Sports for permission to conduct research on the thesis entitled; "Assessing the Impact of Quality Assurance practices in Public TVET Colleges in Uganda". The research will target Technical Vocational Education and Training Colleges of UTC Bushenyi, UTC Kichwamba, UTC Kyema, UTC Elgon, UTC Lira and Institute of Surveys and Land Management, Entebbe.

The Ministry of Education and Sports is pleased to support your research endeavours and is confident that your work will contribute significantly to the development of Uganda's Education sector and TVET in particular.

The purpose of this letter, therefore, is to grant you permission to conduct your research in the above targeted institutions.

By copy of this letter, you are informed accordingly and advised to forward a copy of the final Thesis to the Ministry of Education and Sports, Department of Education Policy and Research (EPAR). For further clarification, contact Assistant Commissioner Research and Innovation, on Tel. 0772440090, Email arwebanda@yahoo.co.uk.

Brighton Barugahare
For: PERMANENT SECRETARY

Appendix 14: UNCST Research Clearance

Uganda National Council for Science and Technology

(Established by Act of Parliament of the Republic of Uganda)

Our Ref: SIR479ES **11 April 2025**

Loy Muhwezi
Mbarara University of Science and Technology
Mbarara

Re: Research Approval: **ASSESSING THE IMPACT OF QUALITY ASSURANCE PRACTICES ON THE QUALITY OF PUBLIC TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING COLLEGES IN UGANDA**

I am pleased to inform you that on **11/04/2025**, the Uganda National Council for Science and Technology (UNCST) approved the above referenced research project. The Approval of the research project is for the period of **11/04/2025** to **11/04/2026**.

Your research registration number with the UNCST is **SIR479ES**. Please, cite this number in all your future correspondences with UNCST in respect of the above research project. As the Principal Investigator of the research project, you are responsible for fulfilling the following requirements of approval:

1. Keeping all co-investigators informed of the status of the research.
2. Submitting all changes, amendments, and addenda to the research protocol or the consent form (where applicable) to the designated Research Ethics Committee (REC) or Lead Agency for re-review and approval **prior** to the activation of the changes. UNCST must be notified of the approved changes within five working days.
3. For clinical trials, all serious adverse events must be reported promptly to the designated local REC for review with copies to the National Drug Authority and a notification to the UNCST.
4. Unanticipated problems involving risks to research participants or other must be reported promptly to the UNCST. New information that becomes available which could change the risk/benefit ratio must be submitted promptly for UNCST notification after review by the REC.
5. Only approved study procedures are to be implemented. The UNCST may conduct impromptu audits of all study records.
6. An annual progress report and approval letter of continuation from the REC must be submitted electronically to UNCST. Failure to do so may result in termination of the research project.

Appendix 15: Similarity Report

DrillBit

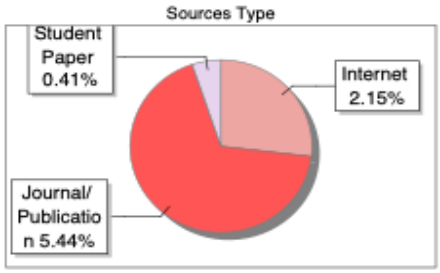
The Report is Generated by DrillBit Plagiarism Detection Software

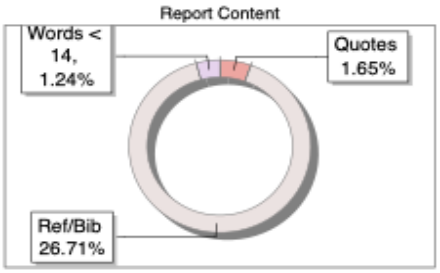
Submission Information

Author Name	Muhwezi, Abaine Kakuri Loy SEDU/TED/P/013/21
Title	REVIEW OF QUALITY ASSURANCE PRACTICES ON EDUCATIONAL OUTCOMES IN PUBLIC TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING COLLEGES IN UGANDA
Paper/Submission ID	4612613
Submitted by	similarity@uoeld.ac.ke
Submission Date	2025-11-03 08:26:25
Total Pages, Total Words	194, 46382
Document type	Dissertation

Result Information

Similarity **8 %**





Exclude Information

Quotes	Not Excluded
References/Bibliography	Not Excluded
Source: Excluded < 14 Words	Not Excluded
Excluded Source	**0 %**
Excluded Phrases	Not Excluded

Database Selection

Language	English
Student Papers	Yes
Journals & publishers	Yes
Internet or Web	Yes
Institution Repository	Yes

A Unique QR Code use to View/Download/Share Pdf File

Appendix 16: Trainees' Views on the Key Areas Regarding QA Practices

Item	Mean	SD
Curriculum Implementation and Evaluation	**3.3969**	**.70418**
The curriculum content and learning objectives meets my expected knowledge, understanding, and practice in the world of work.	2.9208	1.19588
The curriculum contributes to quality skills training	3.4096	1.22730
The curriculum allows me to build upon my prior learning	3.6229	1.07547
The curriculum facilitates my smooth transitions between levels of TVET	3.4673	1.09228
The curriculum encourages me to be innovative and embraces new emerging technologies	3.4719	1.18305
The curriculum adequately prepares me to meet the needs of the society and the communities around.	3.5697	1.22224
The curriculum adequately prepares me to meet the needs of the employment world.	3.5127	1.14103
The training methodologies encourage active participation and engagement of trainees in learning process.	3.4699	1.13715

A combination of instructional methods and hands on exercises is used for training.	3.4615	1.16910
Continuous assessment to monitor trainees' progress is implemented in the college	3.4967	1.23615
Trainers provide timely feedback to trainees in the college	3.1967	1.24486
Trainees' learning is assessed through practical demonstrations	3.1870	1.28465
Trainees' learning is assessed through workplace projects	3.4597	1.25049
Trainees are offered opportunities to reflect on their learning.	3.3103	1.22041
Materials, Facilities and Equipment	**3.0056**	**.74552**
Learning materials and consumables are available in the college for curriculum delivery	3.0427	1.28848
Learning materials and consumables are accessible in the college for curriculum delivery	3.0155	1.23650
Learning materials and consumables are adequate for trainees	2.7140	1.23818
Training Facilities are available in the college for curriculum delivery	2.9507	1.22817
Training Facilities are adequate and accessible in the college for trainees' learning	2.8829	1.23505
Training Facilities are accessible to trainees outside the college for curriculum delivery	2.7212	1.25013
Equipment is available in the college for curriculum delivery to us	2.8775	1.19004
Equipment is adequate and accessible in the college for trainees' learning	2.9223	1.18462

Equipment is accessible for trainees outside the college for curriculum delivery	2.7220	1.23601
The college offers library services for comprehensive support services to trainees	3.4708	1.28119
The college offers ICT laboratories facilities for comprehensive support services to trainees	3.7426	1.15895
Support Services to Trainees	**3.4493**	**.71876**
The college provides pre-training orientation to trainees	3.4845	1.26861
The college provides information to trainees on program expectations	3.3509	1.22153
The college provides information to trainees on available support services.	3.2743	1.17853
Guidance and counselling services to trainees throughout the program are available.	3.0879	1.25388
There are established procedures for admissions and enrolment in the college.	3.5368	1.30117
There are established procedures for course registration.	3.8571	1.10927
There are established procedures for exam registration	3.9640	1.04688
There are established procedures for feedback and complaints by trainees.	3.4091	1.25997
There are established procedures for graduation in the college.	3.6146	1.19256
There is a system with all information about available job opportunities.	2.9139	1.36534
Quality Assurance Systems	**3.0352**	**.83448**

There are established quality assurance policies and procedures known to trainees	2.9354	1.20168
There is an established committee on Quality Assurance in the college.	2.9890	1.15153
The college collects feedback from trainees immediately after the end of a course/program for continuous improvement.	2.8654	1.24809
There is compliance with ethical principles, legal requirements and frameworks within the college.	2.9912	1.18847
There is respect for human rights within the college.	3.3716	1.23470
There is a culture for continuous improvement through feedback mechanisms.	3.0914	1.27164
There is a culture for continuous improvement through stakeholder engagement.	3.0022	1.17387
Greening, Safe and Clean Environment	**3.2410**	**.83615**
Training programs address greening.	3.1189	1.18993
Training programs address sustainable development.	3.2262	1.15172
Training programs address workplace health and safety issues.	3.5465	1.16558
Training programs address environment issues.	3.4227	1.17358
There are healthy, safety and environmental awareness signs well placed in the college.	3.3257	1.26776

There is a plan for conducting trainee activities for environment involving the communities and society.	3.0087	1.24873
There is a plan for conducting trainee sports activities involving the communities and society.	3.2516	1.21551
There is a plan for conducting trainee activities in creative arts and culture involving the communities and society.	3.0273	1.26778
Staff Recruited and Retained	**3.1450**	**.85575**
The ratio of trainers to the number of trainees in my course is adequate	2.8629	1.30406
My trainers have practical experiences with industry of their specialization.	3.0807	1.28205
Qualifications of my trainers are in accordance with course content	3.3710	1.18148
Employers participate in recruitment of staff of the college.	3.2324	1.15437
Staff performance is monitored regularly	3.1416	1.18571
Staff performance appraisals are regularly done	3.1815	1.22477

Appendix 17: Trainers' Views on the Key Areas Regarding QA Practices

Thematic Area of QA Practices	**Mean**	**SD**
Curriculum Implementation and Evaluation	**4.0764**	**.50802**
The curriculum content and learning objectives define trainees' expected knowledge, understanding, and practice in the world of work.	4.1389	.67773
Trainers ensure that curriculum contributes to quality skills training	4.0556	.82032
The curriculum I deliver allows trainees to build upon their prior learning	4.1806	.79304
The curriculum I deliver facilitates smooth transitions between levels of TVET	4.0139	.79599
In handling the curriculum, I encourage innovation and adoption of new emerging technologies	4.3611	.67773
The curriculum delivery adequately prepares trainees to meet the needs the society.	4.0972	.80770
The curriculum adequately prepares trainees to meet the needs of the employment world.	3.9437	.87028
The training methodologies encourage active participation and engagement of trainees in learning process.	4.0714	.77499
A combination of instructional methods and hands on exercises is used for training by trainers.	4.0571	.85392
Continuous assessment to monitor trainees' progress is implemented by trainers	4.3889	.76094
Trainers provide timely feedback to trainees in the college	3.8451	.72477
We assess Trainees' learning through practical demonstrations	4.1389	.77470

We assess Trainees' learning through workplace projects	3.8889	.92775
We offer Trainees opportunities to reflect on their learning.	3.8889	.79710
Materials, Facilities and Equipment	**3.7069**	**.58921**
Trainers ensure that learning materials and consumables are available for curriculum delivery	3.8333	.75059
Trainers ensure that learning materials and consumables are accessible to trainees for curriculum delivery	3.8194	.63526
Trainers ensure that learning materials and consumables are adequate for trainees	3.4861	.91917
Trainers ensure that Training Facilities are made available to students in the college	4.0000	.69201
Trainers ensure that Training Facilities are adequate in the college for trainees' learning	3.7746	.90689
Trainers ensure that alternative outside college Training Facilities are available and accessible to trainees in the event of scarcity	3.5278	.97825
Equipment is available in the college for curriculum delivery	3.8169	.89301
Equipment is adequate in the college for trainees' learning	3.3472	1.02311
Trainers ensure that trainees can access Equipment outside the college for curriculum delivery	3.3803	1.02595
Trainers support trainees to access facilities for comprehensive support services such as library services, ICT laboratories and stores.	4.0833	.78274
Support Services to Trainees	**4.2274**	**.41251**

Trainers support pre-training orientation to trainees	4.1250	.69073
Trainers provide information to trainees on program expectations	4.2500	.68690
Trainers provide information to trainees on available support services.	4.1127	.61779
Trainers provide Guidance and counselling services to trainees throughout the program are available.	4.0278	.94901
There are established procedures for admissions and enrolment in the college.	4.6250	.56761
There are established procedures for course registration.	4.6250	.61524
There are established procedures for exam registration	4.7083	.56761
There are established procedures for feedback and complaints by trainees.	4.0694	.87736
There are established procedures for graduation in the college.	4.6056	.59289
There is a system with all information about available job opportunities.	3.1250	1.19786
Quality Assurance Systems	**3.6280**	**.63659**
There are established quality assurance policies and procedures in the college	3.4028	.97374
There is an established committee on Quality Assurance in the college.	3.1667	1.08770

Trainers ensure that feedback is collected from trainees immediately after the end of a course/program for continuous improvement.	3.4028	1.02997
Trainers comply with ethical principles, legal requirements and frameworks within the college.	3.9722	.75007
Trainers have respect for human rights within the college.	4.1528	.59717
The college conducts regular self-assessment exercises on quality assurance to meet established standards.	3.5000	1.00702
There is a culture for continuous improvement through feedback mechanisms.	3.7222	.95272
There is a culture for continuous improvement through stakeholder engagement.	3.7042	.90995
Greening, Safe and Clean Environment	**3.7722**	**.64864**
Training programs address greening.	3.7465	.89943
Training programs address sustainable development.	3.9722	.76861
Training programs address workplace health and safety issues.	4.1268	.73022
Training programs address environment issues.	3.9429	.74844
There are healthy, safety and environmental awareness signs well placed in the college.	3.3889	1.04215
Trainers have plans and conduct trainee activities for environment involving the communities and society.	3.4861	.91917
Trainers have plans and conduct trainee sports activities involving the communities and society.	3.8472	.94436
Trainers have plans and conduct trainee activities for creative arts and culture involving the communities and society.	3.6667	1.04814
Staff Recruited and Retained	**3.7181**	**.58117**

The ratio of trainers to the number of trainees per course is adequate	2.6111	1.16951
Trainers have work and practical experiences with industry practices.	3.8750	.87109
Qualifications of trainers are in accordance with course content	4.2394	.75926
Employers participate in gaps identification of staff for the college.	3.5775	1.04358
Trainers seek attachment with employers to fill gaps identified.	3.6441	.91563
Employers participate in recruitment of staff of the college.	3.3750	1.27199
Staff performance is monitored regularly	4.0845	.66601
Staff performance appraisals are regularly done	4.3380	.69086