Curriculum Implementation and Practical Skills Development among Trainees of Agriculture in TVET Institutions in Gulu City and Omoro District

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Declaration

I Victor Rwotomiya, hereby declare that this research dissertation, titled "*Curriculum Implementation and Practical Skills Development among Trainees of Agriculture in TVET Institutions in Gulu City and Omoro District,"* is my original work and has not been submitted to any university for any academic award.

Signature: 

Date: 2/10/2026

Victor Rwotomiya

Approval

This research dissertation, titled "*Curriculum Implementation and Practical Skills Development among Learners of Agriculture in TVET Institutions in Gulu City and Omoro District*," was developed under our supervision and is being submitted to the Directorate of Research and Graduate Studies with our approval.

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Dedication

I dedicate this academic work to my family, including my lovely wife Irene Rwotomiya and children Rwotogonya Victor, Laloyo Jordan and Pimar Mirabel; mummy and daddy Mama Florence and Ven Rev Canon Alfred Odoch, not forgetting my sister and brother Aol Mercy Patricia and Akena Willy Chrispus.

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Abstract

This study examined the relationship between Curriculum Implementation and Practical Skills Development among Agriculture Trainees in Technical and Vocational Education and Training (TVET) institutions in Gulu City and Omoro District, Uganda. The study was guided by three objectives: To Assess the Status of Curriculum Implementation among Agriculture Trainees, to examine the Level of Practical Skills Development, and to establish the Relationship between Curriculum Implementation and Practical Skills Development. The study adopted a Convergent parallel mixed-methods Design that combined Quantitative and Qualitative Approaches. Data were collected from 133 trainees, 10 instructors, and 7 administrators using Questionnaires and Interview Guides. Quantitative data were analyzed using Descriptive and Inferential Statistics, including Pearson Correlation. Qualitative data were analyzed thematically.

The findings revealed that Curriculum Implementation in the selected TVET institutions was largely competency-based and practice-oriented, characterized by regular practical sessions, field engagement, and active instructor support. Results further indicated that trainees had attained relatively high levels of practical agricultural skills, particularly in hands-on farm activities, teamwork, problem-solving, and workplace readiness. However, gaps were identified in specialized technical competencies, especially in the operation and maintenance of agricultural machinery and equipment. Correlation analysis established a statistically significant moderate positive relationship between curriculum implementation and practical skills development ($r = .464$, $p < .01$), indicating that improvements in Curriculum Implementation were associated with higher levels of practical skills acquisition among trainees.

The study concluded that effective Curriculum Implementation plays a critical role in enhancing practical skills development in agricultural TVET institutions. It recommends increased investment in instructional resources, modern training equipment, instructor capacity development, and stronger partnerships between TVET Institutions and industry to strengthen competency-based learning and improve graduate employability.

Chapter One

Introduction

1.0 Overview

This chapter provides a comprehensive overview of the study by presenting the background, statement of the problem, purpose, objectives, research questions, research hypotheses, scope, and significance. By situating the study within global and regional contexts, the chapter highlights the importance of examining how curriculum implementation in TVET institutions influences the acquisition of practical agricultural skills, particularly in Gulu City and Omoro District, where variations in institutional capacity and resource availability affect skill development outcomes (ARDF, 2020; Okello & Oryem, 2022).

1.1 Background of the Study

This section is divided into four subsections, namely historical, theoretical, conceptual, and contextual perspectives.

1.1.1 Historical Background

Globally, the development of practical skills is recognized as a critical component of Technical and Vocational Education and Training (TVET) programs. Research indicates that TVET institutions play a vital role in equipping trainees with industry-specific, hands-on competencies that enhance employability, foster entrepreneurship, and contribute to national economic growth (UNESCO, 2020; Oketch, 2021). Effective TVET programs integrate experiential learning, competency-based curricula, and work-based training to ensure that graduates can meet labor market demands and adapt to evolving technological and agricultural practices (Nguyen, Pham, & Le, 2023; MoES, 2020). The development of practical skills among agricultural trainees in TVET institutions has historically depended on

societies' ability to provide structured opportunities for hands-on learning, apprenticeships, and direct engagement with productive work (UNESCO, 2015). Agriculture, one of humanity's earliest economic activities, has always relied on systems in which learners observe, practice, and master practical techniques through continuous experience. Early agricultural education emphasized experiential learning as a primary mode of knowledge transfer.

In ancient civilizations such as Egypt and Mesopotamia, agricultural competencies were transmitted through informal apprenticeships and household instruction, enabling learners to acquire essential farming techniques through observation and practice (Brewer, 2012). During the Greco-Roman era, agricultural training remained largely experiential, with classical authors such as Cato and Varro documenting farm-management practices that combined theoretical knowledge with practical application (White, 1970). These early systems highlight the enduring importance of experiential learning in agriculture, a principle that underpins modern TVET.

During the 18th and early 20th centuries, industrialization spurred the emergence of formal vocational and agricultural colleges across Europe and North America, which emphasized scientific approaches to farming, structured practice, and formal competency assessment (Lucas, 1999). By the mid-20th century, competency-based vocational education was globally recognized as a driver of workforce productivity and economic development (International Labor Organization [ILO], 2019). In the 21st century, TVET frameworks have increasingly emphasized employability, workplace learning, technology integration, and real-world problem-solving, with modern systems promoting internships, field-based projects, and performance-based assessments to enhance practical competencies (UNESCO-UNEVOC, 2020; World Bank, 2021).

In Sub-Saharan Africa, pre-colonial agricultural learning relied on indigenous apprenticeship systems, in which skills were transmitted from experienced farmers to younger generations through observation, imitation, and practice (Ocitti, 1994). Colonial-era agricultural schools introduced formal training programs, but these often served the colonial state's administrative or economic interests rather than the practical needs of local communities (King, 2011). Following independence, many African countries, including Uganda, sought to expand TVET to produce skilled agricultural labor. Despite these efforts, persistent challenges, including limited funding, weak linkages between institutions and industry, and insufficient practical exposure, have constrained the effectiveness of skills development (Afeti & Adubra, 2012; Mulder, 2023).

Uganda's TVET system mirrors these historical patterns. Colonial agricultural institutes laid the foundations for formal agricultural training, which were later expanded through post-independence reforms to increase access to vocational education. National reviews have repeatedly highlighted shortages of equipment, insufficiently trained instructors, and low adoption of competency-based practices as persistent barriers to effective curriculum implementation (MoES, 2019). Recent reforms under the Uganda Vocational Qualifications Framework (UVQF) aim to enhance hands-on learning and promote competency-based training, yet challenges remain in translating policy into effective practice (Directorate of Technical and Vocational Education and Training [DTEVT], 2020).

The Acholi sub-region and Northern Uganda more broadly face additional historical and contextual constraints. Decades of civil conflict disrupted institutional infrastructure, reduced skilled human resources, and limited investment in agricultural TVET (Annan et al., 2011). Research indicates that agricultural TVET centers in this region continue to face shortages of training materials, limited access to demonstration farms, weak linkages with agribusiness and industry, and minimal exposure of trainees to workplace environments (Larok &

Ochieng, 2020; Adoch et al., 2024). These conditions have constrained TVET institutions' ability to implement curricula as intended, particularly for developing practical agricultural competencies.

Collectively, these historical and contextual factors show that although curriculum reforms and modern TVET frameworks emphasize practical skills development, the actual acquisition of these competencies among agriculture trainees in Gulu City and Omoro District remains limited. Implementation gaps, resource constraints, and post-conflict challenges in the Acholi sub-region continue to hinder learners' ability to acquire industry-relevant practical skills. This historical perspective underscores the need for empirical research to examine the relationship between curriculum implementation and practical skills development in agriculture TVET institutions in Gulu City and Omoro District.

1.1.2 Theoretical Background

This study is grounded in Experiential Learning Theory (ELT) developed by Kolb (1984), which holds that learning is a cyclical process comprising concrete experience, reflective observation, abstract conceptualization, and active experimentation. According to Kolb, learners acquire knowledge and skills most effectively when they are actively engaged in performing tasks, reflecting on outcomes, conceptualizing lessons learned, and applying these insights in new situations.

In the context of Technical and Vocational Education and Training (TVET) in agriculture, ELT provides a strong foundation for understanding practical skills development. Agriculture trainees gain competence primarily through hands-on activities such as planting, livestock management, soil analysis, and machinery operation. The quality and structure of curriculum implementation, including practical workshops, field attachments, and supervised farm projects, determine how effectively these experiences translate into tangible skills.

The ELT framework aligns with this study's objectives as follows: Concrete Experience: Trainees engage directly with agricultural practices through curriculum-based practical sessions and fieldwork, forming the basis for skill acquisition (Kolb, 1984; Nguyen, Pham, & Le, 2023). Reflective Observation: Structured opportunities for reflection, instructor feedback, and peer discussions enable trainees to analyze successes and challenges in their practical work (Kamau & Were, 2021; Yarboi & Adu-Gyamfi, 2023). Abstract Conceptualization: Learners connect practical experiences to theoretical agricultural concepts, strengthening understanding and decision-making skills (Muhammad, Khan, & Ali, 2022; Rahman & Ismail, 2024). Active Experimentation: Trainees apply newly acquired skills in subsequent tasks, adjusting techniques based on prior experience, thereby enhancing competence and adaptability (Chukwu, Okeke, & Eze, 2023; Muchiri & Waithaka, 2022).

By applying ELT, this study conceptualizes curriculum implementation as the mechanism for delivering and structuring practical learning experiences, and practical skills development as the outcome of these experiences.

Empirical studies support the relevance of ELT in agricultural and TVET contexts. For instance, Adoch, Okello, and Ladu (2024) found that trainees who completed field attachments showed significant gains in core skills, including nursery management, soil preparation, pest control, and animal feeding, consistent with Kolb's assertion that concrete experience enhances learning outcomes. Similarly, Nguyen, Pham, and Le (2023) showed that TVET trainees who participated in hands-on learning cycles improved problem-solving and employability skills compared with those exposed to lecture-based instruction. Kamau and Were (2021) reported that reflective observation and guided feedback were critical to mastering livestock management techniques in Kenyan agricultural colleges. However, gaps in infrastructure, curriculum implementation, and institutional support have limited the full operationalization of the experiential learning cycle in many local institutions.

1.1.3 Conceptual Background

This study examines two main variables, the Independent Variable (IV), i.e., Curriculum Implementation, and the Dependent Variable (DV), i.e., Practical Skills Development. The IV is expected to influence the DV.

Practical Skills Development (DV) refers to the acquisition of hands-on competencies that enable learners to apply theoretical knowledge to real-world agricultural tasks. According to Kolb (1984), practical skills develop through experiential learning, in which knowledge is created by transforming experience into skill, emphasizing "learning by doing." These skills include crop production techniques (land preparation, planting, pest control, and harvesting), livestock management (feeding, breeding, and disease control), farm equipment handling and maintenance, agribusiness operations, post-harvest handling, record keeping, marketing, and sustainable agricultural practices.

Practical skills are a core function of TVET programs (TVET Act, 2025) and depend on repetitive, authentic practice under supervision, which should be integrated into the curriculum through structured modules and fieldwork. FAO (2016) stresses that practical skills development is essential for productivity, employability, and sustainable agricultural practices, as trainees must competently perform farming operations. Clarke (2018) further emphasizes that practical skills development involves not only technical competence but also problem-solving, decision-making, and adaptability in workplace-related tasks, while Billett (2021) notes that structured engagement with authentic tasks bridges the gap between theory and practice. Therefore, in this study, practical skills development is conceptualized as the process through which trainees acquire the ability to perform agricultural tasks effectively and efficiently through hands-on experience, application of theoretical knowledge, and repeated practice.

Curriculum Implementation (IV) is the process of putting the planned curriculum into practice. Fullan (2017) defines implementation as the interaction between the developed curriculum and those responsible for delivering it. In the TVET context, it encompasses how instructors interpret, adapt, and deliver curricular content, including theory, practical sessions, assessments, and linkages to the labor market. The key components includes Concrete Experience where Trainees engage directly with agricultural practices through curriculum-based practical sessions and fieldwork, forming the basis for skill acquisition (Kolb, 1984; Nguyen, Pham, & Le, 2023); Reflective Observation where trainees analyze successes and challenges in their practical work through structured opportunities for reflection, instructor feedback, and peer discussions (Kamau & Were, 2021; Yarboi & Adu-Gyamfi, 2023); Abstract Conceptualization where Learners connect practical experiences to theoretical agricultural concepts, strengthening understanding and decision-making skills (Muhammad, Khan, & Ali, 2022; Rahman & Ismail, 2024) and lastly, Active Experimentation where Trainees apply newly acquired skills in subsequent tasks, adjusting techniques based on prior experience, thereby enhancing competence and adaptability (Chukwu, Okeke, & Eze, 2023; Muchiri & Waithaka, 2022).

Recent research highlights that effective curriculum implementation requires environments where learners can directly engage with crops, livestock, farm tools, agribusiness activities, and value chain processes (Othman, Omar, & Abd Majid, 2022–2024; Ghonmieen, Alsaaideh, & Abushwemeh, 2025; Olabiyi & Uzoka, 2023; Kyambogo, Kerre, & Okaka, 2022).

In this study, institutional resources, trainee's motivation and industry linkages are treated as moderating variable, meaning it may influence the strength or direction of the relationship between curriculum implementation and practical skills development. Moderating variables do not directly cause changes in the dependent variable but instead affect how strongly or weakly the independent variable influences it (Baron & Kenny, 1986; Creswell & Creswell,

2018). For example, even if a curriculum is well implemented, poor infrastructure, such as inadequate farms, workshops, or digital tools, can reduce the effectiveness of practical skills acquisition. Conversely, robust institutional infrastructure can enhance the positive effects of curriculum implementation on skill development.

The relationship between curriculum implementation and practical skills development is both causal and conditional. A well-designed curriculum that is poorly implemented may produce graduates who are knowledgeable but lack hands-on competence, whereas a limited curriculum can still yield skillful graduates if implemented effectively in a supportive, resource-rich environment. By including institutional infrastructure as a moderating variable, this study can more accurately evaluate the conditions under which curriculum implementation translates into practical skill competence among agriculture trainees in TVET institutions.

1.1.4 Contextual Background

The study was conducted in Gulu City and Omoro District, both in the Acholi sub-region of Northern Uganda. These areas provided a distinctive context for examining curriculum implementation and practical skills development among agriculture trainees in TVET institutions. Gulu City, the commercial and administrative hub of Northern Uganda, has undergone rapid urbanization, economic revitalization, and the expansion of educational institutions over the past decade (UNDP, 2021). The city hosts several TVET and agricultural training institutions, including vocational schools and training centers affiliated with the Uganda Vocational and Technical Assessment Board (UVTAB), which attract learners from across the Acholi sub-region (Ministry of Education and Sports [MoES], 2020). This urban setting offers a strategic context for understanding how curriculum policies are

operationalized in institutions experiencing growth, modernization, and rising demand for youth employment and agribusiness opportunities (Okello & Oryem, 2022).

In contrast, Omoro District is predominantly rural and agriculturally dependent. Subsistence and small-scale commercial farming form the backbone of household livelihoods and community development (FAO, 2021). In this context, practical agricultural skills are essential for food security, income generation, and sustainable land management. However, TVET institutions in rural Northern Uganda often face persistent challenges, including inadequate training equipment, limited instructional materials, insufficiently trained instructors, weak linkages with agribusiness employers, and minimal exposure of trainees to real-world farm environments (Acholi Regional Development Forum [ARDF], 2020). These constraints limit the quality of practical skills acquired and hinder effective curriculum implementation.

Selecting Gulu City and Omoro District enabled a comparative examination of two distinct contexts; an urbanizing educational environment with expanding institutional capacity and a rural setting where agriculture remains central to livelihoods but faces chronic underinvestment in training infrastructure. This comparison allows the study to capture variations in curriculum implementation, differences in trainee experiences, and context-specific barriers to practical skills development. Additionally, insights from these two locations can inform policy and practice to enhance practical agricultural skills in the sub-region TVET system (MoES, 2020; Okello & Oryem, 2022). Moreover, both areas are part of a region emerging from decades of conflict, during which education systems, particularly vocational and agricultural training, were heavily disrupted. The Government of Uganda and various development partners have prioritized Northern Uganda for skills-development interventions, including strengthening TVET capacity as a pathway to youth employment, poverty reduction, and agricultural modernization. However, empirical evidence on the

effectiveness of curriculum implementation and its influence on practical skills development in local TVET institutions remain limited. This gap reinforces the need for a focused study in Gulu City and Omoro District, where outcomes have significant implications for regional recovery and sustainable economic transformation.

1.2 Statement of the Problem

Ideally, developing practical skills among trainees of agriculture in TVET institutions is expected to be high producing a competent, industry-responsive workforce capable of addressing Uganda's agricultural productivity challenges. Effective curriculum implementation, characterized by competency-based training, adequate instructional resources, learner-centered pedagogies, and strong industry linkages, is expected to ensure that trainees acquire and apply practical competencies in real-world contexts (UNESCO, 2023; World Bank, 2024). Empirical and policy literature indicates that practical skills development in TVET is significantly influenced by how the curriculum is implemented (Mwirigi & Njeru, 2023; Mulder, 2023).

In Uganda, TVET reforms have emphasized Competency-Based Education and Training (CBET) to strengthen practical training outcomes (MoES, 2024). However, studies in Northern Uganda reveal persistent constraints, including shortages of instructional materials, inadequate training facilities, and limited exposure to modern agricultural technologies, which undermine experiential learning and skill mastery (Adoch et al., 2024; FAO, 2023). Consequently, many trainees graduate with substantial theoretical knowledge but insufficient practical competencies required for the labor market. Despite recognition of these challenges, empirical evidence remains limited on how curriculum implementation influences practical skills development among agricultural trainees in TVET institutions, particularly in Gulu City and Omoro District. Therefore, this study seeks to examine the relationship between

curriculum implementation and practical skills development among agricultural learners in TVET institutions in Gulu City and Omoro District.

1.3 Purpose of the Study

This study seeks to determine whether Curriculum Implementation impacts Practical Skills Development among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District. (The study aims to assess the impact of Curriculum Implementation on Practical Skills Development.)

1.4 Objectives of the Study

1. To assess the Status of Curriculum Implementation among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District.
2. To examine the Level of Practical Skills Development among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District.
3. To Establish the Relationship between Curriculum Implementation and Practical Skills Development among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District.

1.5 Research Questions

1. What is the Status of Curriculum Implementation among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District?
2. What is the Level of Practical Skills Development among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District?
3. What is the Relationship between Curriculum Implementation and Practical Skills Development among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District?

1.6 Scope of the Study

1.6.1 Content Scope

This study examined the relationship between curriculum implementation and the development of practical agricultural skills among trainees in selected TVET institutions in Gulu City and Omoro District. It assessed the extent to which agricultural training curricula are implemented, including the adequacy of instructional resources, instructor qualifications and pedagogical practices, adherence to competency-based training principles, appropriateness of teaching methods, and alignment with industry needs and local production systems (MoES, 2020; ARDF, 2020). The study also evaluated the level of practical skills acquired by trainees, encompassing technical competencies in crop production, livestock management, agronomy, farm management, agribusiness, value addition, post-harvest handling, and problem-solving in real farm settings, supported by hands-on training, fieldwork, and industrial attachments (FAO, 2021; Okello & Oryem, 2022). Finally, the study investigated how variations in curriculum implementation influence practical skills development, comparing urban Gulu City institutions with better resources to rural Omoro District institutions, and identifying specific factors such as training equipment, instructor capacity, and practical learning opportunities that predict skills acquisition (UNDP, 2021; Adoch, Okello, & Ladu, 2024).

1.6.2 Geographical Scope

The study was conducted in Gulu City and Omoro District, both approximately 330-350 km north of Kampala, offering contrasting yet complementary contexts for examining curriculum implementation and practical skills development in agricultural TVET programs. Gulu City, a rapidly urbanizing commercial hub, hosts several well-resourced TVET institutions and benefits from better infrastructure, market access, and institutional capacity, creating an

enabling environment for implementing competency-based curricula and supporting practical skill acquisition (MoES, 2020; UNDP, 2021). In contrast, Omoro District is predominantly rural, with an economy heavily reliant on subsistence and small-scale commercial farming. TVET institutions there often face limited training materials, weaker industry linkages, and reduced access to modern agricultural technologies (ARDF, 2020; FAO, 2021). Comparing these two sites allows the study to analyze variations in curriculum implementation and practical skills development between urban and rural settings while maintaining cultural and historical relevance within the Acholi sub-region, providing insights applicable to broader TVET policy and agricultural skills development strategies in Northern Uganda (Okello & Oryem, 2022).

1.6.3 Time Scope

The study covers 2016 to 2026, a ten-year span chosen to capture significant developments in the TVET sector in Gulu City and Omoro District, particularly those affecting practical skills development among agricultural trainees. This period is appropriate because it encompasses recent policy reforms, curriculum revisions, and institutional improvements in TVET that have aimed to enhance competency-based training and align education with labor market needs (MoES, 2020; UBTEB, 2019). For instance, during this decade, several TVET institutions in Gulu City and Omoro District expanded their agricultural training programs, integrated modern farming technologies, and strengthened partnerships with agribusiness enterprises and local development agencies to improve hands-on learning opportunities (UNDP, 2021; Okello & Oryem, 2022). Focusing on this period allows the researcher to collect current, relevant data on the effects of these curriculum and institutional changes on practical skills acquisition. The ten-year timeframe also provides sufficient historical perspective to assess trends, improvements, and persistent gaps in curriculum implementation and skills development, thereby facilitating a more comprehensive analysis of the relationship

between curriculum delivery and practical competencies among agricultural trainees in TVET institutions. The study itself is expected to take six months, from proposal development through proposal defense, data collection, analysis, and dissertation presentation for Viva Voce.

1.7 Significance of the Study

This study is significant because it provided insights into how curriculum implementation affects practical skill development among agriculture trainees in TVET institutions, with implications for several key groups:

Policy makers. The findings can guide education and agricultural policymakers in designing policies that ensure effective curriculum implementation and adequate resourcing and support for hands-on training, thereby improving the quality of agricultural training and graduates' employability.

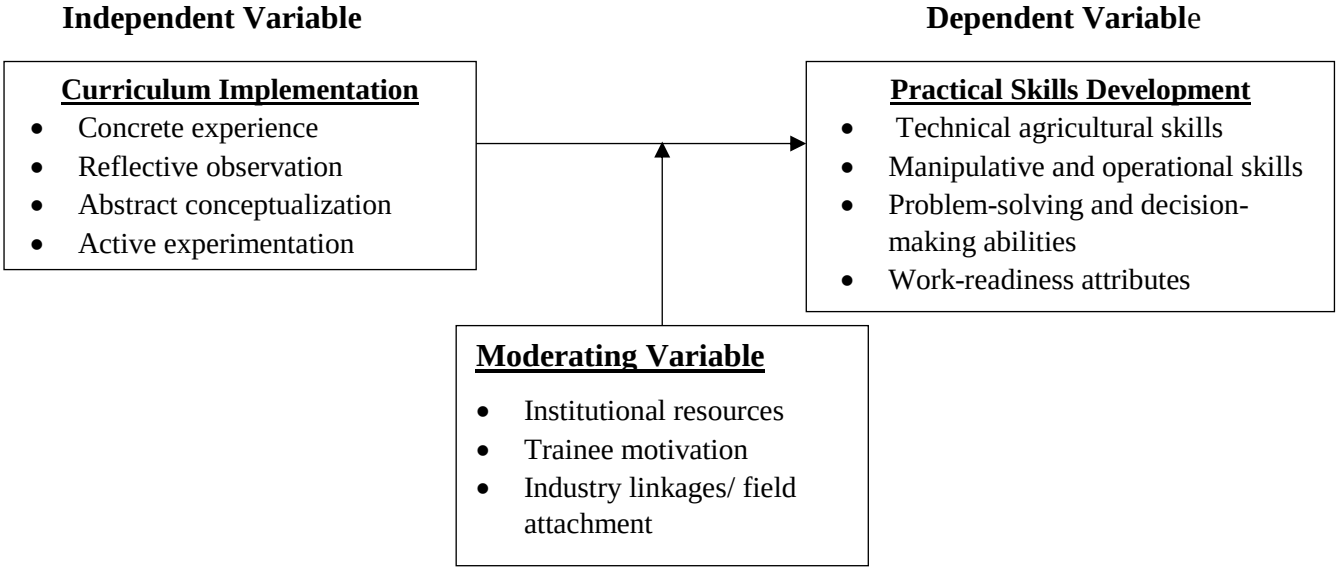
Implementers (TVET Institutions and Trainers). The study offered practical recommendations for TVET administrators and trainers to improve instructional methods, supervision, and assessment practices to enhance practical skill acquisition among trainees.

Future Researchers. The study laid a foundation for further research on curriculum implementation and skills development in agricultural and vocational education, particularly in Northern Uganda and similar post-conflict regions, thereby informing future studies and interventions.

1.8 Conceptual Framework of the Study

A conceptual framework is a logically developed structure that identifies and organizes key concepts, constructs, and variables relevant to a research problem. It draws on existing theories and literature and guides the formulation of research questions, the design of methods, and the interpretation of results (Ravitch & Riggan, 2017; Maxwell, 2021).

This study is grounded in David Kolb's Experiential Learning Theory (ELT, 1984), which holds that learning is a cyclical process comprising concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb argues that trainees acquire knowledge and skills most effectively when they are actively engaged in performing tasks, reflecting on outcomes, conceptualizing lessons learned, and applying insights to new situations (Kolb, 1984; Nguyen, Pham, & Le, 2023).



Source: Kolb's Experiential Learning Theory (1984).

Figure 1. 1: A Conceptual Framework Showing the assumed Relationship between the IV and the DV

Assumptions underlying ELT include the following: Learning is a continuous process, i.e., knowledge is constructed through experience, and learning occurs when individuals move through the full cycle of concrete experience, reflection, conceptualization, and experimentation; Learners are active participants, i.e., learning is most effective when students actively engage with tasks and experiences rather than passively receiving information; Experience is central to learning: practical, hands-on experiences form the foundation for developing skills and understanding abstract concepts; Learning styles influence outcomes, i.e., individuals have preferred ways of learning (e.g., accommodating, diverging, converging, or assimilating), which affect how they process and apply knowledge

(Kolb, 1984; Muhammad, Khan, & Ali, 2022); Reflection bridges experience and understanding, i.e., systematic reflection on practical experiences is essential for abstract conceptualization and application in new contexts.

In the context of TVET in agriculture, ELT provides a strong foundation for understanding the development of practical skills. Agriculture trainees gain competence primarily through hands-on activities such as planting, livestock management, soil analysis, and machinery operation. The quality and structure of curriculum implementation, including practical workshops, field attachments, and supervised farm projects, determine how effectively these experiences translate into tangible skills (Okello & Oryem, 2022; MoES, 2020).

The ELT framework aligns with the study's objectives as follows. Concrete Experience involves trainees engaging directly with agricultural practices through curriculum-based practical sessions and fieldwork, forming the basis for skill acquisition. Reflective Observation provides structured opportunities for reflection, instructor feedback, and peer discussions, allowing trainees to analyze successes and challenges in their practical work. Abstract Conceptualization involves learners linking practical experiences to theoretical agricultural concepts, strengthening understanding and decision-making skills. Active Experimentation involves trainees applying newly acquired skills in subsequent tasks, adjusting techniques based on prior experience, which enhances competence and adaptability (Chukwu, Okeke, & Eze, 2023).

In this study, curriculum implementation is treated as the independent variable, and practical skills development is the dependent variable. Variations in curriculum implementation, such as resource availability, instructor support, and teaching strategies, are expected to influence the level of practical skill acquisition among students.

Moderating variables are also considered in this study. These factors may strengthen, weaken, or alter the relationship between the independent and dependent variables. In this research, potential moderating variables include institutional infrastructure, trainee motivation, and exposure to field attachments. For example, even with well-implemented curriculum, limited infrastructure or low student motivation may reduce the effectiveness of skill acquisition. Including moderating variables allows the study to examine how and under what conditions curriculum implementation affects practical skills development (Baron & Kenny, 1986; Creswell & Creswell, 2018; Muhammad, Khan, & Ali, 2022).

Chapter Two

Literature Review

2.0 Introduction

This chapter reviewed related theories and literature pertaining to Curriculum Implementation and Practical Skills Development. It was divided into Theoretical Review, Related Literature, and Conceptual Framework.

2.1 Theoretical Review

In this section, the focus was on reviewing the theories related to practical skills development and on exposing the gaps in each of them.

Constructivist Learning Theorists, Piaget (1973) and Vygotsky (1978), argue that trainees actively construct knowledge based on prior experiences and social interactions. Learning is most effective when new information is connected to existing knowledge. Vygotsky introduced the concept of the Zone of Proximal Development (ZPD), in which trainees develop skills with guidance or scaffolding from instructors or peers. This implies that agricultural trainees can develop practical skills effectively under instructor guidance (scaffolding) and through collaborative learning during workshops or on farms. It also highlights curriculum implementation strategies that emphasize mentorship, group work, and guided practice, which are consistent with this theory. This theory underscores the importance of social interaction and mentorship in skill development and supports curriculum design that integrates scaffolding and stepwise skill mastery. However, it is less structured around the cyclical practice-reflection process, which is central to hands-on skill acquisition.

Behaviorist theorist B.F. Skinner (1938) emphasizes learning through repetition, reinforcement, and feedback. Skills are developed through repeated practice and rewards or

corrections. Practical skills development involves habit formation and procedural mastery through drill, demonstration, and feedback. The theory suggests that trainers can reinforce correct agricultural practices (e.g., planting techniques, livestock handling) through repetition and immediate feedback. Curriculum implementation that includes step-by-step demonstrations, practical drills, and assessments aligns with behaviorist principles. The theory is very effective for procedural or technical skill mastery and is easy to operationalize in structured workshops or laboratories. However, it may ignore higher-order problem solving, critical thinking, or trainee reflection. The theory is less focused on trainee autonomy.

Social Learning Theorist Albert Bandura (1977) argues that trainees develop skills by observing and imitating others, with attention, retention, reproduction, and motivation as key processes. Observational learning is enhanced by modeling, mentorship, and peer learning. This means that trainees can acquire agricultural skills by observing instructors or senior trainees in real farm settings. Curriculum implementation using apprenticeships, demonstrations, or peer learning embodies this theory. The theory emphasizes learning in social contexts, which is important in agricultural settings where collaborative work is common, and it explains how trainees can learn complex skills without relying solely on trial and error. A limitation of social learning theory is that it does not fully explain how trainees internalize skills or apply reflective thinking to improve performance.

Experiential Learning Theory (ELT) by David Kolb (1984) posits that learning occurs through a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. Trainees construct knowledge by engaging directly with tasks and reflecting on their experiences. Practical skills development aligns strongly with this cycle because learners acquire hands-on competencies and refine them through reflection and practice. This means that trainees in agricultural TVET institutions learn by doing, such as

planting, managing livestock, and using equipment. Reflection (what worked, what didn't) helps consolidate skills. Curriculum implementation strategies like field attachments, internships, and practical workshops directly reflect the ELT model. The theory provides a strong link between theory and practice, as it emphasizes trainee engagement and reflection, which are key to developing both technical skills and problem-solving abilities. However, it does not explicitly address external factors like resources, instructor quality, or institutional support, which can affect skill acquisition.

ELT is the most suitable theory underpinning my study, since it focuses on practical skill development, which is inherently hands-on. ELT directly addresses learning through experience. Additionally, TVET curriculum implementation often involves practical sessions, workshops, fieldwork, and internships, which are all core to ELT. The theory accommodates reflection and adaptation, which are critical in agriculture, where trainees must adjust techniques based on environmental conditions and feedback. While other theories (constructivism, social learning, and behaviorism) explain parts of the learning process, ELT provides a comprehensive framework connecting experience, reflection, theory, and active application, matching the research focus on linking curriculum implementation to practical skill outcomes. This implies that curriculum implementation can be examined through the lens of ELT by assessing: the availability of practical learning opportunities (concrete experience); how instructors facilitate reflection and feedback (reflective observation); the integration of conceptual understanding of agricultural practices (abstract conceptualization); and opportunities for trainees to apply skills independently (active experimentation).

This study was therefore grounded on Experiential Learning Theory (ELT) developed by Kolb and in the context of Technical and Vocational Education and Training (TVET) in agriculture, ELT provides a strong foundation for understanding practical skills development and stands the best theory for this study.

2.2 Status of Curriculum Implementation among trainees of Agriculture in TVET Institutions

Across the world, TVET is increasingly being repositioned toward competency-based, work-based, modular, blended, and digitally supported delivery. UNESCO (2020) notes that effective TVET systems now depend on stronger links with labor market information, employer engagement, and flexible delivery models that combine school-based and work-based learning. At the same time, the UNESCO (2020) evaluation of its TVET Strategy shows that implementation remains uneven, with challenges such as delays in curriculum development, difficulties in assessing against new standards, and the need for stronger continuing professional development for trainers. In agricultural TVET specifically, UNESCO-UNEVOC (2021) observes that many countries still rely too heavily on short extension-style interventions, while agricultural TVET needs trained staff, better vocational pedagogies, and clearer practical-teaching guidance. The global gap, therefore, is that although curriculum reform is widely acknowledged, many TVET systems still struggle to translate curriculum intentions into consistent practical skills outcomes.

Allais (2023) highlighted a persistent gap between policy and implementation in many African TVET systems, where policy intentions (curriculum reform, new competencies) often do not align with actual implementation. The study points to weak trainer capacity, limited industry engagement, and rigid curricula that do not allow local adaptation. In a separate study on TVET systems and the changing world of work and the digital transformation, Allais (2023) explored how digitalization is reshaping the skills required in the labor market, but also how many TVET curricula are slow to implement these changes. The study points out that curriculum implementation is not just about digitizing content but about rethinking the curriculum to reflect new competencies.

In Sub-Saharan Africa, agricultural TVET remains fragmented, underfunded, and weakly integrated into broader TVET systems (Haßler et al., 2020; NEPAD, 2019). NEPAD (2019) reports that agricultural training in Africa still lags behind current skill and labor market needs; it is often poorly integrated into TVET, private-sector needs are not sufficiently identified, and financing is limited. The broader Sub-Saharan Africa TVET research review by Haßler and colleagues likewise highlights a recurring concern that curriculum content often does not match company needs and that curricula must be adapted to local realities rather than imported unchanged from elsewhere. The African gap is therefore not simply access to TVET, but how well curriculum implementation reflects industry needs, local agricultural realities, and the practical competencies demanded by modern value chains.

A study conducted in southern Nigeria by Oladiran & Ngozi (2020) on Innovative Policies for Implementation of TVET Curriculum in Enhancing Students Competencies for Sustainable Industrial Development used a survey of practitioners and employers to examine how TVET curriculum implementation can be improved through employer involvement, competency-based training, and stronger apprenticeship systems. It recommended policy reforms, quality assurance, and a national vocational qualifications framework to strengthen curriculum implementation.

Muhammed (2022), in Search of Relevance, argued that many TVET curricula are outdated and misaligned with current societal and economic needs, calling for regular curriculum reviews. The study also highlighted structural constraints (policy and resources) that make implementing a relevant curriculum difficult. Yadessa & Akwasi (2021) examined how the TVET curriculum in building construction was mapped to occupational standards and whether this mapping truly reflected labor market needs. The study found that the curriculum does not sufficiently address actual societal training needs, pointing to weaknesses in

implementation design. This was in TVET Curriculum Mapping and Its Responsiveness to the Labor Market Demand: Case of Building Construction in Ethiopia.

Similarly, Yadessa (2020) assessed the practices of TVET curriculum design and development in Ethiopia and examined factors that affect curriculum development and implementation, including stakeholder roles, resource allocation, and the balance between theory and practice. He recommended a more market-driven curriculum design and better integration of practical training.

Kimutai, Kitonyi & Kimitei (2025) conducted an evaluation of Kenya TVET trainers on the use of artificial intelligence (AI) in instructional design and delivery. While focused on an AI, the article offered insight into how curriculum implementation is evolving: trainers' capacity to integrate new technologies into their teaching influences how the curriculum is delivered. The article suggested that capacity-building for instructors is critical for implementing modern curriculum components.

Terblanche & Bitzer (2017) focused on leadership in curriculum change, arguing that college leaders need to understand industry needs, manage change, and drive implementation. They emphasized aligning curriculum change with both technical (industry) and educational competencies. These works showed that implementation gaps are common even when curricula are reformed. This supports investigating how curriculum implementation affects practical skills development. The studies highlighted important variables: teacher/trainer capacity, industry linkage, policy frameworks, and resource allocation.

Uganda has made policy and legal reforms that demonstrate a clear intent to strengthen TVET curriculum implementation, as reported by TVET Operations and Management, Uganda (2025). The Ministry's TVET department oversees delivery across 145 government and registered private institutions, and the current legal framework assigns curriculum

development and management to the TVET Assessment Board in consultation with sector skills experts, TVET providers, and the TVET Council (MoES, 2019/2020). In practice, Uganda has also moved toward modular assessment and a stronger practical orientation; for example, the National Certificate in Woodwork Technology syllabus was realigned into modules that emphasize real-life projects, industrial training, and practical assessment. However, evidence also shows serious implementation gaps; the World Bank's SABER-WfD review for Uganda found that only a small share of the population had formal BTVET training, that programs covered a narrow range of occupations, and that employers felt trainees were not acquiring enough practical and job-relevant competencies (Kim, 2021). Kim's report highlights weak or nonexistent links between training institutions and industry and limited industry influence on curriculum design. In addition, a review of Uganda's vocational education noted that agriculture was not strongly promoted in vocational education and that a standard curriculum for the agriculture sector had only recently been developed. The Ugandan gap is therefore the mismatch between reform on paper and uneven implementation in institutions.

The need for this study is particularly strong in the Acholi Sub-region, where the area remains highly dependent on agriculture and subsistence livelihoods, as reported by the National Planning Authority (NPA, 2025). According to the Ministry of Agriculture, Animal Industry and Fisheries, Uganda (MAAIF, 2020/2021), Uganda's Employment and Skills Status Report shows that Acholi had 60.9% of its working population engaged in subsistence agriculture, one of the highest shares in the country. At the same time, government and partner interventions in Acholi have focused on building agricultural skills, such as training staff in agricultural production and enhancing the skills of farmer-entrepreneurs and equipment operators. That is useful, but it also suggests that skills development in the region is still largely driven by project-based interventions rather than by strong evidence on how

the curriculum is actually implemented in TVET institutions. The local gap, therefore, is the absence of context-specific empirical evidence on how curriculum implementation in agricultural TVET institutions in the Acholi Sub-region translates into practical skills development among trainees. This is the exact justification for conducting the study in Acholi rather than relying only on national, African, or global evidence.

2.3 Level of Practical Skills Development among trainees of Agriculture in TVET Institutions

Globally, the level is best described as moderate and uneven because TVET is widely recognized as a route to employability, yet implementation is often incomplete (Cedefop, 2024). Cedefop (2024) argues that even the literature on transferable and core skills indicates that many systems identify these skills in policy but lack matching delivery, assessment, and reporting arrangements, and that no comprehensive international assessment exists for all contexts. That gap justifies local studies because global policy strength does not automatically translate into practical classroom and workshop competence in every country or region.

The Inter-American Development Bank (IADB, 2023) reports that in Latin America and the Caribbean, the level is moderate but constrained by major skills deficits. The Inter-American Development Bank (2023) also reports that only 19% of secondary-school graduates reach the minimum basic skills needed to progress in study or work, and that graduate skills remain insufficient and unequal for today's social and labor demands. The gap is that even where TVET reforms and skills initiatives exist, the region still faces a serious mismatch between training outcomes and labor-market expectations. This makes an Acholi study relevant because it can test whether agricultural TVET curriculum implementation is producing stronger practical skills in a much more localized rural setting.

In Canada, the level is high, as reported by the Government of Canada (2026). The Government of Canada describes apprenticeship and skilled-trades training as providing "specialized training, practical skills and hands-on work," and notes that this training is tied to nationally recognized Red Seal certification (Government of Canada, 2026). The gap is not that Canada lacks practical training, but that the evidence largely reflects a strong apprenticeship model in a developed labor market; by contrast, the Acholi Sub-region needs evidence on whether comparable practical-skill gains can be achieved in agricultural TVET institutions operating under more resource-constrained conditions. That is an inference from Canada's strong apprenticeship structure and the very different institutional context in Acholi.

In Europe, the level is also high but uneven across countries. Cedefop (2023) reports that in 2022, 60.1% of recent VET graduates in the EU had work-based learning, exceeding the EU target. However, the share ranges from 8.4% in Romania to 98.4% in Spain (European Commission / Cedefop, 2023). The gap is therefore not the absence of a practical-skills policy but the uneven quality and reach of work-based learning across systems. This supports an Acoli study because European success is tied to mature apprenticeship and labor-market structures that may not be present in agricultural TVET institutions in Northern Uganda; local evidence is needed before assuming similar outcomes.

In Asia, especially in the Asia-Pacific region, the level is moderate to high but uneven and implementation-sensitive (UNESCO, 2024). UNESCO-ILO analysis shows that some countries have advanced in integrating transferable skills, while others are only beginning; the same analysis identifies key barriers, including disagreement over who should teach transferable skills, rigid curricula, weak capacity for innovative teaching, and weak assessment methods (UNESCO, 2024). The gap is that the region's progress depends heavily on system capacity and implementation design, so an Acholi study is justified to determine

whether similar barriers are affecting practical-skills development in agricultural TVET institutions in Uganda.

In Sub-Saharan Africa, the level is generally low to moderate. UNESCO-UNEVOC (2021) reports that opportunities for digital skills development in TVET teacher training are limited, and that prior to the pandemic, only 50% of secondary teachers had received the minimum required training. UNESCO's Africa TVET review also identifies common problems across the continent: digital infrastructure gaps, curriculum–labor market mismatch, inadequate funding, shortages of qualified teachers and trainers, and weak quality assurance (UNESCO-UNEVOC, 2021). The gap is therefore structural and systemic, which makes Acholi especially important because an agricultural region with similar constraints needs context-specific evidence on how curriculum implementation is shaping practical skills.

Practical skills in the context of TVET refer to hands-on, job-specific competencies that trainees need in real-world work environments. These include both technical skills (e.g., operating a tractor, soil analysis, crop management) and transferable employability skills (e.g., problem-solving, teamwork). Effective development of these skills depends on experiential learning, especially work-based learning (WBL), internships, apprenticeships, and structured practical training that bridges theory and practice.

Mubiru, Mukibi, and Katongole (2025) find that work-based learning models (structured apprenticeships, internships) strongly correlate with skills acquisition. Using Kolb's Experiential Learning Theory, they argue that trainees who learn in real work settings develop not only technical but also higher-order problem-solving skills. They note that inconsistent supervision, weak industry-educator partnerships, and a lack of formal WBL frameworks hinder the full benefits of WBL. The findings further show that lecturers' own

industrial attachments (i.e., when TVET lecturers gain workplace experience) significantly improve their ability to teach practical skills.

Ndaula et al. (2022) use experiential learning (field attachments) for university students in Northern Uganda and document significant gains in practical crop and livestock skills. Though it's at the university level, not TVET, this is highly contextually relevant (Northern Uganda). It provides empirical evidence that hands-on experiential components of curriculum implementation can improve practical agricultural skills.

Turyatemba, Kiplagat, & Wanami (2023) conducted a study on the Role of TVET Managers in the Implementation of Real-Life Project-Based Learning for Competence Development of TVET Trainees in Uganda, published in the African Journal of Education, Science and Technology. The study links project-based learning (PBL), a curriculum implementation strategy, to competence development (which includes practical skills) among TVET trainees. It highlights how institutional leadership (managers) influences the successful implementation of PBL, thereby affecting the quality of skill development.

The VVOB (2022) document Teaching Agriculture Practically under Building Ugandan teachers' capability to skill youth for agriculture focuses on improving agricultural TVET in Uganda by strengthening instructors' pedagogical and technical competencies so they can deliver practical agricultural education more effectively. It explicitly links teacher capacity and curriculum delivery (how the curriculum is implemented) to the goal of improving practical skills among youth in agriculture. This demonstrates institutional support (at the teacher training level) for practical curriculum implementation, which can lead to better "hands-on" competence among trainees.

Muhwezi (2025) discusses how Uganda's TVET system uses a dual training/tripartite assessment model that involves close collaboration with industry during workplace learning.

Employers provide industrial training and assess learners during on-the-job practical training. This is relevant because it underscores that practical skills are developed and assessed not only in classrooms or school workshops but also in real workplace contexts, reinforcing the importance of industry-driven practical training in TVET.

Additionally, Kerre and Okaka (2022) examined institutional, economic, and social challenges in the TVET system. They highlighted that weak infrastructure, lack of policy implementation, and poor resource allocation limit the capacity for hands-on training. From a practical skills perspective, this means that even when curricula are competency-based or include practical components, delivering them effectively is a major obstacle.

Chola & Kiplagat (2025) reviewed how TVET contributes to green economies and sustainable development in Kenya, noting that TVET programs deliver not only job skills but also environmentally responsible practices. Practical skills include environmental and green-technology competencies, which are increasingly part of agricultural TVET (especially in climate-smart agriculture).

Everest, Ssemakula & Nuwemuhwezi (2024) examined how modern agricultural education in Ugandan secondary schools is linked to students' practical farming skills. They found that the use of modern agricultural inputs, machinery, and demonstration methods in school significantly improves students' practical competence. Although this is at the secondary-school level rather than TVET, the findings are highly relevant: modern agricultural pedagogy and practical demonstrations strongly influence practical skill acquisition.

Kaula (2023) explored how TVET produces graduates with skills demanded by the labor market and how labor market information moderates this relationship. This study is relevant to practical skills because it highlights the gap between what TVET trains for and what industries need, which can affect how practical training is designed and delivered. A 2025

review examined pathways to reduce youth unemployment through agriculture and agribusiness, noting that a lack of practical training, resource constraints, and a skills mismatch are major barriers. This supports the argument that practical skills development in agriculture is critical for creating sustainable and productive jobs for youth, especially in rural or agrarian contexts.

These studies show that developing practical skills in TVET is not just about having workshops or hands-on labs. It also depends on industry participation (for workplace training), policy and infrastructure support, and the curriculum's relevance to labor market demands.

In Northern Uganda, especially in Gulu City and Omoro District, TVET institutions are not well-resourced for practical training. Links with local agribusiness or farms to support hands-on learning are often weak, as students typically source their industrial placements on their own, and the skills taught are not aligned with the needs of the agricultural labor market. As noted by Everest et al. (2024), updating the curriculum and investing in practical demonstrations are key to improving skills in TVET.

In a study on assessment methodologies and determinants of employability and skill levels among TVET graduates in Central Uganda, Yiga (2022) measured skill levels (on a 1–5 scale) and examined determinants of employability. Yiga used logistic regression and Tobit models to analyze data from 150 graduates. While not limited to agriculture, the study showed how graduate skill levels were assessed and the gap between skills and industry needs. It’s relevant for understanding how “skill level” is operationalized among TVET trainees in Uganda. However, it’s not agriculture-specific, and its focus is on graduates (post-training) rather than trainees in training.

Nahamya & Mukakanya (2023), in Learning While Producing Using Low Cost Technology Innovation: The Case of Maize Mill in Uganda, describe a “learning while producing” model: TVET trainees built a low-cost maize mill as part of their training, applying competence-based curriculum principles. This study exemplifies practical skills development through project-based, hands-on work and shows how real-life, low-cost production tasks can be integrated into training. It is more of a conceptual and practicum innovation description than a large-scale empirical study and may not provide large-sample measures of skill development.

Also, Mugweri (2023), in a survey on the performance of the Technical and Vocational Training System toward skill development in Uganda, uses a quantitative descriptive survey (questionnaires) to analyze how TVET performs in developing skills. The study identified challenges such as inadequate funding, low teacher incentives, and limited equipment. It highlighted systemic constraints in TVET that hinder effective skills development, including in practical training. The findings can help you situate practical skills development in your research within broader institutional and resource challenges. However, the survey was not agriculture specific.

Comparatively, Mukasa (2022) investigated how the quality of technical teacher training affects the competence of TVET instructors. He argues that teachers need more modern, well-equipped training to deliver high-quality instruction. Thus, if teacher training quality is low, it may limit the implementation of the practical curriculum, thereby limiting the development of practical skills among trainees. However, the study focused on teachers rather than trainees and doesn’t examine agricultural training specifically.

In Uganda, the policy environment expects TVET to be employer-led and labor market-responsive, and the Uganda Skills Development Project was designed to build a scalable

model for high-quality vocational and technical training linked to labor market needs (MoE&S, 2020). Yet national development evidence shows that Acholi remains under pressure: poverty has worsened, 78% of households in Acholi are stuck in a subsistence economy, and government reports continue to call for stronger regional planning and evidence on the causes of poor outcomes. The Ministry of Agriculture also reports targeted efforts to build agricultural skills in Acholi, which suggests that the region is already treated as a skills-development priority, but the missing question is whether TVET curriculum implementation within institutions is translating into practical agricultural competence among trainees (MAAIF, 2026). That provides a local research gap for this study to address.

2.4 The Relationship between Curriculum Implementation and Practical Skills Development among Trainees of Agriculture in TVET Institutions

According to UNESCO (2022), the relationship between curriculum implementation and practical skills development in TVET is generally positive worldwide: when curricula are implemented through employer engagement, work-based learning, competency standards, and practical assessment, learners gain stronger occupational skills; when implementation is weak or mismatched to labor market needs, practical skills outcomes are lower. UNESCO (2022) frames TVET as a bridge between education and work, while ILO (2016) notes that programs combining classroom-based and work-based training, including apprenticeships, tend to produce the best skills outcomes. Globally, the relationship is strong in policy but uneven in practice. The UNESCO (2022–2029) TVET Strategy stresses skills development for employability, productive work, and stronger employer engagement, yet also notes the persistence of youth unemployment, skills mismatch, and the need for better governance, financing, and teacher capacity (UNESCO, 2022). The gap is that many systems recognize the need for practical-skills curriculum reform, but implementation quality varies. Therefore,

a study was needed in the Acholi Sub-Region to test whether curriculum implementation produces practical agricultural skills in a low-resource rural setting.

In the USA, the relationship is also positive. Competence Technical Education (CTE) is designed to give students' academic, technical, and employability skills, and the U.S. Department of Education's work-based learning toolkit states that employers help shape the curriculum, design workplace practice opportunities, and mentor learners (Inter-American Development Bank, 2023). The gap is that not all learners receive equally strong WBL experiences; the toolkit specifically asks whether there are gaps in WBL offerings and whether some groups are underrepresented in higher-level experiences such as paid internships. That gap supported an Acholi study because it suggested that access to and quality of practical learning can differ sharply by context and learner group.

In Latin America, the relationship is positive but constrained by significant skills deficits. The Inter-American Development Bank (2023) reports that the region has high levels of informal employment, weak foundational skills, and a broad skills gap. Its TVET-related interventions show that private-sector collaboration, updated curricula, and hands-on training improve employability prospects (Institute of Education Science, 2020). The gap is that many systems still struggle to convert training into labor-market-relevant competence at scale, which makes Acholi relevant because a rural agricultural economy may face a similar mismatch between curriculum intentions and practical skills outcomes.

According to the UK Department for Education (2021), in the UK, curriculum implementation is strongly employer-led. Government policy states that Local Skills Improvement Plans should help colleges reshape provision to match labor market needs, and T Level evidence shows that industry placements help learners develop practical skills, workplace understanding, communication, IT skills, and confidence (UK Department for

Education, 2021). However, this good practice depends on sustained employer engagement and local capacity, so outcomes are not automatic across all providers. This left room for an Acholi study to examine whether agricultural TVET institutions have the same employer linkage and practical orientation on the ground.

In Asia, the relationship is also positive but highly dependent on implementation quality (World Bank, 2023). ILO (2016) guidance for the Asia-Pacific region recommends keeping curricula current through occupational standards and stakeholder involvement and notes that programs combining classroom-based and work-based training tend to produce the best results (World Bank, 2023). The persistent skills mismatch across the region, along with uneven capacity to teach, assess, and embed work-based learning consistently, remains a gap. That gap justified Acholi research because it showed that even where curriculum reform exists, the translation into practical skills can still fail without strong implementation structures.

In Sub-Saharan Africa, the relationship is often weaker because implementation constraints are more pronounced. The UNESCO-UNEVOC (2024) Africa review finds a digital divide, weak ICT infrastructure, a mismatch between TVET curricula and labor market needs, inadequate funding, a shortage of qualified teachers and trainers, and weak quality assurance (UNESCO-UNEVOC, 2024). The gap is therefore not only in curriculum design but also in implementation capacity itself. This is exactly why a study in the Acholi Sub-Region is needed: it can show whether agricultural TVET institutions are overcoming or reproducing the same implementation barriers seen across the region.

Uganda’s TVET policy is explicitly intended to produce employable, workplace-oriented practical skills, and the Uganda Skills Development Project was designed to strengthen demand-driven training in agriculture, construction, and manufacturing (MoE&S, 2020). Yet

evidence from the National Planning Authority (2022) shows that poverty in Acholi has worsened and that about 78% of households in Acholi remain in the subsistence economy, while recent employment data indicate that Acholi has one of the highest shares of working people in subsistence agriculture. The gap is clear: policy expects practical, labor-market-relevant TVET, but there is still little context-specific evidence showing whether curriculum implementation in Acholi TVET institutions is actually building practical agricultural skills. That local evidence gap was what this study filled.

In Uganda, Technical and Vocational Education and Training (TVET) is positioned as a strategic driver of skills development, youth employment, and socio-economic transformation. National policy frameworks, such as the TVET Policy (2020) and the Skilling Uganda Strategy, emphasize competency-based training and practical skills acquisition, particularly in priority sectors such as agriculture. Despite these policy commitments, concerns persist about the practical competence of TVET graduates. This literature review examines Ugandan and related African scholarship on the relationship between curriculum implementation and practical skills development in TVET institutions.

Theoretically, Experiential Learning Theory offers a relevant framework for understanding skills acquisition in TVET institutions. Kolb (1984) argues that learning is most effective when learners actively engage in concrete experiences, followed by reflection and experimentation. In agricultural TVET institutions in Uganda, effective curriculum implementation that integrates demonstration farms, fieldwork, and industrial training enables trainees to acquire hands-on skills essential for agricultural productivity. Weak implementation, however, limits experiential exposure and undermines skills development. Constructive Alignment theory further explains the link between curriculum implementation and learning outcomes. According to Biggs (1996), alignment among learning outcomes, teaching activities, and assessment enhances deep learning. In the Ugandan TVET context,

where assessments are sometimes dominated by theoretical examinations, misalignment reduces the emphasis on practical competence (Biggs & Tang, 2011).

The availability of training resources strongly affects the development of practical skills. Agricultural TVET institutions in Uganda often face shortages of tools, demonstration farms, and consumables, limiting practical sessions (McGrath et al., 2020). Afeti (2018) notes that inadequate infrastructure in African TVET institutions results in theory-oriented training that fails to meet labor market demands. This challenge is pronounced in rural and post-conflict regions of Northern Uganda. Assessment is a key mechanism through which curriculum implementation influences learning. Performance-based assessment reinforces practical competence, while theory-heavy examinations undermine skills acquisition (Allais, 2014). In Uganda, reforms promoting modular assessment and workplace evaluation aim to address this gap, though implementation remains uneven (MoES, 2019).

2.5 Summary of the Gaps

Despite extensive scholarship on curriculum implementation and practical skills development in TVET institutions, significant gaps persist, particularly in agriculture-focused training in the Acholi sub-region of Northern Uganda. Existing studies widely affirm the value of experiential learning, competency-based approaches, industry partnerships, and instructor capacity in enhancing technical and employability skills; however, much of this research is concentrated on universities, secondary education, or generalized TVET systems, with limited empirical focus on agricultural TVET programs in local contexts. Furthermore, although policy frameworks advocate for industry-relevant and competency-based curricula, implementation remains constrained by weak instructor capacity, inadequate resources, limited integration of emerging technologies, rigid and sometimes outdated curricula, and insufficient alignment with labor market demands. In rural and post-conflict settings such as

Gulu City and Omoro District, these challenges are compounded by weak agribusiness linkages, infrastructural deficits, and restricted access to workplace-based learning opportunities, all of which undermine effective hands-on skill acquisition. Additionally, while theoretical models such as experiential learning and constructive alignment emphasize integrating practical engagement, reflection, and aligned assessment, many institutions remain predominantly lecture-oriented, with poorly embedded practical components and misaligned evaluation methods. Notably, much of the existing literature emphasizes post-training outcomes or broad systemic analyses, with limited attention to real-time processes of skills development during training. Consequently, there is a clear need for localized, agriculture-specific, and empirically grounded research that critically examines how curriculum implementation, shaped by the interplay of instructor capacity, resource availability, institutional support, industry collaboration, and labor market relevance, directly influences practical skills development among TVET trainees in Gulu City and Omoro District.

Chapter Three

Research Methodology

3.0 Introduction

This chapter presents the methodological framework that guides the study of curriculum implementation and practical skills development among agriculture trainees in Technical and Vocational Education and Training (TVET) institutions in Gulu City and Omoro District. The methodology is grounded in the theoretical perspectives discussed in Chapter Two, particularly Experiential Learning Theory and Constructivist Learning Theory, which emphasize hands-on learning, guided practice, and competence-based assessment. The chapter outlines the research approach, design, study population, sampling procedures, data collection methods and instruments, administration procedures, data quality control measures, data analysis techniques, ethical considerations, and study limitations and delimitations. The methodological choices are intended to generate both measurable and contextual evidence on how curriculum implementation influences practical skills development in resource-constrained, post-conflict educational settings characteristic of the Acholi sub-region.

3.1 Research Approach

This study adopted a mixed-methods research approach, combining quantitative and qualitative techniques within a single study to provide a more comprehensive understanding of the research problem, as cited by Creswell & Plano Clark (2018). Mixed-methods research was appropriate for an educational study dealing with the complex phenomenon of "curriculum implementation and practical skills development," which required both numerical measurement and contextual interpretation. The quantitative component allowed for the objective measurement of variables such as the availability of practical learning opportunities, the frequency of practical sessions, and levels of practical skills development

among trainees. However, as highlighted in chapter two, practical skills development in TVET was also influenced by contextual factors, including instructor competence, institutional resources, and industry linkages, which couldn't be fully captured through quantitative methods alone. The qualitative component, therefore, complemented the quantitative data by exploring the lived experiences of instructors and trainees, particularly within the socio-economic and institutional realities of Gulu City and Omoro District. In this study, the mixed-methods approach was used to collect quantitative data through structured questionnaires and qualitative data through interviews, with findings integrated to provide a holistic understanding of how curriculum implementation shapes practical skills development in agricultural TVET institutions in Gulu City and Omoro District.

3.2 Research Design

The study employed a convergent parallel mixed-methods design, in which quantitative and qualitative data are collected concurrently, analyzed separately, and then merged during interpretation (Creswell & Plano Clark, 2018). This design was suitable for this study because it allowed for triangulation of findings, thereby enhancing the validity and credibility of the results. In the Acholi sub-region, where TVET institutions operate under varying conditions of resource availability and institutional capacity, relying on a single data source could have produced incomplete findings. The quantitative strand, using a cross-sectional survey, provided statistical evidence on the level of curriculum implementation and practical skills development among trainees. At the same time, the qualitative strand generated in-depth insights into instructional practices, challenges, and contextual factors affecting implementation. The convergent design was useful for identifying areas of convergence, where both data strands support similar conclusions, and divergence, where findings differed and required further interpretation. In this study, both datasets were collected simultaneously from selected TVET institutions in Gulu City and Omoro District and integrated during

analysis to provide a comprehensive explanation of the relationship between curriculum implementation and practical skills development.

3.3 Study Population

The study population comprises the entire group of individuals relevant to the research problem (Cohen et al., 2018). In this study, the population consisted of agriculture trainees (approximately 200), instructors (5-10), and selected administrators (5-7) across 5 TVET institutions in Gulu City and Omoro District (MOES, 2024). The inclusion of agriculture trainees was justified by the study's focus on practical skills development, as trainees are the primary beneficiaries of Curriculum Implementation. Instructors were included because they are directly responsible for delivering the curriculum and facilitating practical learning experiences, while administrators provided insights into institutional policies, resource allocation, and implementation challenges. The selection of this population was informed by the literature reviewed in chapter two, which emphasizes that practical skills development is influenced by multiple stakeholders operating within the TVET system.

3.4 Sample Size

Sample size is the number of participants selected from the population for inclusion in the study, while sample selection refers to the procedures used to choose them (Krejcie& Morgan, 1970). Determining an appropriate sample size is essential to ensure that the findings are statistically reliable and representative of the population. In this study, the sample size for trainees was determined using the Krejcie and Morgan (1970) table, which provides a standardized method for selecting sample sizes based on population size. For a population of approximately 800-1,000 trainees in the selected TVET institutions, a sample of 250 trainees is considered adequate. In addition, a smaller purposive sample of instructors and administrators was selected for the qualitative component, with the final number guided

by the principle of data saturation, where no new information is obtained from additional participants. The sample was proportionally distributed across institutions in Gulu City and Omoro District to ensure fair representation. This approach ensures that both the quantitative and qualitative components of the study generate reliable and contextually meaningful data.

Table 3. 1: A Sample Size Determination Table

Category	Population size (N)	Sample size (n)	Sampling technique	Justification
Trainees	200	133 Gulu city=42 and Omoro District=91	Simple random	Based on Krejcie and Morgan (1970) at 95% confidence level and 5% margin of error.
Instructors	10	9 Gulu City=5 and Omoro District=4	Purposive sampling	Selected for expertise in curriculum implementation
Administrators and policy makers	05	05 Gulu city=3 And Omoro District=2	Purposive	Selected for their expertise in implementation and supervision of curriculum implementation
Totals	**217**	**147**	Mixed sampling	Ensures representation of all respondents

Source: MOES, (2024)

3.5 Sampling Techniques

Sampling techniques are the methods used to select participants from the population (Bryman, 2016). In this study, a combination of probability and non-probability sampling techniques will be used to balance representativeness and relevance. Purposive sampling was used to select TVET institutions offering agricultural programs in Gulu City and Omoro District, ensuring that only institutions relevant to the study objectives were included. Within these institutions, stratified random sampling was used to categorize trainees by program level (Certificate or Diploma) and year of study, followed by simple random sampling to select respondents from each stratum. This approach ensured that different categories of

trainees were adequately represented. For the qualitative component, purposive sampling was used to select instructors and administrators directly involved in curriculum implementation, who, therefore, could provide detailed and relevant information. This combination of sampling techniques is appropriate for the study because it enhances the validity of quantitative findings while ensuring depth and contextual richness in qualitative data.

3.6 Data Collection Methods

Data collection methods are systematic procedures for gathering information from participants (Cohen et al., 2018). In this study, multiple data collection methods were employed, including questionnaire surveys and interviews, to enhance the credibility of the findings through triangulation. Surveys enabled the collection of quantitative data from a large number of trainees and instructors, allowing measurement of variables such as curriculum implementation practices and levels of practical skills development. Interviews, on the other hand, provided an opportunity to explore participants' experiences and perspectives in greater depth, particularly regarding instructional practices and institutional challenges.

3.7 Data Collection Instruments

Data collection instruments are tools for gathering information from respondents. In this study, three main instruments were used: structured questionnaires and interview guides. The trainee questionnaire collected quantitative data on demographic characteristics, exposure to practical training, resource availability, and self-reported levels of practical competence. The instructor questionnaire captured information on teaching methods and curriculum implementation practices. The interview guide collected qualitative data from administrators, focusing on their experiences with curriculum implementation and practical skills development. These instruments were designed to operationalize key constructs derived from the theoretical frameworks discussed in chapter two, particularly experiential learning

(hands-on practice), constructivism (guided learning), and CBET (competence demonstration).

3.8 Administration Procedures

Data collection followed a systematic procedure. After successfully defending my proposal, I made compliance with the required corrections suggested by the panel and wrote a compliance report. I obtained an introductory letter from the Office of the Dean, Faculty of Education and Humanities, and proceeded to the field to collect data. I trained the research assistants on the study's objective, ethical conduct, and the proper administration of the instruments. The questionnaires were administered to trainees and instructors during scheduled sessions by the research assistants. I clarified the questions and administered the interview guide to the administrators. Completed instruments were checked daily for completeness and consistency before data entry. The research participants were debriefed after administering the questionnaire guides and interviews.

3.9 Quality Control of Instruments

Quality control involves ensuring that the instruments and findings are both valid and reliable. Validity refers to the extent to which an instrument measures what it is intended to measure, while reliability refers to the consistency of the measurement (Taber, 2018). In this study, content validity was ensured through expert review by specialists in TVET and agricultural education, who assessed the instruments' relevance and clarity. A pilot study was conducted at a non-sampled institution to refine the instruments. Reliability was assessed using Cronbach's alpha, which yielded a value of 0.70 and was considered acceptable.

For the qualitative component, trustworthiness was ensured through credibility, dependability, and confirmability, using techniques such as member checking and maintaining an audit trail. The use of multiple data sources and methods further enhanced the study's validity through triangulation.

3.10 Data Analysis

Data analysis involves organizing, processing, and interpreting collected data to answer the research questions (Creswell & Plano Clark, 2018). In this study, quantitative data were analyzed using the statistical software SPSS. Descriptive statistics were used to analyze respondents' background and research objectives one and two. This approach was preferred because it allowed the study to present findings in tables using frequencies, percentages, means, and standard deviations. Inferential statistics, specifically 'Pearson correlation' was used to examine the relationship between curriculum implementation and practical skills development, using data from objectives one and two that were transformed. Qualitative data were analyzed thematically to make sense of respondents' individual stories.

Furthermore, thematic analysis, which involved coding and categorizing data into themes, reflected participants' experiences and perspectives. The findings from both quantitative and qualitative analyses were integrated during interpretation to provide a comprehensive understanding of the study problem. This approach directly addressed the research gap identified in chapter two regarding the need for both statistical and contextual evidence.

3.11 Ethical Considerations

Ethical considerations are the principles that guide responsible conduct in research (Creswell & Plano Clark, 2018). In this study, ethical principles were observed throughout the research process to protect participants' rights and well-being. Participation was entirely voluntary, and informed consent was obtained from all respondents before data collection. Participants were assured of confidentiality and anonymity, and no identifying information was included in the analysis or reporting of findings. Data were securely stored and used only for academic purposes. Participants were also informed of their right to withdraw from the study at any time without any negative consequences. These measures ensured that the study adhered to accepted ethical standards in educational research.

3.12 Limitations and Delimitations

Limitations are constraints that may affect the study but are beyond the researcher's control (Creswell & Plano Clark, 2018). In this study, one limitation was the use of a cross-sectional design, which didn't allow for the establishment of causal relationships between variables. This limitation was mitigated through triangulation. Additionally, reliance on self-reported data may introduce response bias, which was mitigated by clearly stating the purpose of the study. The study was limited to agriculture trainees and instructors in selected TVET institutions in Gulu City and Omoro District within the Acholi sub-region and does not cover other regions or disciplines. These limitations were addressed through triangulation of the findings.

Chapter Four

Data Presentation, Analysis and Interpretation

4.0 Introduction

This chapter presents data analysis, a summary of the findings, and interpretations of the results, all based on the study objectives formulated in Chapter One. Descriptive statistics were used to analyze the background of the respondents and to address objectives one and two. Pearson correlation was used to analyze the relationship between curriculum implementation and practical skills development among Agriculture trainees in TVET institutions.

4.1 Demographic Characteristics of Respondents

The demographic characteristics, according to this study's interest, were structured in terms of age bracket, gender, year of study, study program enrolled in, and duration of the training in months as shown on Table 4.1.

Table 4. 1: Demographic Characteristics of Respondents N =133 (Trainees)

Age bracket				
		Frequency	Percent	Cumulative Percent
Valid	16-20 years	*52*	*39.1*	*39.1*
	21 and above years	*81*	*60.9*	*100.0*
Gender				
Valid	Male	*47*	*35.3*	*35.3*
	Female	*86*	*64.7*	*100.0*
Year of study				
Valid	First year	*57*	*42.9*	*42.9*
	Second year	*71*	*53.4*	*96.2*
	Third year	*5*	*3.8*	*100.0*
Programme enrolled in				
		Frequency	Percent	Cumulative Percent
Valid	Certificate	*129*	*97.0*	*97.0*
	Diploma	*4*	*3.0*	*100.0*
Duration of training (months)				
Valid	Six Months	*4*	*3.0*	*3.0*
	Two Year	*103*	*77.4*	*80.5*
	Three Years	*26*	*19.5*	*100.0*

Source: Primary Data (2026)

Table 4.1 shows that the majority of trainees (60.9%) are 21 years or older, while 39.1% fall within the 16-20-year bracket. This indicates that the sample is largely composed of relatively mature learners, many of whom may have prior life, work, or educational experiences. The dominance of trainees aged 21 and older implies that respondents are likely to exhibit higher levels of maturity, self-regulation, and possibly clearer career goals. This may positively influence variables such as skill acquisition, problem-solving ability, and work-readiness. However, it also means the findings may not fully represent younger, less experienced trainees.

Gender Composition of the participants. The sample is predominantly female (64.7%), compared with 35.3% male participants. This suggests a gender imbalance in enrollment or participation within the training programs. The higher proportion of female trainees indicates increasing female participation in technical and vocational education. This has implications for curriculum design, which may need to be gender-responsive; for policy formulation, particularly in promoting inclusivity and addressing barriers faced by male or female trainees differently; and for generalizability, as findings may be more reflective of female experiences.

Year of Study. Most respondents are in their second year (53.4%), followed by first-year trainees (42.9%), with only a small proportion in third year (3.8%). This indicates that the data is heavily drawn from trainees who are midway through their training. Since most respondents are in their second year, they are likely to have adequate exposure to both the theoretical and practical components, leading to more informed perceptions of curriculum implementation and skill development. However, the very small number of third-year trainees limits insights into advanced-level competencies and long-term training outcomes.

Program Enrollment. An overwhelming majority (97.0%) are enrolled in certificate programs, while only 3.0% are pursuing diplomas. This indicates that the study largely reflects lower-level vocational or technical training. With 97% enrolled in certificate programs, the study largely reflects basic and intermediate skill levels rather than advanced technical competencies. This implies that the findings may not be generalizable to diploma or higher-level training contexts, and the study is more relevant to entry-level workforce preparation.

Training Duration. Most trainees (77.4%) are undertaking two-year programs, followed by 19.5% in two-year programs, and only 3.0% in six-month courses. This suggests a dominance of medium-term training exposure among respondents. The prevalence of two-year programs indicates that the study captures trainees exposed to moderate-duration training, which is typically sufficient for foundational skills development. Short-term (6 months) and long-term (2 years) training experiences are underrepresented, limiting comparative analysis of how duration affects competency development.

Generally, the demographic structure indicates that the research findings will primarily reflect the experiences of adult, female, certificate-level trainees in one-year programs, mostly in their second year of study. This has two key consequences: First, the data are likely reliable for assessing practical skills development and curriculum implementation among mainstream TVET trainees. Second, the findings may have limited generalizability to younger learners, male trainees, diploma students, or those in significantly shorter or longer training programs.

Demographic Characteristics of Respondents (TVET Trainers and Administrators).

According to this study, the demographic characteristics of the respondents (trainers and administrators) in TVET institutions were described and structured in terms of age bracket,

gender, professional qualification in TVET, experience in TVET teaching, and the highest qualification as shown on Table 4.2.

Table 4. 2: Demographic Characteristics of Respondents (Instructors and TVET Institution Administrators: N=14)

		Frequency	Percent	Cumulative Percent
Age bracket				
Valid	20-30	*8*	*57.1*	*57.1*
	31-40 years	*6*	*42.9*	*100.0*
Gender				
Valid	Male	*8*	*57.1*	*57.1*
	Female	*6*	*42.9*	*100.0*
Professional TVET qualification				
Valid	yes	*10*	*71.4*	*71.4*
	No	*4*	*28.6*	*100.0*
Training experience in TVET				
Valid	1-5 years	*7*	*50.0*	*50.0*
	6-10 years	*5*	*35.7*	*85.7*
	11 and above years	*2*	*14.3*	*100.0*
What is highest qualification				
Valid	Diploma	*5*	*35.7*	*35.7*
	Degree	*7*	*50.0*	*85.7*
	Postgraduate	*2*	*14.3*	*100.0*

Source: Primary Data, (2026)

Findings from the table above (4.2) show that:

Age Distribution. A majority of respondents (57.1%) are 20–30 years old, while 42.9% are 31-40 years old. This indicates that the instructional and administrative workforce is relatively young, with no representation from older age groups (above 40). The dominance of instructors aged 20–30 suggests a young, potentially energetic workforce, likely open to innovation and modern teaching approaches. However, this may also imply limited depth of experience in curriculum delivery and possible challenges in mentoring trainees or handling complex training environments.

Gender Composition. The sample shows a fairly balanced gender distribution, with 57.1% male and 42.9% female respondents. This suggests moderate gender inclusivity within TVET staffing. The near gender balance enhances the study's representativeness and the inclusivity of perspectives. It also reduces gender bias in responses related to curriculum implementation, teaching effectiveness, and trainee engagement.

Professional TVET Qualification. Most respondents (71.4%) possess a professional TVET qualification, while 28.6% do not. This indicates that although a majority are professionally trained, a notable proportion lacks formal pedagogical or technical certification in TVET. While most respondents have TVET qualifications, the 28.6% without professional certification is significant. This may affect the quality and standardization of training delivery, the effectiveness of competency-based education, and the interpretation of findings, as not all instructors may fully understand or apply TVET pedagogical principles.

Teaching Experience in TVET. Half of the respondents (50.0%) have 1–5 years of experience, followed by 35.7% with 6-10 years, and only 14.3% with over 11 years. This suggests that the workforce is largely early- to mid-career, with limited highly experienced personnel. With 85.7% of respondents having 10 years or less of experience, the findings largely reflect early- and mid-career perspectives. This implies greater adaptability to new teaching methods and competence-based curricula.

Highest Academic Qualification. Most respondents hold a degree (50.0%), followed by diploma holders (35.7%), with a small proportion holding postgraduate qualifications (14.3%). This indicates moderate academic preparation but relatively low representation of advanced-level expertise. The dominance of degree and diploma holders suggests that instructors have adequate academic grounding for TVET delivery. However, the low proportion of postgraduate qualifications (14.3%) may limit advanced pedagogical

innovation, research-informed teaching practices, and strategic curriculum development at the institutional level.

Generally, the demographic profile indicates that the study findings from instructors and administrators largely reflect the views of a young, moderately qualified, and relatively inexperienced workforce, with a majority having formal TVET training. Taken together, these characteristics suggest that while the instructional staff is adequately qualified and fairly balanced by gender, there are notable gaps in experience and advanced qualifications, which may influence both the quality of training delivery and the interpretation of curriculum implementation and skills development outcomes in the study.

4.2 What is the Status of Curriculum Implementation among Trainees of Agriculture in TVET Institutions in Gulu City and Omoro District?

Research question one sought to assess the status of curriculum implementation among agriculture trainees in TVET institutions in Gulu City and Omoro District. The descriptive statistics in Table 4.3 below indicate that trainees perceive curriculum implementation in TVET institutions as generally effective and practice oriented. Most mean scores fall between 3.6 and 4.4, suggesting agreement with positive statements about how the curriculum is delivered.

Table 4. 3: Descriptive Statistics for the Status of the Curriculum Implementation in TVET Institutions, N = 133 (Trainees)

Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
The curriculum content is well-organized and easy to follow	*1.00*	*5.00*	*3.8797*	*1.14837*
Teaching methods used in my program allow sufficient hands-on practice	*1.00*	*5.00*	*4.2481*	*.94873*
Learning materials (books, manuals, guides) are adequate and accessible	*1.00*	*5.00*	*3.6241*	*1.32346*
Instructors effectively explain both theoretical and practical aspects of agriculture	*1.00*	*5.00*	*4.2256*	*1.06327*
The curriculum aligns with the skills required in real agricultural work	*1.00*	*5.00*	*4.4286*	*.83744*
Scheduled practical sessions are conducted regularly as per the curriculum	*1.00*	*5.00*	*3.8797*	*1.19365*
Assessment methods reflect both theoretical knowledge and practical competence	*1.00*	*5.00*	*4.3083*	*.93079*
The institution provides enough tools and equipment for practical training	*1.00*	*5.00*	*4.0977*	*4.56081*
The curriculum encourages independent problem-solving during practical work	*1.00*	*5.00*	*3.9323*	*1.16902*
Feedback from instructors helps improve my practical skills	*1.00*	*3.00*	*4.4135*	*2.87920*
Trainees are given sufficient time for hands-on practice	*1.00*	*5.00*	*4.0376*	*1.20231*
Practical activities are aligned with the curriculum objectives.	*1.00*	*5.00*	*5.0827*	*6.81803*
Industrial attachments and field visits are regularly organized	*1.00*	*5.00*	*4.0602*	*1.11979*

Source: Primary Data, (2026)

The results in Table 4.3 shows that the curriculum's alignment with real agricultural work has a high mean (4.4286), indicating that trainees perceive a strong connection between what they learn and actual workplace demands. Similarly, feedback from instructors (Mean = 4.4135) and assessment methods that reflect both theory and practice (Mean = 4.3083) are highly rated, suggesting that evaluation and guidance systems support competency development. Teaching effectiveness is also evident, with high ratings for hands-on teaching methods (Mean = 4.2481) and instructors' ability to explain both theory and practice (Mean = 4.2256).

There are also moderately positive perceptions regarding the availability of tools and equipment (Mean = 4.0977), time allocated for practical work (Mean = 4.0376), and industrial attachments/field visits (Mean = 4.0602). These findings indicate that institutions are making reasonable efforts to support experiential and workplace-based learning.

However, some weaker areas are evident. Learning materials (Mean = 3.6241) received the lowest rating, raising concerns about the adequacy and accessibility of instructional resources. Additionally, curriculum organization (Mean = 3.8797), regularity of practical sessions (Mean = 3.8797), and promotion of independent problem-solving (Mean = 3.9323) fall slightly below the stronger areas, indicating gaps in structure, consistency, and learner-centered approaches.

Results in Table 4.3 above indicate that curriculum implementation is largely effective, particularly in linking training to real-world agricultural skills. Teaching methods, instructor competence, and assessment practices are strong and support practical skill acquisition. Experiential learning opportunities (tools, time, and field exposure) are moderately adequate. Learning resources, curriculum organization, and problem-solving opportunities are comparatively weaker and require improvement.

Trainee results indicate that TVET institutions have made substantial progress in implementing a competency-based, practice-oriented curriculum that prepares trainees for real-world agricultural work. However, for optimal effectiveness, there is a need to improve access to learning materials, strengthen curriculum organization, ensure consistent practical sessions, and promote independent problem-solving skills. Addressing these gaps would enhance the overall quality and impact of TVET curriculum implementation. Administrators also acknowledge critical implementation gaps, largely consistent with trainee experiences, including limited teaching and learning resources as noted by A2 below;

"While the curriculum is well designed, we still face shortages of tools, farm inputs, and demonstration materials, which limit the depth of practical exposure."

This confirms that resource constraints hinder the full implementation of the curriculum in TVET institutions.

Table 4. 4: Descriptive Statistics Showing Curriculum Implementation in TVET Institutions (Trainers), N=10

	Minimum	Maximum	Mean	Std. Deviation
I engage my trainees in hands-on agricultural activities during training.	*4.00*	*5.00*	*4.4000*	*.51640*
Practical sessions are adequately integrated into the training curriculum in this institution.	*3.00*	*5.00*	*4.0000*	*.66667*
I provide sufficient opportunities for real-life farming experiences.	*2.00*	*5.00*	*3.9000*	*1.10050*
I demonstration farms or practical sites effectively during my instruction sessions.	*3.00*	*5.00*	*4.1000*	*.73786*
I actively involve trainees to participate in fieldwork and practical demonstrations.	*4.00*	*5.00*	*4.4000*	*.51640*
I encouraged trainees to reflect on their practical experiences after activities.	*3.00*	*5.00*	*4.1000*	*.56765*
I facilitate discussions with my learners to review lessons learned from practical sessions.	*4.00*	*5.00*	*4.7000*	*.48305*
I give feedback regularly to trainees on their performance during practical work.	*4.00*	*5.00*	*4.5000*	*.52705*
Trainees are guided to analyze their successes and challenges in farming activities in this institution.	*4.00*	*5.00*	*4.5000*	*.52705*
Reflection sessions help my trainees to improve their understanding of agricultural practices.	*4.00*	*5.00*	*4.6000*	*.51640*
I link my trainers to practical experiences to theoretical concepts.	*4.00*	*5.00*	*4.4000*	*.51640*
I encourage my trainees to develop ideas and principles from their experiences.	*4.00*	*5.00*	*4.6000*	*.51640*
Our curriculum promotes understanding of agricultural theories and models.	*4.00*	*5.00*	*4.3000*	*.48305*
My trainees can explain the reasoning behind different agricultural practices.	*3.00*	*5.00*	*4.3000*	*.67495*
My classroom instruction supports the development of critical thinking skills.	*3.00*	*5.00*	*4.3000*	*.67495*
I encourage my trainees to test new agricultural ideas and techniques.	*4.00*	*5.00*	*4.3000*	*.48305*
Our curriculum allows trainees to apply learned concepts in new situations.	*4.00*	*5.00*	*4.7000*	*.48305*

I always give my trainees the opportunities to innovate and try out different farming methods.	*3.00*	*5.00*	*3.9000*	*.56765*
I always support trainees in implementing their own agricultural projects.	*4.00*	*5.00*	*4.6000*	*.51640*
My trainees can adapt their knowledge to solve practical agricultural challenges.	*3.00*	*5.00*	*4.2000*	*.63246*

Source: Primary Data, (2026)

The descriptive statistics indicate that trainers perceive curriculum implementation as highly effective, particularly in promoting practical, experiential, and competency-based learning. Most mean scores fall between 4.0 and 4.7, reflecting strong agreement with positive statements about teaching practices. Trainers report high engagement in hands-on agricultural activities (Mean = 4.4) and active involvement of trainees in fieldwork and demonstrations (Mean = 4.4). This suggests that practical training is well embedded in instructional delivery. Administrators across TVET institutions generally affirm trainees' positive assessments, emphasizing that the shift toward competency-based and practice-oriented curriculum implementation is a deliberate policy direction aligned with national TVET reforms. From administrators' perspectives, curriculum implementation has improved substantially in structure and intent. A1 noted that;

"We have deliberately aligned our training to competency-based approaches where learners must demonstrate what they can do, not just what they know."

"Practical training is no longer optional; it is central to our curriculum delivery, especially in agriculture, where learners must engage directly with real-world production systems."

(A4)

There is also strong evidence of reflective learning practices. Trainers strongly agree that they facilitate post-practical discussions (Mean = 4.7), encourage reflection (Mean = 4.1), and help trainees analyze successes and challenges (Mean = 4.5). These practices are essential for deep learning and skill internalization. Administrators of TVET institutions also noted that

trainers are encouraged to use experiential learning approaches, including reflection, group discussions, and continuous feedback. This was noted by both A1 and A5 as below;

"Our instructors are guided to facilitate learning rather than just lecture. Reflection and feedback are part of every practical session."

In terms of feedback and guidance, trainers report consistently high engagement. Regular feedback provision (Mean = 4.5) and support for improving understanding (Mean = 4.6) indicate that trainees receive continuous academic and practical support.

The findings further demonstrate strong alignment with conceptual and theoretical integration. Trainers report effectively linking theory to practice (Mean = 4.4), promoting understanding of agricultural models (Mean = 4.3), and supporting the development of critical thinking (Mean= 4.3). This suggests a balanced approach between theory and application.

Regarding innovation and application, trainers reported that the curriculum allows trainees to apply knowledge in new situations (Mean = 4.7), develop ideas from experience (Mean = 4.6), and implement their own agricultural projects (Mean = 4.6). However, slightly lower means for providing real-life farming experiences (Mean = 3.9) and encouraging innovation through trying new methods (Mean = 3.9) indicate some limitations in fully exposing trainees to real-world or experimental contexts.

Findings indicate that curriculum implementation is strongly practice-oriented, with a strong emphasis on hands-on training and field engagement. Trainers actively promote reflection, discussion, and feedback, enhancing experiential learning. There is effective integration of theory and practice, supporting conceptual understanding and critical thinking. The

curriculum supports application, adaptation, and innovation, though real-world exposure and experimentation could be strengthened.

The findings demonstrate that trainers are effectively implementing a competency-based, experiential curriculum in TVET institutions. Instructional practices strongly support practical skill development, reflective learning, and the application of knowledge. However, to further strengthen curriculum implementation, expanding real-life farming experiences and encouraging greater innovation and experimentation among trainees are needed. Overall, the trainer perspective confirms a high level of curriculum effectiveness, complementing trainee perceptions and reinforcing the reliability of the study findings. The administrators reported that;

"Ideally, practical sessions should be continuous, but sometimes they are interrupted due to limited facilities, weather challenges, or time constraints." (A2 and A4)

4.3 What is the Level of Practical Skills Development among Trainees of Agriculture in TVET Institutions in Gulu City and Omoro District?

Research question two sought to examine the level of skills development among agricultural trainees in Gulu City and Omoro District. The analysis in Table 4.5 below was based on the study constructs for practical skills development, including technical agricultural skills, manipulative and operational skills, problem-solving and decision-making abilities, and work-readiness attributes, as formulated in the conceptual framework under Chapter One.

Table 4. 5: Descriptive Statistics on the level of Practical Skills Development among Agricultural trainees, N = 133 (Trainees)

Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
I can perform basic agricultural tasks independently (e.g., planting, watering, harvesting)	*1.00*	*5.00*	*4.3835*	*1.00545*
I can operate agricultural tools and machinery safely and efficiently	*1.00*	*5.00*	*3.7444*	*4.40326*
I am confident in applying the techniques taught in class to real farming activities	*1.00*	*3.00*	*4.5263*	*2.80038*
I regularly participate in hands-on practical sessions	*1.00*	*5.00*	*4.3158*	*.93232*
The curriculum aligns with the skills required in real agricultural work	*2.00*	*5.00*	*4.3835*	*.77579*
I can identify and solve problems encountered during practical agricultural tasks	*1.00*	*5.00*	*4.1203*	*.96952*
The skills I am acquiring will make me employable in the agricultural sector	*2.00*	*5.00*	*4.6316*	*.66826*
I receive adequate guidance and supervision during practical exercises	*1.00*	*5.00*	*4.3835*	*.96705*
I am able to work effectively in a team during practical activities	*1.00*	*5.00*	*4.4812*	*.78433*
Practical training has improved my overall confidence in performing agricultural tasks	*1.00*	*5.00*	*4.4286*	*.91524*
I can apply sustainable and environmentally friendly practices	*1.00*	*5.00*	*4.5789*	*.68767*

Source: Primary Data, (2026)

The descriptive statistics above (Table 4.5) indicate that trainees report a high level of practical skills development in agricultural training. Most mean scores exceed 4.1, indicating strong agreement that the training has equipped them with relevant competencies. The highest mean score is for the statement that skills acquired will make them employable (Mean = 4.6316), followed closely by the ability to apply sustainable and environmentally friendly practices (Mean = 4.5789) and confidence in applying techniques to real farming activities (Mean = 4.5263). This suggests that the training is not only practical but also aligned with labor market and sustainability demands.

Trainees also demonstrate strong technical and operational competence. They report being able to perform basic agricultural tasks independently (Mean = 4.3835), participate actively in practical sessions (Mean = 4.3158), and work effectively in teams (Mean = 4.4812). Additionally, guidance and supervision during practical work (Mean = 4.3835) appear adequate, supporting skill acquisition.

The results further show positive outcomes in problem-solving and confidence-building. Trainees report being able to identify and solve problems during practical tasks (Mean = 4.1203) and note that practical training has improved their confidence (Mean = 4.4286). This reflects the effectiveness of experiential learning approaches in building both competence and self-efficacy. However, a comparatively lower mean is observed for operating agricultural tools and machinery (Mean = 3.7444), suggesting gaps in more advanced or technical skill areas. This may indicate limited access to equipment or insufficient exposure to mechanized farming practices.

The results indicate that trainees demonstrate strong practical skills, confidence, and readiness for employment in agriculture. The training effectively supports hands-on learning, teamwork, and problem-solving. There is a strong emphasis on sustainability and the real-world application of skills, though some gaps remain in technical skills related to operating machinery and equipment. The findings suggest that TVET agricultural training is highly effective in developing practical competencies and preparing trainees for the workforce. Trainees feel confident, capable, and employable, indicating successful curriculum outcomes. However, to enhance overall skills development, institutions should strengthen training in the use of agricultural tools and machinery, ensuring trainees acquire both basic and advanced technical competencies.

Descriptive Statistics Analysis on Practical Skills Development in TVET Institutions (Trainers).

Table 4. 6: Descriptive Statistics Showing Practical Skills Development in TVET Institutions N=10 (Trainers)

	Minimum	Maximum	Mean	Std. Deviation
My learners can effectively apply modern farming techniques taught during training.	*4.00*	*5.00*	*4.4000*	*.51640*
My learners are able to identify and manage crop pests and diseases appropriately.	*4.00*	*5.00*	*4.4000*	*.51640*
My learners can correctly use agricultural inputs such as fertilizers and seeds.	*4.00*	*5.00*	*4.5000*	*.52705*
My learners have gained sufficient knowledge in soil preparation and crop production practices.	*3.00*	*5.00*	*4.3000*	*.67495*
My learners can carry out livestock management practices such as feeding, breeding, and disease control.	*4.00*	*5.00*	*4.5000*	*.52705*
My learners can competently operate basic agricultural tools and machinery.	*4.00*	*5.00*	*4.4000*	*.51640*
My learners are able to maintain and repair farm tools and equipment when necessary.	*4.00*	*5.00*	*4.4000*	*.51640*
My trainees can safely handle farm inputs such as chemicals and fertilizers.	*2.00*	*5.00*	*3.8000*	*.91894*
My trainees can perform practical farming tasks (e.g., planting, irrigation, harvesting) efficiently.	*3.00*	*5.00*	*4.3000*	*.67495*
My learners are confident in using irrigation and water management systems.	*4.00*	*5.00*	*4.5000*	*.52705*
My learners can identify challenges in agricultural production and suggest appropriate solutions.	*3.00*	*5.00*	*4.5000*	*.70711*
My learners are able to make informed decisions regarding crop and livestock management.	*3.00*	*5.00*	*4.1000*	*.56765*
My learners can analyze farming situations and adapt practices to changing conditions.	*4.00*	*5.00*	*4.7000*	*.48305*
My learners are confident in solving unexpected problems that arise during farm activities.	*4.00*	*5.00*	*4.3000*	*.48305*
My learners can evaluate different agricultural methods and choose the most effective one.	*3.00*	*5.00*	*4.6000*	*.69921*
My learners can demonstrate punctuality and reliability in agricultural training activities.	*4.00*	*5.00*	*4.1000*	*.31623*
My learners can work effectively both independently and as part of a team.	*3.00*	*5.00*	*4.5000*	*.70711*
I follow safety guidelines and professional standards in farm work.	*4.00*	*5.00*	*4.2000*	*.42164*
My learners are always prepared to start or engage in agricultural work after completing my training.	*4.00*	*5.00*	*4.6000*	*.51640*
My learners always show a positive attitude and willingness to learn new agricultural practices.	*3.00*	*5.00*	*4.0000*	*.47140*

Source: Primary Data, (2026)

Table 4.6 shows that trainers perceive a high level of practical skills development among trainees, with most mean scores ranging from 4.1 to 4.7. This indicates strong agreement that trainees are acquiring relevant agricultural competencies. A key strength is technical agricultural competence. Trainers report that learners can effectively apply modern farming techniques (Mean = 4.4), manage crop pests and diseases (Mean = 4.4), and use agricultural inputs correctly (Mean = 4.5). Similarly, competence in livestock management practices (Mean = 4.5), soil preparation and crop production (Mean = 4.3), and the use and maintenance of tools and equipment (Mean ≈ 4.4) suggests that trainees are well-grounded in both crop and animal production skills.

The results also highlight strong development in problem-solving and adaptive skills. Trainees are perceived to analyze farming situations and adapt practices to changing conditions (Mean = 4.7), evaluate agricultural methods (Mean = 4.6), and propose solutions to production challenges (Mean = 4.5). This indicates that the training goes beyond routine skills to foster higher-order thinking and decision-making. In terms of practical performance and confidence, trainers agree that learners can perform farming tasks efficiently (Mean = 4.3), are confident in irrigation and water management (Mean = 4.5), and can solve unexpected problems (Mean = 4.3). These competencies are essential for real-world agricultural work.

The results further indicate positive outcomes in work-readiness attributes. Trainees are seen as ready to engage in agricultural work after training (Mean = 4.6), able to work both independently and in teams (Mean = 4.5), and demonstrating punctuality and reliability (Mean = 4.1). They also show a positive attitude toward learning new practices (Mean = 4.0). However, a relatively lower mean is observed for the safe handling of farm inputs, such as chemicals and fertilizers (Mean = 3.8), indicating a potential gap in safety practices and occupational health competencies. Additionally, moderately high ratings in decision-making

(Mean = 4.1) and attitude toward learning (Mean = 4.0) suggest areas for further strengthening.

The results above show that trainees have developed strong technical competencies in crop and livestock production, and there is strong development of problem-solving, adaptability, and decision-making skills. Trainees demonstrate confidence, efficiency, and readiness for agricultural work. Positive work attitudes and teamwork abilities are evident, and some gaps remain in the safe handling of agricultural inputs and, to a lesser extent, in decision-making and learner attitude.

The findings indicate that, from the trainers' perspective, TVET institutions are highly effective at developing practical agricultural skills. The training equips learners with not only technical competencies, but also critical thinking, adaptability, and work-readiness skills required in the agricultural sector. However, to further enhance training quality, institutions should strengthen safety training for handling farm inputs and reinforce decision-making and positive learning attitudes. Overall, the results confirm a strong alignment between training and the demands of modern agricultural practice, indicating successful skills development outcomes.

Findings from the Administrators in TVET Institutions on Practical Skills Development.

Most administrators generally corroborate the positive outcomes reported by both trainees and trainers. From their perspective, TVET agricultural programs are increasingly achieving their core mandate of producing competent, confident, and work-ready graduates.

They emphasized that:

Practical competence is visibly improving: Administrators observe that trainees demonstrate strong abilities in crop production, livestock management, and basic agribusiness practices, aligning with competency-based training goals.

Work-readiness and confidence are evident: Graduates are described as self-reliant, innovative, and capable of engaging in agricultural enterprises or employment, reflecting effective curriculum implementation.

Experiential learning is working: Institutions have strengthened hands-on training, demonstrations, school farms, and group-based activities, which administrators link directly to improved teamwork, problem-solving, and adaptability skills.

Sustainability and real-life application are embedded: Administrators note that training increasingly integrates climate-smart agriculture, sustainable farming practices and community-based learning, enhancing relevance to real-world agricultural challenges.

Despite these achievements, administrators highlight critical systemic and instructional gaps that constrain the development of optimal practical skills:

Limited access to modern agricultural machinery and equipment: Many institutions lack sufficient or up-to-date tools, which affects trainees' exposure to mechanized agriculture and advanced technologies.

Inadequate emphasis on safety and handling of agricultural inputs: Administrators confirm gaps in training on safe use of chemicals, fertilizers, and machinery, which pose risks to both trainees and future work environments.

Variability in higher-order skills development: While basic competencies are strong, some trainees still show inconsistencies in decision-making, critical thinking, and independent problem-solving, especially in unfamiliar situations.

Resource and infrastructure constraints: Challenges such as limited funding, insufficient training materials, and inadequate farm facilities hinder the full implementation of the curriculum.

Trainer capacity gaps: Although trainers are generally effective, administrators note the need for continuous professional development, particularly in modern agricultural technologies and competency-based assessment.

4.4 What is the Relationship between Curriculum Implementation and Practical Skills Development among Trainees of Agriculture in TVET Institutions in Gulu City and Omoro District?

Pearson Correlation Analysis

Table 4.7 below presents Pearson correlation results on the relationship between Curriculum Implementation (CI) and Practical Skills Development (PSD) among trainees in TVET institutions (*N = 133*).

Table 4. 7: Pearson Correlation Analysis

Correlations

		CI	PSD
Curriculum Implementation (CI)	Pearson Correlation	*1*	*.464***
	Sig. (2-tailed)		*.000*
	N	*133*	*133*
Practical Skills Development (PSD)	Pearson Correlation	*.464***	*1*
	Sig. (2-tailed)	*.000*	
	N	*133*	*133*

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

Correlation Coefficient (*r = 0.464*): The correlation between CI and PSD is positive and moderate. This means that as practical skills development improves, curriculum implementation also tends to improve. The strength of 0.464 indicates a meaningful but not overly strong relationship, suggesting that PSD is an important but not sole driver of curriculum implementation.

Statistical Significance ($p = 0.000$): The p-value is less than *0.01*, meaning the relationship is highly statistically significant. This confirms that the observed association is not due to chance, and there is strong evidence of a real relationship between the two variables.

Sample Size ($N = 133$): The analysis is based on a relatively adequate sample of trainees, which strengthens the reliability of the results.

Findings show a moderate positive relationship between practical skills development and curriculum implementation. The relationship is statistically significant at the *0.01* level, and improved practical skills development is associated with better curriculum implementation outcomes. The findings confirm that Practical Skills Development is significantly and positively related to Curriculum Implementation in TVET institutions. This implies that institutions that emphasize hands-on training, skill acquisition, and practical engagement are more likely to achieve effective curriculum implementation. However, because the relationship is moderate, other factors beyond PSD also influence curriculum implementation and should be considered in policy and practice improvements.

Chapter Five

Discussions, Conclusions, and Recommendations

5.0 Introduction

This chapter presents discussions arising from investigations into the status of curriculum implementation, the level of practical skills development, and the relationship between curriculum implementation and practical skills development in agricultural TVET institutions in Gulu City and Omoro District. The discussion is intended to answer the research questions, and conclusions are drawn from the study's findings. Finally, recommendations are made.

5.1 Discussions

This section discusses the findings; it begins by determining the status of curriculum implementation in agricultural TVET institutions in the Gulu City and Omoro District.

5.2 Assessing the Status of Curriculum Implementation among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District

Trainee results indicated that TVET institutions have made substantial progress in implementing a competency-based, practice-oriented curriculum that prepares trainees for real agricultural work. However, for optimal effectiveness, access to learning materials needs to be improved, curriculum organization strengthened, practical sessions made more consistent, and independent problem-solving skills promoted. Addressing these gaps would enhance the overall quality and impact of TVET curriculum implementation. Findings show that curriculum implementation is strongly practice-oriented, with a strong emphasis on hands-on training and field engagement. Trainers actively promote reflection, discussion, and feedback, enhancing experiential learning. There is effective integration of theory and practice, supporting conceptual understanding and critical thinking. The curriculum supports

application, adaptation, and innovation, though real-life exposure and experimentation could be strengthened.

The findings of this study closely align with the broader literature on competency-based Technical and Vocational Education and Training (TVET), particularly the works of Allais (2023), Oladiran& Ngozi (2020), Muhammed (2022), and Yadessa& Akwasi (2021), all of whom emphasize practice-oriented, competency-based learning as central to effective skills development.

First, the strong emphasis on hands-on training and field engagement observed in this study aligns with Allais (2023), who argues that competency based TVET systems are most effective when learning is grounded in real or simulated work environments. Similarly, Oladiran& Ngozi (2020) found that agricultural TVET programs that prioritize experiential learning significantly improve trainees' readiness for the labor market. The current findings reinforce this perspective by showing that trainees are actively engaged in practical activities, thereby enhancing their preparedness for real agricultural work.

Second, the study's finding that trainers promote reflection, discussion, and feedback aligns with Muhammed (2022), who emphasizes the role of reflective practice in deepening learning outcomes in TVET. The integration of reflective observation and active experimentation suggests that trainees are not merely performing tasks but also developing critical thinking and problem-solving skills. Yadessa & Akwasi (2021) similarly note that interactive pedagogies, such as discussions and guided feedback, enhance learners' ability to internalize and apply knowledge effectively.

Third, the effective integration of theory and practice observed in this study aligns with the literature. Oladiran& Ngozi (2020) emphasize that bridging theoretical instruction and practical application is essential for conceptual clarity and skill mastery. The findings

confirm that trainees can connect classroom knowledge with field-based experiences, supporting innovation and adaptability, key competencies highlighted by Muhammed (2022).

However, the gaps identified in this study, particularly limited access to learning materials, inconsistent practical sessions, and insufficient emphasis on independent problem-solving, echo concerns raised by Allais (2023) and Yadessa& Akwasi (2021). These scholars caution that without adequate resources and structured implementation, competency-based curricula risk uneven delivery. The need to strengthen real-world exposure and experimentation further aligns with Muhammed (2022), who stresses that continuous, authentic practice is necessary for developing higher-order competencies.

5.3 The Level of Practical Skills Development among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District

The findings from both trainees and trainers are strongly consistent with the intentions and design of Uganda's Lower Secondary Curriculum (commonly referred to as the new O'Level curriculum), formulated by the Ministry of Education and Sports (MoE&S, 2020) through its agency, the National Curriculum Development Center (NCDC). The curriculum emphasizes competence-based learning, practical application of knowledge, learner-centered pedagogy, and the development of transferable skills for work and life.

First, the evidence that trainees demonstrate strong practical skills, confidence, and readiness for employment directly reflects the Lower Secondary Curriculum's core goal of producing learners who are not only knowledgeable but also able to apply skills in real-life contexts. The curriculum prioritizes hands-on learning and project-based activities, which explains why trainees demonstrate competence in agricultural tasks and feel employable. This alignment suggests that TVET institutions are effectively building on the foundational competencies developed at O-Level, particularly in agriculture-related learning areas.

Second, the strong emphasis on teamwork, problem-solving, and adaptability observed in the findings aligns with the curriculum's focus on generic or cross-cutting competencies. These include critical thinking, collaboration, communication, and creativity. Trainees' ability to work effectively in teams and solve agricultural problems indicates successful internalization of these competencies, which are introduced early in the Lower Secondary Curriculum and reinforced in TVET training.

Third, integrating sustainability and real-world application of skills in TVET aligns with the curriculum's emphasis on environmental awareness and responsible citizenship. Agricultural training that incorporates sustainable practices reflects the curriculum's broader vision of developing learners who can contribute to socio-economic transformation while addressing environmental challenges. This continuity between O-Level and TVET strengthens the overall education-to-work transition.

Fourth, trainers' observations that trainees possess strong technical competencies in crop and livestock production further demonstrate that the competence-based approach is yielding positive outcomes. The development of decision-making skills, adaptability, and work readiness aligns with the curriculum's learner-centered methodologies, such as inquiry-based learning and continuous assessment.

However, the gaps identified in the findings, particularly in operating machinery, safe handling of agricultural inputs, and aspects of decision-making and learner attitudes, highlight limitations in the transition from the Lower Secondary Curriculum to TVET. While the O'Level curriculum provides a broad foundation of competencies, it may not sufficiently emphasize specialized technical skills such as mechanization and advanced safety procedures. This suggests a need for stronger articulation between secondary education and TVET, ensuring that foundational competencies are progressively deepened into specialized skills. Additionally, the gaps in learner attitudes and safety practices point to the need for

more deliberate reinforcement of values and work ethics, which are also key components of the Lower Secondary Curriculum. This indicates that while knowledge and skills are being transferred effectively, behavioral and attitudinal competencies require continuous strengthening across both curricula.

5.4 Relationship between Curriculum Implementation and Practical Skills Development among Agriculture Trainees in TVET Institution in Gulu City and Omoro District

Findings show a moderate positive relationship between practical skills development and curriculum implementation. The relationship is statistically significant at the *0.01* level, and improved practical skills development is associated with better curriculum implementation outcomes. The findings confirm that Practical Skills Development is significantly and positively related to Curriculum Implementation in TVET institutions. This implies that institutions that emphasize hands-on training, skill acquisition, and practical engagement are more likely to achieve effective curriculum implementation. However, because the relationship is moderate, other factors beyond PSD also influence curriculum implementation and should be considered in policy and practice improvements.

The findings of a moderate, positive, and statistically significant relationship between Practical Skills Development (PSD) and Curriculum Implementation (CI) align with global and national perspectives on TVET effectiveness, particularly those advanced by UNESCO (2016), Simon McGrath et al. (2020), George Afeti (2018), and the Ministry of Education and Sports Uganda (2019).

These reports collectively emphasize that hands-on training and skills acquisition are central to effective TVET curriculum implementation. For instance, UNESCO (2016) underscores that competency-based curricula achieve intended outcomes only when practical training is meaningfully integrated into teaching and learning. Similarly, McGrath et al. (2020) argue that strong workplace-oriented learning enhances both the relevance and implementation

fidelity of TVET programs. The current findings reinforce this position by showing that institutions that prioritize PSD through fieldwork, demonstrations, and experiential learning tend to implement curricula more effectively.

Afeti (2018) further highlights that, in the African context, practical skills training is critical for bridging the gap between education and labor market demands. The observed positive relationship between PSD and CI confirms that when trainees actively engage in skill acquisition, curriculum delivery aligns more closely with real-world expectations. Likewise, the MoES (2019) framework for TVET in Uganda advocates practice-oriented instruction to improve learning outcomes and graduate employability. The findings therefore validate national policy directions that prioritize competence-based and skills-driven education.

However, the moderate nature of the relationship is equally important and consistent with the broader literature. While PSD significantly contributes to effective curriculum implementation, it is not the sole determinant. UNESCO (2016) and McGrath et al. (2020) caution that curriculum implementation is a multidimensional process influenced by additional factors, including the availability of learning resources, instructor competence, institutional leadership, infrastructure, assessment systems, and industry linkages. Afeti (2018) also highlights systemic challenges in African TVET systems, such as inadequate funding and weak governance that can limit the impact of practical training alone.

Although the strengthening of PSD is likely to improve curriculum implementation across TVET institutions, its impact cannot be maximized universally without addressing these complementary factors. The moderate correlation suggests that in some contexts, even well-designed practical training may not yield optimal implementation outcomes if other systemic conditions are weak. Therefore, caution should be exercised not to over generalize PSD as a standalone solution; rather, it should be viewed as a key but interdependent component within a broader ecosystem of curriculum implementation.

5.5 Conclusions

This study concluded that TVET institutions have made commendable progress in implementing a competency-based, practice-oriented curriculum aligned with global best practices. The strong emphasis on hands-on learning, the integration of theory and practice, and the promotion of reflective learning demonstrate that the curriculum is largely effective in preparing trainees for the agricultural sector. However, persistent gaps in resource availability, the consistency of practical training, and the development of independent problem-solving skills limit the full realization of its potential.

The findings indicated that the new Lower Secondary Curriculum has laid a strong foundation for competency-based learning, which is effectively extended and enhanced in TVET agricultural training. Trainees' high levels of practical competence, confidence, and employability confirm that the curriculum is achieving its intended outcomes. However, gaps in specialized technical skills, safety practices, and certain attitudes indicate areas where alignment and progression between O-Level and TVET need to be strengthened.

The study concluded that Practical Skills Development is a significant and positive predictor of Curriculum Implementation in TVET institutions, aligning with both global and national perspectives. However, the moderate strength of the relationship indicates that effective curriculum implementation depends on a combination of factors beyond practical training alone.

5.6 Recommendations

Institutions should prioritize providing adequate learning materials and modern training equipment to support practical learning. Curriculum organization should be strengthened to ensure the systematic and consistent delivery of practical sessions across all training modules.

Trainers should receive ongoing professional development to adopt learner-centered approaches that foster independent problem-solving and innovation.

To improve coherence and effectiveness, there should be stronger alignment between the Lower Secondary Curriculum and TVET programs, particularly in technical and vocational pathways. The O-Level curriculum should provide greater exposure to basic agricultural mechanization and safety practices. TVET institutions should intensify training in machinery operation and the safe handling of inputs through structured practical sessions and industry partnerships. Continuous professional development for teachers and trainers should emphasize integrating attitudes, safety, and advanced technical competencies.

TVET policymakers and institutions should adopt a holistic approach to curriculum implementation by strengthening practical skills development and investing in instructor capacity, learning resources, infrastructure, and industry partnerships to maximize overall effectiveness.

This study didn't investigate all aspects of curriculum implementation and practical skills development under TVET in the Acholi Sub-Region; therefore, it suggests the following for future studies:

1. Influence of Industry-Based Training on Practical Skills Development among TVET Agricultural Trainees in Uganda.
2. Effect of Curriculum Delivery Approaches on Acquisition of Agricultural Skills in TVET Institutions.
3. Role of Experiential Learning in Enhancing Agricultural Competencies among TVET Students.

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Appendices

Appendix A: Questionnaire for Trainees

Dear trainee, I am conducting a study on Curriculum Implementation and Practical Skills Development among Agriculture Trainees in TVET Institutions Gulu City and Omoro District. Please respond honestly to the statements below. Your answers will remain confidential and will be used only for research purposes.

Thank you for your cooperation

Section A: Demographic Information

Please put a tick in the box below your response appropriately

SNO	QUESTION	RESPONSES		
01	What is your age bracket	10-15years	16-20years	Above 20years
02	What is your gender	Male		Female
03	What is your year of study	1st year	2nd year	3rd year
04	What program are you offering	certificate	Diploma	Other occupation
				Specify……
05	What is the duration of your training (month)	Please write here……		

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Section B: Curriculum Implementation (What is the status of curriculum implementation among Agriculture trainees in TVET institutions in Gulu City and Omoro District?)

Scale: 1= Strongly Disagree; 2= Disagree; 3= Not Sure; 4= Agree; 5= Strongly Agree

SNO	ITEM	1	2	3	4	5
01	The curriculum content is well-organized and easy to follow					
02	Teaching methods used in my program allow sufficient hands-on practice					
03	Learning materials (books, manuals, guides) are adequate and accessible					
04	Instructors effectively explain both theoretical and practical aspects of agriculture					
05	The curriculum aligns with the skills required in real agricultural work					
06	Scheduled practical sessions are conducted regularly as per the curriculum					
07	Assessment methods reflect both theoretical knowledge and practical competence					
08	The institution provides enough tools and equipment for practical training					
09	The curriculum encourages independent problem-solving during practical work					
10	Feedback from instructors helps improve my practical skills					
11	Trainees are given sufficient time for hands-on practice					
12	Practical activities are aligned with the curriculum objectives.					
13	Industrial attachments and field visits are regularly organized					

Section C: Practical Skills Development (What is the level of practical skills development among Agriculture trainees in TVET institutions in Gulu City and Omoro District?)

SNO	ITEM	1	2	3	4	5
01	I can perform basic agricultural tasks independently (e.g., planting, watering, harvesting)					
02	I can operate agricultural tools and machinery safely and efficiently					
03	I am confident in applying the techniques taught in class to real farming activities					
04	I regularly participate in hands-on practical sessions					
05	The curriculum aligns with the skills required in real agricultural work					
06	I can identify and solve problems encountered during practical agricultural tasks					
07	The skills I am acquiring will make me employable in the agricultural sector					
08	I receive adequate guidance and supervision during practical exercises					
09	I am able to work effectively in a team during practical activities					
10	Practical training has improved my overall confidence in performing agricultural tasks					
11	I can apply sustainable and environmentally friendly practices					

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Appendix B: Questionnaire for Instructors/ TVET Trainers

Dear trainer, I am conducting a study on Curriculum Implementation and Practical Skills Development among Agriculture Trainees in TVET Institutions in Gulu City and Omoro District. Please respond honestly to the statements below. Your answers will remain confidential and will be used only for research purposes.

Thank you for your cooperation

Section A: Demographic Information

Please put a tick in the box below your response appropriately

01	What is your age bracket	20-30years	31-40years	Above 40years
02	What is your gender	Male		Female
03	What is your highest academic qualification	Diploma	Graduate	Postgraduate
04	What is your teaching experience in TVET (years)	1-5years	6-10years	More than 10 years
				Specify……
05	Do you have a professional TVET qualification	Yes		No

Section B: Curriculum Implementation (What is the status of curriculum implementation among Agriculture trainees in TVET institutions in Gulu City and Omoro District?)

Scale: 1= Strongly Disagree; 2= Disagree; 3= neutral; 4= Agree; 5= Strongly Agree

SNO	Statements on Curriculum Implementation	1	2	3	4	5
CI1	**Concrete Experience (Learning by Doing)**					
	I engage my trainees in hands-on agricultural activities during training.					
	Practical sessions are adequately integrated into the training curriculum in this institution.					
	I provide sufficient opportunities for real-life farming experiences.					
	I demonstration farms or practical sites effectively during my instruction sessions.					
	I actively involve trainees to participate in fieldwork and practical demonstrations.					
CI2	**Reflective Observation (Learning by Reflecting)**					
	I encouraged trainees to reflect on their practical experiences after activities.					
	I facilitate discussions with my learners to review lessons learned from practical sessions.					
	I give feedback regularly to trainees on their performance during practical work.					
	Trainees are guided to analyze their successes and challenges in farming activities in this institution.					
	Reflection sessions help my trainees to improve their understanding of agricultural practices.					
CI3	**Abstract Conceptualization (Learning by Thinking)**					
	I link my trainers to practical experiences to theoretical concepts.					
	I encourage my trainees to develop ideas and principles from their experiences.					

	Our curriculum promotes understanding of agricultural theories and models.					
	My trainees can explain the reasoning behind different agricultural practices.					
	My classroom instruction supports the development of critical thinking skills.					
CI4	**Active Experimentation (Learning by Applying)**					
	I encourage my trainees to test new agricultural ideas and techniques.					
	Our curriculum allows trainees to apply learned concepts in new situations.					
	I always give my trainees the opportunities to innovate and try out different farming methods.					
	I always support trainees in implementing their own agricultural projects.					
	My trainees can adapt their knowledge to solve practical agricultural challenges.					

Section C: Practical Skills Development

S/N	Statement of Practical Skills Development	SA	A	NS	D	SD
PSD1	**Technical Agricultural Skills**					
	My learners can effectively apply modern farming techniques taught during training.					
	My learners are able to identify and manage crop pests and diseases appropriately.					
	My learners can correctly use agricultural inputs such as fertilizers and seeds.					
	My learners have gained sufficient knowledge in soil preparation and crop production practices.					
	My learners can carry out livestock management practices such as feeding, breeding, and disease control.					
PSD2	**Manipulative and Operational Skills**					
	My learners can competently operate basic agricultural tools					

	and machinery.					
	My learners are able to maintain and repair farm tools and equipment when necessary.					
	My trainees can safely handle farm inputs such as chemicals and fertilizers.					
	My trainees can perform practical farming tasks (e.g., planting, irrigation, harvesting) efficiently.					
	My learners are confident in using irrigation and water management systems.					
PSD3	**Problem-Solving and Decision-Making Abilities**					
	My learners can identify challenges in agricultural production and suggest appropriate solutions.					
	My learners are able to make informed decisions regarding crop and livestock management.					
	My learners can analyze farming situations and adapt practices to changing conditions.					
	My learners are confident in solving unexpected problems that arise during farm activities.					
	My learners can evaluate different agricultural methods and choose the most effective one.					
PSD4	**Work-Readiness Attributes**					
	My learners can demonstrate punctuality and reliability in agricultural training activities.					
	My learners can work effectively both independently and as part of a team.					
	I follow safety guidelines and professional standards in farm work.					
	My learners are always prepared to start or engage in agricultural work after completing my training.					
	My learners always show a positive attitude and willingness to learn new agricultural practices.					

Appendix C: Interview Guide (Instructors, Administrators, Policy Makers)

Section 1: Curriculum Implementation

1. Describe how the agricultural curriculum is delivered in your institution.
2. How do you integrate theory with practical activities?
3. What challenges do you face in implementing the curriculum effectively?
4. How do you assess trainees' practical competence?

Section 2: Practical Skills Development

1. How do you ensure trainees acquire hands-on competencies?
2. What strategies support experiential learning and problem-solving?
3. How do trainees demonstrate mastery of agricultural skills?
4. How do you link practical learning to local labor market needs?

Section 3: Institutional Infrastructure

1. What resources are available to support practical training?
2. How does infrastructure (farms, workshops, ICT) affect skills development?
3. What improvements are needed to enhance hands-on learning?
4. How does infrastructure interact with curriculum implementation to influence trainee outcomes?

Appendix D: A Map of Acholi Sub-Region Showing Gulu City and Omoro District

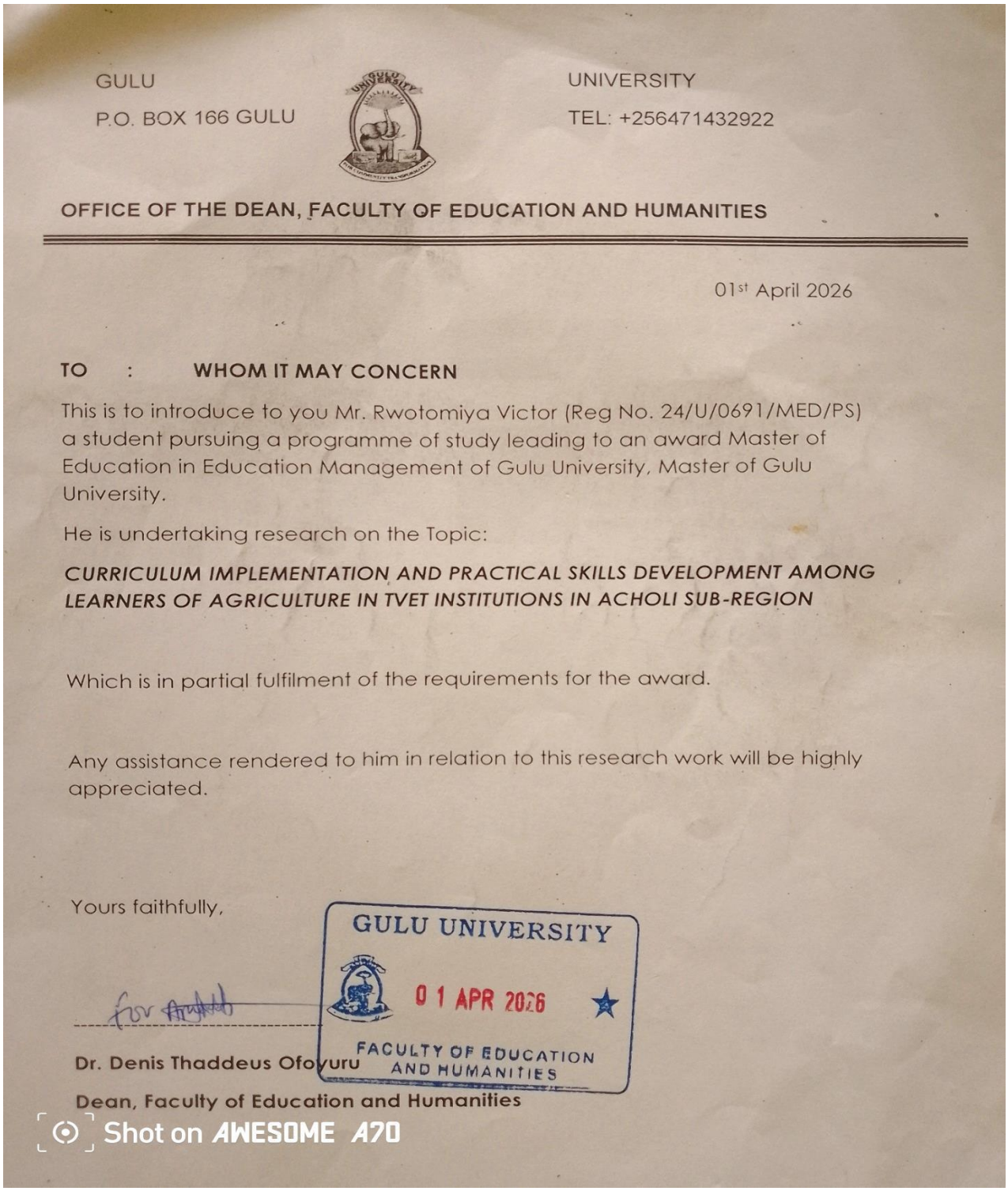


Appendix E: Krejcie and Morgan (1970) Sample Size Determination Table

The table below, developed by Krejcie and Morgan **(1970)**, is used to determine an appropriate sample size for a given population at a 95% confidence level and 5% margin of error.

Population Size (N)	Sample Size (S)	Population Size (N)	Sample Size (S)
10	10	220	140
20	19	240	148
30	28	260	155
40	36	280	162
50	44	300	169
75	63	320	175
100	80	340	181
150	108	360	186
200	132	380	191
250	152	400	196
300	169	420	201
350	186	440	205
400	196	460	210
450	205	480	214
500	217	500	217
600	234	700	248
800	260	900	269
1,000	278	10,000	370
50,000	381	100,000	384

Appendix F: An Introductory letter



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OFFICE OF THE DEAN, FACULTY OF EDUCATION AND HUMANITIES

01st April 2026

TO : WHOM IT MAY CONCERN

This is to introduce to you Mr. Rwotomiya Victor (Reg No. 24/U/0691/MED/PS) a student pursuing a programme of study leading to an award Master of Education in Education Management of Gulu University, Master of Gulu University.

He is undertaking research on the Topic:

CURRICULUM IMPLEMENTATION AND PRACTICAL SKILLS DEVELOPMENT AMONG LEARNERS OF AGRICULTURE IN TVET INSTITUTIONS IN ACHOLI SUB-REGION

Which is in partial fulfilment of the requirements for the award.

Any assistance rendered to him in relation to this research work will be highly appreciated.

Yours faithfully,

GULU UNIVERSITY
01 APR 2026
FACULTY OF EDUCATION AND HUMANITIES

Dr. Denis Thaddeus Ofoyuru

Dean, Faculty of Education and Humanities

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