

**THE RELATIONSHIP BETWEEN TEACHER TRAINING AND  
LEARNING OUTCOMES OF AGRICULTURE TEACHER TRAINEES  
IN PRIMARY TEACHERS' COLLEGES IN EASTERN UGANDA**

**BY**

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**DECLARATION**

I, Mike Nangono solemnly declare that the information that this dissertation is original and is a result of an independent investigation. In components that are indebted to the work of others, due acknowledgement has been made.

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## APPROVAL

This dissertation titled “The Relationship between Teacher Training and Learning outcomes of Agricultural Teacher Trainees in Primary Teachers’ Colleges in Eastern Uganda” has been submitted to Graduate School Kyambogo University with our approvals as dissertation supervisors.

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## **DEDICATION**

This piece of work is dedicated to my dear parents; Mr. Mwambu Dison and Mrs. Mary Mwambu, and my wife Olivia Awori and children Felix, Emma, Mark, Mercy, and Innocent for their moral and financial support they rendered to me during my academic life.

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## **LIST OF ACRYNOMS**

ANOVA	Analysis of Variance
CVI	Content Validity Index
GDP	Gross Domestic Product
ICT	Information and Communications Technology
NCDC	National Curriculum Development Centre
NEMA	National Environment Management Authority
PTCs	Primary Teachers Colleges
PCA	Principal Component Analysis
SOPs	Standard Operating Procedures
SPSS	Statistical Package for Social Scientists
UBOS	Uganda Bureau of Statistics
UCE	Uganda Certificate of Education
UNEB	Uganda National Examinations Board
UNESCO	United Nations Education Scientific Cultural Organization
USAID	United States Agency for International Development

## ABSTRACT

Effective teacher training is critical for the development of competent teaching workforce, less of which generates ineffective graduates. The study examined the relationship between teacher training and learning outcomes of Agriculture teacher trainees in Primary Teachers' Colleges in Eastern Uganda. Specifically, the study assessed the relationship between the pedagogical competencies of tutors and teacher trainees of Agriculture, examine the relationship between Agriculture subject matter competencies of tutors and teacher trainees of Agriculture, and examine the influence of training process on the competencies of teacher trainees of Agriculture in Primary Teachers' Colleges in Eastern Uganda. A cross sectional survey research and mixed methodology designs was used to select a sample of 200 respondents. Data were analyzed using descriptive, Pearson correlation coefficient, and linear regression. Study findings revealed that there is a weak positive significant relationship between pedagogical competencies and student learning outcomes ( $r=.278^{**}$ ;  $p=.000<0.01$ ). Further, there is a weak positive significant relationship between learning environment and student learning outcomes ( $r=.284^{**}$ ;  $p=.000<0.01$ ). In addition, the findings indicate that there is a strong positive significant relationship between pedagogical competencies in the subject matter and student learning outcomes ( $r=.411^{**}$ ;  $p=.000<0.01$ ). The Agriculture subject matter competencies (Beta=0.335,  $p<0.000$ ) and learning environment competencies (Beta=3.498,  $p<0.001$ ) have a statistical significant positive influence on learning outcomes of Agriculture teacher trainees. The investigator recommends that there is need to: establish college demonstration farms where teacher trainees of agriculture are provided a conducive environment for hands-on training to develop appropriate competencies for teaching Agriculture; develop a policy for every Primary Teachers' College to have a farm to ease practical teaching and learning of Agriculture; and to stem up supervision of teaching and learning processes to ensure implementation of active teaching and learning methods that the Ministry of Education and Sports trained Primary Teachers College on and to conduct regular in-service professional competence training to refresh and enhance teaching competencies of tutors. The investigator concludes that there is a substantial relationship between learning environment and student learning outcomes, between pedagogical competencies and student learning outcomes and a substantial relationship between tutor competencies in subject matter and student learning outcomes in Primary Teachers' Colleges in Eastern Uganda.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background to the Study**

Uganda's economy is primarily agricultural, with agriculture supporting close to 90% of the country's population (National Environmental Management Authority [NEMA], 2019). The sector accounts for about 50% of gross domestic product (GDP), and over 90% of the exports. Agriculture employment accounts for about 70% of the entire employment in Uganda, a share that is expected to drop significantly in the years to come because of the rural-urban migration of the energetic youth and drastic increase in the population against fixed land. Agriculture is, thus a very important sector in Uganda's economy, which makes it equally important that appropriate agricultural skills and training is carried out in learning institutions to address the challenge of dwindling agricultural productivity by building the capacity of young people in appropriate skills and competencies through agricultural education in schools. Thus, agriculture is the engine of economic growth for Uganda as it is the main source of exports, income and employment.

Despite all professions being important for human development, the teaching profession has clearly defined facets for propelling individuals on the way of a better well-being because it could be difficult to achieve development without the input of a teacher (Sarita et al., 2017). In Uganda, agriculture is taught in primary and secondary schools, vocational institutes, primary teachers' colleges, agricultural colleges, national teachers' colleges and universities. Although agricultural education is carried out in various learning institutions, this research study only focuses on Primary Teachers' Colleges because it is the primary teacher's colleges that feed primary schools upon which learners

(UNESCO, 1997) develop a foundation for appropriate competencies for the agricultural vocation and profession.

In Uganda, teachers of primary schools are trained in Primary Teacher's Colleges. The Primary Teacher's Colleges enroll students who have completed Uganda Certificate of Education (UCE) academic qualification with a minimum of six subjects passed in one sitting of the Uganda National Examinations Board namely; Mathematics, English, Chemistry, Biology, Physics, and agriculture. The primary teacher trainees are trained for two academic years. Each academic year is divided into a three-month term.

The teacher trainees are trained in the specific subject content in the area of specialty, teaching methodology and professional ethics. Under teaching methodology, the teacher trainees must develop skills and competencies in making schemes of work, writing lesson plans, preparing instructional materials, and engage in practical teaching through micro teaching and school practice in primary schools.

During primary teachers' college training, the trainees study 14 subjects namely; mathematics, English, Social Studies, Integrated Science, Religious Education, professional educational studies and School practice as core subjects. The other optional subjects are; Agriculture, Music, Physical Education, Local Language, Early Childhood Education, and Integrated Production skills. However, this study only focuses on Agriculture as a teaching subject because the investigator is a student of agriculture education and extension. In the first academic year, the Primary Teachers' College trainees study all the fourteen subjects and in the subsequent year (second

year) the trainees have the option of choosing between agriculture and Early Childhood Education. The subjects that primary teachers teach at primary school level include Mathematics, English, Science, Social Studies, Physical Education, and Agriculture among others.

The teaching of Agriculture in primary school stress imparting knowledge and practical skills required for increased sustainable agricultural production. Acquiring appropriate knowledge and skills in processing and value addition to agricultural products and self-employment are important for building the competency of a practical oriented agriculture instructor in Ugandan schools (National Curriculum Development Centre, 2012).

The overall objective of the Certificate Program in primary teaching is to prepare initial teachers /teacher educators by equipping them with requisite knowledge, competencies and positive mindset (Uganda's Ministry of Education and Sports, 2020). Thus, the teacher trainees are expected to gain deeper comprehension of understanding of philosophy and its effect on education, the inter relationship between education, technology, society and the world of work among others. The specific objectives include among others enabling teachers to acquire academic and professional knowledge, skills, values and attitudes in agriculture. From the objectives above, it is evident agricultural skills acquisition is emphasized. However, the fundamental question is whether teacher training in agriculture in Uganda equips teacher trainees with the appropriate pedagogical skills, subject matter competencies and skills on organizing a conducive learning environment. Hence, there is need to investigate the training process and its relationship with the learning



outcomes of Agriculture teacher trainees in Primary Teachers' Colleges in Eastern Uganda.

### **1.2 Personal Background and Experience**

I am a professional primary School Teacher and I majored in Agriculture double main as my teaching subject. I attained Bachelor's Degree in Education and a Diploma in Primary Education, and I have been teaching Agriculture for the last 25 years. Teaching Agriculture has become part of me. My educational background together with my field experience in teaching Agriculture acts as a foundation for my motivation to pursue this course of Master in Agriculture Education and Extension. According to my personal experience as a teacher of agriculture, Uganda's teachers seem to lack appropriate agriculture skills for effective teaching of the subject, which contradicts the pivotal goal of teaching agriculture to impart practical skills to pupils to make them self-reliant, resourceful and solve problems (Uganda National Examinations Board, 2018)

### **1.3 Statement of the Problem**

The Teacher Instructor Education and Training (TIET) strategic plan 2011 of the Government of Uganda reported that Agriculture teachers lack agriculture production skills failing to ignite the right skills, attitudes and competences to apply in the labour market. The ideal teacher training program should train teachers in a more hands-on approach to skill train teachers with in pedagogical and subject content competencies and effective management of the learning environment, which hands-on experiences would in turn be imparted in learners taught by such teachers.

However, Agriculture teachers appear to lack agriculture production skills since the early times of formal education in Uganda. Failing to ignite the right skills, attitudes and competences to apply in the labour market. This observation implies that Agriculture Teachers may have limited skills to pass appropriate agriculture competences onto the learners. It is therefore, not surprising that agriculture-training programs have been described as generally of low quality (Teacher and Instructor Education and Training [TIET], 2011), it is against that background that TIET is advocating for re-utilization of training facilities, new and improved curricular and human resource development for instruction and management of skills training.

In order to address the low quality of skill training and the inadequacies of competencies developed by Agriculture teacher trainees, Primary Teachers' College administrators instituted interventions like establishing demonstration and students' gardens and farms for hands-on learning and field excursions to places of practical learning in other communities like agricultural research organizations, however the low quality of skill training inadequacies in teaching competencies of the Agriculture teacher trainees still persist. The persistence of low quality of skill training and inadequacies in teaching competencies of agriculture teacher trainees could partly be attributed to the skill training and teaching competencies inadequacies of the tutors that train the Agriculture teachers in Primary Teachers' Colleges, especially in pedagogy and subject content. Even when the aims and objectives of the Agriculture teacher training programme in Uganda emphasizes the acquisition of both adequate knowledge and skills by the teachers, the expectations of the trainees, the mode and the character of the training determine the acquisition

of skills and competences to use in the world of work. Since teacher-training quality has a relationship with the competencies developed by teacher trainees (Kim et al., 2019), thus it is sufficient to investigate the relationship between skill training of Primary Teachers' Colleges and teaching competencies developed by Agriculture teacher trainees in Eastern Uganda. It is against that background that this study seeks to gain insights into the perceptions of Agriculture teacher trainees in Primary Teachers' Colleges on teaching competencies in Eastern Uganda,

#### **1.4 General Objective**

The general objective of the study was to examine the relationship between teacher training and learning outcomes of teacher trainees of Agriculture in Primary Teachers' Colleges in Eastern Uganda.

#### **1.5 Specific Objectives**

The study focuses to achieve these objectives:

- i) To assess the relationship between the learning environment and delivery of learning outcomes in Primary Teachers' Colleges in Eastern Uganda
- ii) To assess the relationship between the pedagogical competencies of tutors and teacher trainees of Agriculture in Primary Teachers' Colleges in Eastern Uganda
- iii) To examine the relationship between Agriculture subject matter competencies of tutors and teacher trainees of Agriculture in Primary Teachers' Colleges in Eastern Uganda

- iv) To examine the influence of training process on the delivery of Agriculture teacher trainee learning outcomes in Primary Teachers' Colleges in Eastern Uganda.

### **1.6 Research Questions**

This study addressed these research questions:

- i) What is the relationship between the learning environment and delivery of learning outcomes in Primary Teachers' Colleges in Eastern Uganda?
- ii) What is the relationship between the pedagogical competencies of tutors and delivery of learning outcomes in Primary Teachers' Colleges in Eastern Uganda?
- iii) How do the Agriculture subject matter competencies of tutors and delivery of Agriculture teacher trainees' learning outcomes relate in Primary Teachers' Colleges in Eastern Uganda?
- iv) How does the training process influence the delivery of Agriculture teacher trainees' learning outcomes in Primary Teachers' Colleges in Eastern Uganda?

### **1.7 Scope of the Study**

The study covered the geographical location, content and time of the study to examine the skills training and competencies possessed by the teacher trainees of Agriculture in Primary Teachers' Colleges in Eastern Uganda.

### **1.7.1 Geographical Scope**

The study was carried out in four Primary Teachers' Colleges in Eastern Uganda, principally Nyondo PTC in Mbale District in Bugisu sub-region, Mukuju PTC in Tororo District in Bukedi sub-region, Soroti PTC in Soroti District in Teso sub-region Kapchorwa PTC in Kapchorwa district in Sebei sub-region.

### **1.7.2 Content Scope**

The study focused on three aspects: examining the expectations for inclusion of agriculture as a subject in the PTC curriculum; establishing methods of training and facilities used to equip school Agriculture teachers with agricultural skills in Primary Teachers' Colleges and to find out whether they are in line with pedagogical methods and determining the best options for agricultural skills training in Primary Teachers' Colleges.

### **1.7.3 Time**

The study on the skills training and teaching competencies possessed by the teacher trainees of Agriculture in Primary Teachers' Colleges in Eastern Uganda was carried out between 2001 and 2022.

## **1.8 Justification of the Study**

In Uganda, a key objective of the Ministry of Education and Sports, Uganda's Vision 2040 and the National Development Plan III is to help students acquire the competencies they need to join the world of work and continue with their education as well (Teacher and Instructor Education and Training [TIET], 2011). The Ministry intends to reconfigure the post-tertiary education sector

and focus on agriculture education and training (TIET, 2011). This requires to produce teachers who are well equipped with skills and competencies to teach and train learners. The study examined the skills training and competencies of teacher trainees of Agriculture in Primary Teachers' Colleges in Eastern Uganda, with a focus on the learning environment, pedagogical and subject matter competencies for the effective delivery of teaching and learning processes. Producing a competent teacher of Agriculture could in turn help to build skilled and competent learners that would contribute to the development of the agriculture sector for self-reliant household and national economies.

### **1.9 Significance of the Study**

The results of this study could benefit teacher trainees and teachers, tutors of agriculture, Primary Teachers' College administrators, Ministry of Education and Sports and Local Governments. To the policy makers that comprise of Local Government and Ministry of Education and Sports and other government agencies supporting teacher education like ENABEL, Global Partnership for Education, United States Agency for International Development (USAID), the findings of this study could inform policy that aims at improving the quality of teacher and teacher education in Uganda. The findings of this study could inform the tutors in Primary Teachers' Colleges on how best to build their skill and competencies level for quality training of teachers of agriculture. To the teacher trainees of Agriculture, this study could raise their awareness on the existing gaps in teacher training in PTC, thus demand and advocate for better training of teacher trainees for improved service delivery in the teaching and learning process. The findings of this

study could further contribute to the body of literature for use by scholars and researchers of agricultural and teacher education in Uganda and elsewhere.

### **1.10 Limitations and Delimitations**

This research study was expected to experience some limitations, which included COVID-19 pandemic that delayed the collection of data and limited the accessibility of the respondents located in the different parts of Eastern Uganda, and elsewhere in the country. However, the pandemic was counteracted by telephone collection of data that allowed distant interaction with the respondents to gather the required data. In instances where, physical interaction was inevitable, the investigator observed the Standard Operating Procedures (SOPs) as recommended by the Uganda's Ministry of Health like wearing masks, sanitizing and social distancing (Uganda Ministry of Health, 2020).

### **1.11 Theoretical Framework**

The study used the comprehensive model of teacher competence as an interpretive framework to gain insights into the perceptions of teacher trainees of agriculture in Primary Teachers' Colleges on competencies for teaching in Eastern Uganda (Roelofs & Sanders, 2007). Various domains have been used to measure the competence performance of teachers including planning and preparation, instruction, classroom environment, and professional responsibilities. With regard to the classroom environment, performed activities have to be conducted in a conducive environment that cultivates a culture for teaching and learning and creates a safe environment. The instruction should create an atmosphere of mutual support to the learning

process. Therefore, these actions tend to focus on the consequences of the teaching and learning actions rather than the actions themselves.

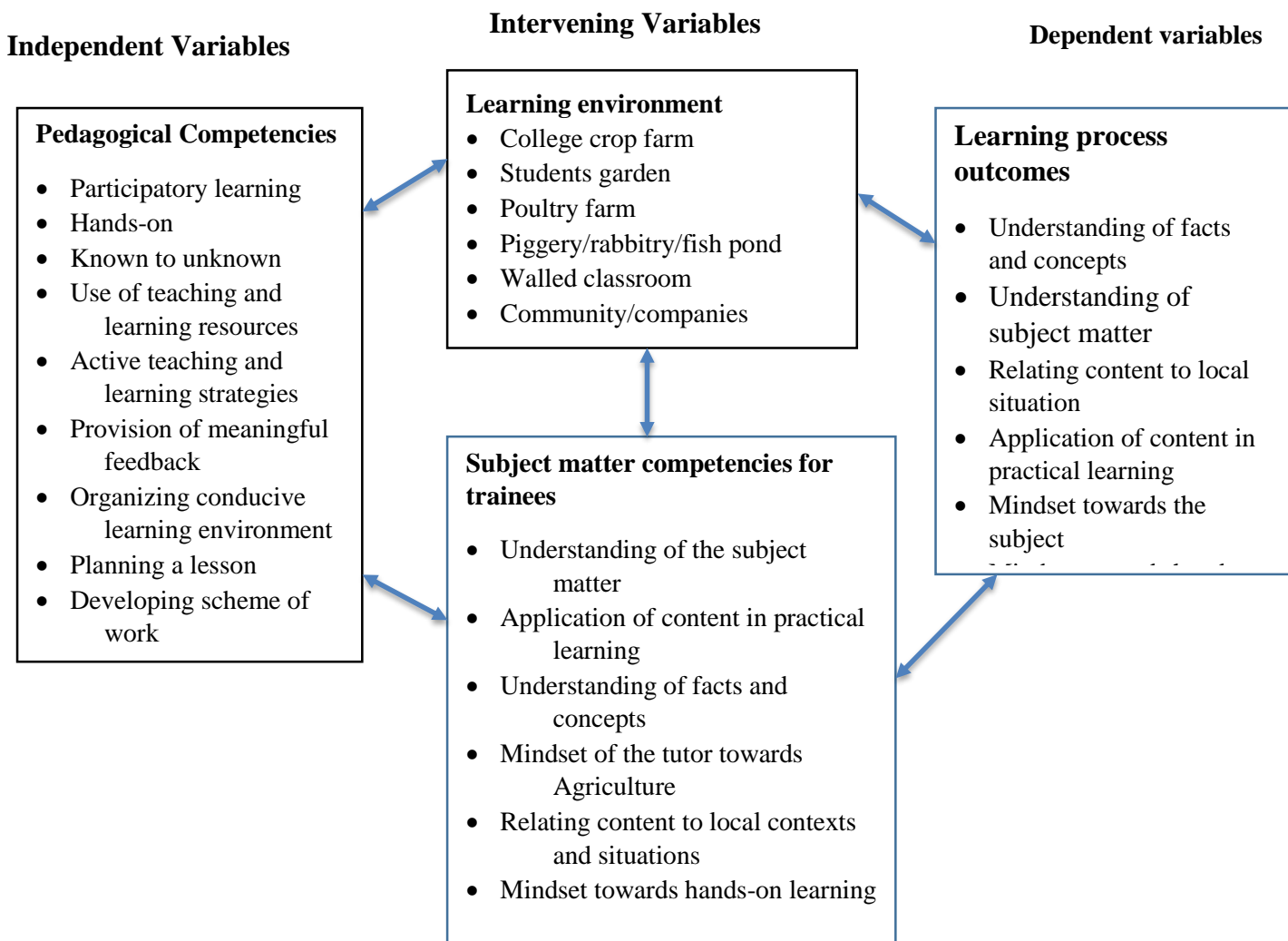
Furthermore, the Dutch Foundation of Professional Teaching Competence developed seven domains as a set of proficiency standards for teachers in primary and secondary schools. The seven domains include; interpersonal competence to create a friendly and cooperative climate for open communication, pedagogical competence to develop a psychologically safe learning environment and well-being of learners, and subject matter and didactic competence which is the ability to guide learners to acquire basics of the subject matter and using this knowledge in their daily and working life. Others include organizational competence, which is the ability to create an orderly on-task climate in daily duties, competence in cooperating with colleagues, and gear one's own work to the work of colleagues and contribute to general school organization. Further, competence in cooperating with the school environment implying cooperating with parents and other people and organizations within the school is another aspect. Lastly, context competence in reflection and development which implies reflecting on one's own competence and to keep up with the changing demands and developments within the profession.

Therefore, the comprehensive model for assessing teachers and learners' competencies is suitable for examining the perceptions of teacher trainees of agriculture in Primary Teachers' Colleges on the teaching competencies in Eastern Uganda. Competence variables used in this study namely; pedagogical, subject matter, learning and learning process match those



competence domains described by the comprehensive model of teacher competence as an interpretive framework. There is therefore an alignment between the comprehensive model of teacher competence (Roelofs & Sanders, 2007) to the variables used in this study. Thus, the comprehensive model of teaching competence can be used to explain the interrelations among the pedagogical competencies, subject matter competencies, learning environment competencies and the training process variables used in this study. Theoretical application of the comprehensive model of teaching competence in the perceptions of teacher trainees of agriculture in Primary Teachers' Colleges on competencies for teaching Agriculture in primary schools in Eastern Uganda has been organized into pedagogical competencies, subject matter competencies, learning environment competencies, training process competencies as learning outcomes.

## 1.12 Conceptual Framework



**Figure 2.1. Conceptual Framework**

The conceptual framework shown in Figure 2.1 considers three competencies that affect the teaching outcome of teacher trainees of agriculture in teaching Agriculture subject in primary schools in Eastern Uganda as; Pedagogical competencies, subject matter competencies and learning environment competencies. The relationship among variables is indicated only by the double-pointed arrow, which shows a relationship or an interaction among the independent, intervening and dependent variables.

As shown in Figure 2.1, a full understanding of the perceptions of teacher trainees of agriculture in Primary Teachers' Colleges on the teaching competencies begins by analysing the three domains that influence the training outcomes of teacher trainees of agriculture: Pedagogical competencies, subject matter competencies, and learning environment competencies. A combination of agriculture teacher trainee's pedagogical competencies in teaching include; use of participatory learning, hands-on, of teaching and learning resources, use of active teaching and learning methods. Others include providing meaningful feedback, psycho-social stability of learners, lesson planning, developing schemes of work have an effect on both the development of subject matter and learning environment competencies for effective delivery of teaching-learning process or learning outcomes.

However, external to this conceptual framework is environmental contexts such as societal culture, political conditions, and geographic settings and weather conditions, and the prevailing peace and tranquility in the regions and nation (Laverack et al., 2007).

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Introduction

This chapter reviewed the existing literature related to the perceptions of Agriculture teacher trainees on skill training in Primary Teachers' Colleges and teaching competencies in Eastern Uganda. The relevant literature reviewed include skill training, theories, pedagogical competencies, agriculture subject matter competencies, learning process and learning outcomes to identify gaps in literature. The main sources are published journal articles, textbooks, and governmental manuals.

### 2.2 Theoretical Review

*Theory of Curriculum Implementation.* Concepts of the Theory of Curriculum Implementation by Hattingh et al. (2013); Rogan and Aldous (2007). This theory creates a detailed collection of factors surrounding the curriculum implementation processes. It consists of three main parts called constructs that include (i) the profile of implementation (Learning environment), (ii) the capacity to support implementation and (iii) the external factors. The profile of implementation (Learning environment) shows how the intentions expected in the curriculum are put in practice in the form of classroom interactions, science practical work and assessment. The learning environment plays a major role in enabling teachers at school to identify their strengths by interacting with students and the diversity and adequacy of the resources will improve the intensity of sub-constructs of the profile implementation (Lizio et al., 2002).

The schools' capacity to support implementation is dependent on a number of factors not limited to the sub-constructs like school management, learner factors, teacher factors and physical resources. The school management cannot be ignored. School heads are expected to collaborate with subject teachers and students to identify inadequate resources and plan on how to provide them timely. Schools have different capacity in terms of resources and curriculum implementation will depend on the degree of innovation put into place by teachers and learners to utilize locally available resources (Nsengimana et al., 2020). Teacher factors like motivation, confidence, commitment to teach and subject matter are important in curriculum implementation and improvement. Insufficient mastery of the subject matter and inadequacy of pre-service, in-service and seminars training, will become a long-term, ongoing hindrance in the implementation of curriculum (Rogan & Aldous, 2007). Learner factors like home background may be a factor in curriculum implementation. If the learner lacks support from parents to practice learned skills at home.

Lastly, the external factors like monitoring, funding agencies and community have a greater contribution to school curriculum improvement. From the framework, successful curriculum implementation calls for the three constructs in order to succeed in practical instruction of vocational subjects Education is meant to satisfy needs of the community and solve problems by ensuring learners acquire relevant education. This theory is relevant to this study since institutional preparedness relies on the teacher training (Pedagogical Competencies), physical resources (Learning Environment), which are infrastructural and instructional resources. According to Ouma et al.

(2020), integration of visits to community farms for practical lessons greatly improves the competencies of teachers.

### **2.3 Perceptions of Agriculture Teacher Trainees in Primary Teachers**

#### **Colleges on Learning Environment and Student Learning Outcomes**

The way education is delivered has a substantial impact on the way in which teacher trainees develop teaching competencies (Ouma et al., 2020). The pedagogy, curriculum, school rules and climate, assessments, and learning from other learning institutions are all key factors in improving skill training in teacher education. However, the classroom is the main environment where all factors closely interact to bring about knowledge acquisition and skills development in teacher training (Yoshikawa et al., 2015a; 2015b). In the classroom, teacher trainees observe the modeling of the appropriate skills by their instructors and can practice them themselves. It is therefore, important to train teachers to acquire skill sets that are much needed in teaching to deliver effective competencies to teacher trainees, and be able to deliver these skills to other learners.

Provision of feedback and promoting reflective practice in teacher trainees is important (Yoshikawa et al., 2015a; Yoshikawa et al., 2015b). Sustained deliverance of meaningful developments in education requires feedback that is purposed for the continuous improvement and ongoing support of teacher trainees. Interventions on feedback would emphasis on actual performance as effective means to improve skill-training environment (Baker, 2018).

It is important for educators to operate within a framework of meaningful pedagogy that recognises learners' autonomy, and to promote their control of

their learning (Darling-Hammond, 2019). Effective educators strive to create conducive learning environment for learners to feel good about themselves; and develop a positive mindset about themselves (Smith & Yasukawa, 2017). This requires use of critical pedagogy and problem-solving strategies to promote a sense of self-control, self-awareness, and motivation for learning (Freire, 1972). The purpose of these approaches is to enhance human qualities in learners and enable them to navigate their learning and careers (Osborne et al., 2007). Important also is to creative ways to ensure learning experiences involve the transfer of information from college or university campuses to the world of work. This rule could be made possible through use of participatory learning techniques that attract learner active involvement in the entire learning process (Burke et al., 2009).

Further, it is also important to realign learning in schools to the tasks and activities at the workplaces to make learning closer to the real life situations as opposed to the current practice that promotes a mismatch between school and workplace environments. Off-school field work-related learning helps to reduce learner's boredom and motivates both the teacher and the student during the teaching and learning process (Puspitarini & Hanif, 2019). Vocational subjects require learners to carry out projects and experiments both at school farm and laboratory to increase knowledge retention and help students acquire practical skills, develop a positive attitude towards learning and apply the skills learnt in and out of schools (Akani, 2015; Behrendt & Franklin, 2014).

A research conducted in Finland on learner's competencies in vocational subjects indicated that no matter how trained and competent a teacher is,

learners cannot understand fully, apply skills and concept learned without practicing them (Rissanen et al., 2018). Therefore, schools use farms in the practical teaching of vocational subjects since they make learning real and authentic. An ideal school farm should have plants and animals used to teach across all grades, a section for museum, demonstration, commercial section and project section (Njura et al., 2020). A school farm that has no activities and projects meant for learning in a specific field, is not a farm (Baker, 2019). Poor student performance is neither a measure of the subject difficulty nor incompetence of a teacher but it is as a result of the resources available for instruction and the degree to which students interact with their environment. Typically, learning environment for agriculture include; workshops for agriculture well furnished with metal and woodwork tools, gas and electric welders; tractors, power generators, cultivators, fuel storage tank, combine harvesters, a science laboratory, school farm, vehicle and funds for running agriculture department (Onwumere et al., 2016)

Thus, the certainty is that teachers have a desire to present the best learning environment for learners in order to give every student an opportunity to learn well. A teacher's ability to manage learning activities is a critical set of competencies that must be possessed all teachers. Therefore, a learning environment with diverse learning resources reduces learner's boredom and motivates both the teacher and the student during the learning process, thereby influencing positively the delivery of subject matter in agriculture.



## **2.4 Relationship between Pedagogical Competencies of Tutors and Teacher Trainees of Agriculture in Primary Teachers Colleges**

Teachers desire to provide best learning to their students. A teacher's ability to manage learners learning is called pedagogic competence. Teachers need strong and efficient professional competencies since they are responsible for operating the educational system. Pedagogical competencies constitute part of the teachers' professional competencies that differentiate professional from untrained teachers because of the level of success of the learning process and the outcomes of their students. The pedagogical competency is obtained through continuous and systematic a learning effort that involves the interaction with co-teachers, learners, parents among others (Korthagen, 2013).

Pedagogical competencies as the means of teaching and learning management that covers discerning the students, making teaching plans and implementing then in the classroom, evaluating, and developing students' potential (Lozano et al., 2017). This competence constitutes the key to efficient education because it is closely connected with three essential education factors: efficiency and achievement, teachers' professional development and societal change (Suciu & Mata, 2011). Haenilah (2013) postulates that pedagogical competencies are influenced by an attempt to set up suitable condition for students to actualize themselves in knowledge comprehension, skills, or behavioral building; finally, its value is highly effected by academic, social, and personal skills as the requisite for constructing pedagogical competencies. Therefore, it is necessary for teachers to possess pedagogical competencies so that they can help the students to achieve the intended the aim of education.

Furthermore, Akhyak et al. (2013) summarizes pedagogical competence into three competences: competency in teaching plan, teaching and learning process, and competency in assessment and evaluation. According to them, having competence in planning and designing teaching reinforce teacher competence dealing with ability of explaining objective, choosing and arranging materials, deciding methods and strategies of learning, deciding source of learning, media, tools, and time allocation. Meanwhile, competence in teaching and learning process comprises teachers' ability in opening lesson, conveying materials, using teaching method and media, using communicative language, encouraging students, well prepared activities, use of interactive learning, provision of feedback, conducting assessment and evaluation, and timely and effective delivery of the learning process.

Education systems that flourish tend to focus skill training for the trainees to develop appropriate competencies and learning outcomes (Ramsaroop & Petersen, 2017). Skill training entails a process in which skills development are given utmost priority, and especially disbanding old and obsolete skills in preference to the new skill sets that match the new demand of the world of work. Integrating skill development in teacher education programmes requires a large vision and comprehensive approach for accomplishment of desired output. Teachers need to know about different teaching skills before facing the classroom with varied learners with a range of diverse needs. ICT is seen as a critical component in the key competencies both as a skill and as a tool in the development of other skills (Abbitt, 2011). The challenge for ICTs in Teacher Education is to assure that the new generation of teachers, as well as current teachers, are well prepared to use new learning methods, processes and

materials with the new ICT skills for learning and teaching. Today's life and work environments require far more than thinking skills and content knowledge. Cultivating the ability to navigate the complex life and work environments requires novice teachers to develop adequate soft skills and life skills.

Meaningful vocational pedagogy as promoted by the framework of social learning promotes cooperation over competition for learners to share their experiences and potentials to optimise active participation in collaboration in learning (Almajed et al., 2016; Jjuuko et al., 2019). Educators that possess authoritative traits tend to perpetuate domination culture and competition, which limit cooperation capacities as social beings (Sennett, 2008).

A meaningful vocational pedagogy as a social practice integrates approaches that connect theoretical and cognitive learning with practice to enhance vocational interests, career maturity and working competence (Berger, 2003). Such vocational pedagogies tend to build craftsmanship because it combines working and learning (Armatas & Papadopoulos, 2013; Streumer & Kho, 2006). An effective pedagogy tends to recognise a mutual connection between head, hand and heart because separation creates poor comprehension and performance in those skills (Žižanović, 2013). Such pedagogy is not anchored in the traditional dichotomy of theory and practical sessions as argued by the Sennett's: . . . [i] All skills, even the most abstract begin as bodily practice; . . . [ii] technical understanding develops through the power of imagination . . . (Sennett, 2008). Use of work place-related learning approaches tends to provide real-life world experiences that do not alienate learners from the

realities of desired occupations (Guile & Griffiths, 2001; Streumer & Kho, 2006). Immerse students in active and authentic learning (Burke et al., 2009).

Thus, pedagogic competence affects learning outcomes and is a reflection of learner's understanding of the subject matter delivered by the teacher. This implies that the success of the teacher in delivering appropriate learning outcomes is pegged on the effective use of appropriate pedagogical strategies.

## **2.5 Competencies in Teaching Subject Matter**

The focus of this study is Agriculture teacher trainees' perception towards skill training and teaching competencies. Students' perception toward their teachers' pedagogical competence affect students' achievement (Hallinan, 2008). This is due to the fact that, the responsibilities of teachers and that of schools has been changing, and so are expectations of learners from them. Teachers are now required to teach in multicultural classrooms, with an integral attention to students with special needs, use ICT for teaching, provide evaluation outcomes as accountability, and involve parents in school activities (OECD, 2009). Furthermore, teachers need to help students acquire skills that are easiest to teach and easiest and creativity, critical thinking, problem solving, and decision-making competencies (OECD, 2011).

Teaching learners to develop competencies demands complex combinations of knowledge, skills, understanding, values and attitudes, leading to effective action in situation (Yoshikawa et al., 2015a; 2015b). Since teaching is a more demanding task and responsibility, it requires use of values or assumptions concerning education, learning and society, a teacher's personal concept of their possessed competences.

Competencies are thus practical practices that a learner is expected to do by the end of the learning session. Competencies compose of broad knowledge that involves an individual's to know the required knowledge and be able to express it practically (Diep & Hartmann, 2016). Gudmundsdottir & Shulman (1987) categorizes teacher competencies as subject-matter content knowledge, pedagogical content knowledge, extra-curricular that for use in teaching (Kleickmann et al., 2012).

Accordingly, competency in teaching encompasses an individual's ability to integrate theory and practice in classroom learning activities (Diep & Hartmann, 2016). Teachers therefore, must be able to design the objective of teaching and learning bearing in mind the learners' background and use the different teaching methods that adequately assist learners to comprehend and reflect on the learning objectives (Ball et al., 2008). Professional Competency requires vocational teachers' ability to grasp the learning content that could be used to respond appropriately to the demands of the world of work (Grollmann, 2008). In ability of a teacher to impart appropriate competencies produces graduates who are deficient of appropriate competencies demanded by the world of work (Oluwasola, 2014). Most important, a teacher's possession of effective communication competencies is a prerequisite to effective delivery of the learning content (Oluwasola, 2014). The critical communication tends to occur in the classroom during the learning process (Amiruddin et al., 2015; Diep & Hartmann, 2016). In addition, there is also a domain of a teacher's personal competency that include self-image, ethics and personal goals that exert influence the level of job performance (Yusof et al., 2015). Teachers therefore, require continuous update of their competencies

including new relevant theories, and new technologies to use in the learning process (Roberts et al., 2006).

However, Amiruddin et al. (2015) emphasized that teachers tend to be academic-trained, with limited work place experience. Thus, limited experience makes vocational teachers more textbook focused and more academic-oriented that promotes theoretical learning. In addition, teachers require capability to both teach theory in class and guide learners in the workplace through workshop or laboratory learning environments that very much relate real life situations. Any reforms in teacher education demands changes in teachers' character and leadership to match the global era rapid demands in the world of work (Sardiman, 2007).

A teacher's personal competence is associated with his/her personality, discipline, responsibility and committed among others (Sagala, 2007). Critical in a teacher's personality is his/her social competence that includes the ability to communicate with various stakeholders of education, proficiency in using information technology, and the capability network with the various sections of the community.

Darling-Hammond (2019), emphasized the use of seven indicators that could be used to identify effective teaching as good organization of material, effective communication, mastery of and enthusiasm for the subject matter, positive attitude toward learners, provision of fair value, flexibility in approaches to learning, and can produce good learners. These indicators are based on a review of the process and the achievement of learning outcomes of learners (Baker, 2018).

## **2.6 Delivery of the Student Learning Outcomes**

According to Baker (2018) student learning outcomes is a relatively sedentary change in a person's behavior as a result of interaction someone with the learning environment. Low student learning outcomes is caused by several factors among which is the use of the conventional method learning that is used by lecturers still conventional so that it discourages students to develop tend to impact on the learning outcomes The low one. Lack of communication between students and lecturers. Then, lecturer problems in applying competence when teaching. This is visible when the teacher ignores the components in lecturer competence, especially competence that directly relate with the process learning to teach is like neglecting giving motivation to students related to the material to be delivered, the use of that teaching method less varied, and lack of feedback from students when the lecturer explains. So deep this opportunity based on that background the researcher took the title Competency Influence Pedagogy of student learning outcomes in physics lessons.

Further, Baker (2018) contends that learner's achievement results from learning that is dominated by academic as it is reflected in the capability and performance of learners in comprehending multidisciplinary subject matter in cognitive, affective, and psychomotor skills. The cognitive domain is associated with conceptualization, effective reasoning, thinking skills, recognition knowledge, deals with feelings, determination, understanding, emotions and acceptance or rejection of content. Psychomotor skills relate to the competence to job performance that involves the use of the limbs and competencies associated with the use of the physical movement. The

achievement attained by a learner is a target measured by the competence of the learner to learn, with an attached score as an indicator. It is important to note that the score is not the final indicator as most people would think but an individual's level of performance in a given job is taken as a final indicator (Baker, 2018).

## **2.7 Summary of Literature Review**

It is evident that a meaningful pedagogy as a social practice integrates various learning approaches that link theoretical and cognitive learning with practice to motivate interests, working competence and career maturity (Berger, 2003). In addition, meaningful pedagogies tend to build on craftsmanship combined with work place learning (Armatas & Papadopoulos, 2013; Streumer & Kho, 2006). These tend to prevent the dangers of separating the head and hand from the heart in the learning process (Brühlmeier, 2010).

A pedagogy that takes into account the linkage between head, hand and heart promotes understanding and expression of skills and performance (Sennett, 2008). Skills development begins as bodily practice; and the technical understanding develops through imagination and motivation (Sennett 2008). It is imperative thus, while examining a meaningful vocational pedagogy, skills training and competencies possessed by the learners and their tutors be put into context, the gap this study is addressing.



## **CHAPTER THREE: METHODOLOGY**

### **3.0 Introduction**

In this chapter methods and procedures used in the study including geography of study area, study design, study population, sample size and sampling, instrumentation, data collection, and data analysis are described.

### **3.1 Research Design**

The researcher adopted a cross sectional survey research designs to study the perceptions of agriculture teacher trainees in Primary Teachers' Colleges on teaching competencies in Eastern Uganda (Urdu, 2010). The cross sectional survey research design was adopted because it allows data to be collected at any given point in time. The quantitative research approach emphasized on objective measurements and numerical analysis of data collected from tables to make meaning out of it across groups of people. Cross-sectional survey research design was employed because it enabled the study to target a large group of respondents to obtain information without making a follow up of the respondents once the data was obtained from them.

### **3.2 Geography of Study Area**

The geographical area of the study was Primary Teachers' Colleges in Eastern Uganda; principally in Nyondo PTC in Mbale District in Bugisu sub-region, Mukuju PTC in Tororo District in Bukedi sub region, Soroti PTC in Soroti District in Teso Sub-region, Kapchorwa PTC in Kapchorwa District in Sebei sub region. The study populations comprised of agriculture teacher trainees in the above mentioned Primary Teachers' Colleges. The Eastern Uganda is

composed of five sub regions namely; Busoga sub-region (with Jinja and Bishop Willis Core PTCs), Bukedi sub region (Busikho, Mukuja, and Kabwangazi PTCs), Bugisu sub-region (Nyondo PTC), Teso sub-region (Bukedea, St Aloysius Core, and Soroti Core PTCs) and Sebei sub-region. All these are government or public Primary Teachers' Colleges. Therefore, it is sufficient to note that the study was carried out in only government-aided Primary Teachers' Colleges because there are no privately operated Primary Teachers' Colleges in Eastern Uganda as most of them closed due to inability to enroll adequate number of teacher trainees to meet the cost of running Primary Teachers' College.

### **3.3 Study Population**

The study on the perceptions of Agriculture teacher trainees in Primary Teachers' Colleges on the teaching competencies in Eastern Uganda focused on teacher trainees undertaking a two-year training to teach primary schools level in Uganda. Further, the study focused only on teacher trainees that were taking Agriculture as a teaching option and were in second year of their training. Agriculture teacher trainees in their second year of training participated in this study because they were deemed to have taken longer in Primary Teachers' College training program and have developed expected competencies required for effective teaching of Agriculture in primary school level in Uganda.

### **3.3 Sample Size and Sampling**

Eastern Uganda was purposively selected because of its low performance in science subject in Primary Leaving Examinations (UCE) in which Agriculture

is integrated in the Science subject curriculum. Eastern Uganda is composed of five sub-regions namely Busoga and Bukedi sub-regions, Bugisu sub-region, Teso sub region and Sebei sub region. Out of the five named sub regions in Eastern Uganda, only four were selected randomly to give equal opportunity for each sub region to select to participate in the study and minimize selection error (Dillman et al., 2014; Urdan, 2010).

Eastern Uganda is composed of 10 Primary Teachers' Colleges namely; Jinja and Bishop Willis Core PTCs in Busoga sub region, Busikho, Mukuja, and Kabwangazi PTCs in Bukedi sub region, Nyondo PTC in Bugisu sub region, Bukedea, St Aloysius Core, and Soroti Core PTCs in Teso sub region and Kapchorwa PTC in Sebei sub region. All these are government or public Primary Teachers' Colleges.

Urdan (2010) refers to sampling frame as the list of elements from which the sample is actually drawn. Thus, the sampling process involves drawing conclusion based on measurement of a portion of the population (Dillman et al., 2014). According to Dillman et al. (2014) simple random sampling refers to a method where individuals in the population are selected randomly using either a random number generator or a random number table to give every individual in the population the same probability of being selected for the sample. In this method, the units to be sampled are included in a list, also termed a sampling frame and this list should be numbered in sequential order from one to the total number of units in the population.

In order to avoid bias, the register of Agriculture Teacher Trainees at Nyondo PTC, Mukuju PTC, Soroti PTC and Kapchorwa PTC, were obtained from the

respective registrars of the PTCs. This list formed our sampling frame from which 50 respondents from were selected using simple random sampling from each Primary Teachers' College. From the sampling frame, the names of all Agriculture teacher trainees were grouped together, arranged in alphabetical order and assigned numbers from 1 (one) to 10 (ten). Simple random sampling was used to select even numbers in such a way that the name of the agriculture teacher trainee in a position coinciding with an even number was selected and included in the study sample. Random sampling was adopted to give an equal opportunity to all the respondents to be selected to participate in the study, which minimizes selection error.

The record of Agriculture teacher trainees at Nyondo PTC in Mbale District in Bugisu sub-region, Mukuju PTC in Tororo District in Bukedi sub region, Soroti PTC in Soroti District in Teso Sub-region, and Kapchorwa PTC in Kapchorwa district in Sebei sub region were obtained from the various PTCs and this list formed the sampling frame for this study. All the Agriculture Teacher Trainees at the above PTCs were grouped together, arranged in alphabetical order and assigned numbers from 1 to the total number of the trainees in each PTC. This grouping formed the sampling frame for selecting the study sample size using Krejcie & Morgan (1970) as summarized in Table 1.

Table 1: Sampling Frame

Primary Teachers' College	Target population	Sample	Sampling Technique
Nyondo PTC	105	50	Random
Mukuju Core PTC	101	50	Random
Soroti Core PTC	112	50	Random
Kapchorwa PTC	108	50	Random
Total	426	200	

### 3.4 Instrumentation

The researcher utilized telephone-administered survey and interview protocol for collecting quantitative and qualitative information from the respondents respectively.

#### 3.4.1 Telephone-administered Survey

The telephone-administered survey was used to collect quantitative data from Agriculture teacher trainees in Primary Teachers' Colleges in Eastern Uganda as recommended by Dillman et al. (2014). The interviewer-administered paper survey was categorized into four sections including pedagogical competencies, subject matter competencies, learning environment competencies and the learning process outcomes of Agriculture teacher trainees.

#### Validity and Reliability

The questions were reviewed for content validity by a panel of experts, which included the dissertation supervisors. The survey was subjected to a pilot test by administering it to 15 Agriculture teacher trainees. The pilot test

participants were not included in the actual study data. Cronbach Alpha measured the internal consistency of the question items.

The survey consisted of items measured as dummy variables, and with a five-point Likert response scale, rated as: very high =5, high =4, neither high nor low =3, low =2. Cronbach Alpha ( $\alpha$ ) was used for testing internal consistency of the summated scales and ranged between  $\alpha = .535$  and  $\alpha = .911$ . The reliability analysis for pedagogical competencies  $\alpha = .862$ , subject matter competencies  $\alpha = .535$ , learning environment competencies  $\alpha = .911$ , and learning process outcomes  $\alpha = .940$ . Validity determines whether the research measures what it was intended to measure (Bashir et al., 2010). Content validity is the degree to which an instrument has an appropriate sample of items for the construct being measured (Polit & Beck, 2006).

### **3.5 Data Collection Process**

Data collection began by consulting with personnel at the sampled Primary Teachers' Colleges in Eastern Uganda to obtain permission to conduct research involving Agriculture teacher trainees. The purpose of the consultation with the Primary Teachers' Colleges personnel was to obtain support in identifying and mobilizing potential research enumerators and respondents from Nyondo PTC, Soroti Core PTC, Mukuju Core PTC, and Kapcchorwa PTC. Research enumerators assisted in administering the telephone survey and telephone in depth interview were trained for two days to reduce measurement error as in the data collected and increase the efficiency and effectiveness of collecting data.

Dillman et al. (2014) survey refers quantitative data collection as a method of data as data collection methods where a respondent completes a questionnaire. The authors noted that questions needed to be simple and easy to understand and the questionnaire has to be clear and easy to complete for the respondent to elicit correct responses. The telephone survey was administered by eight research enumerators (two for each PTC) trained by the investigator in accordance with the standards of conducting survey research on human subjects. The research enumerators included teachers of agriculture in primary and secondary schools in Eastern Uganda. Quantitative data were collected in May 2021 from 200 second year Agriculture teacher trainees, with 50 respondents from each of the participating Primary Teachers' College in Eastern Uganda. The questionnaires were administered through telephone at a time convenient to the respondent, and in one sitting for about 15 minutes. The data collection was supervised by the principal investigator to ensure adherence to research standards of minimizing harm on the respondents.

Quantitative data were collected from Agriculture teacher trainees using telephone-administered survey.

### **3.6 Data Analysis**

Data analysis involves inspecting, cleaning, classifying, coding, tabulating, transforming and modeling data needed to perform quantitative or qualitative analyses according to the research design and appropriateness of the data (Babbie, 2009).

The data were compiled, sorted, edited, classified, coded into a coding sheet and analyzed using a Statistical Package for Social Scientists (SPSS) version

23. Descriptive and multivariate analysis) to examine the relationship between teacher training and learning outcomes. Pearson Correlation Coefficient was used to analyze the relationship between learning environment, pedagogical skills, subject matter competencies as independent variables and the learning of learning outcomes in Agriculture teacher trainees as dependent variable. Multiple linear regression models were used to analyze the influence of the teacher training process on the delivery of learning outcomes among Agriculture teacher trainees in Primary Teachers' Colleges in Eastern Uganda.

### **3.7 Ethical Consideration**

The permission to carry out this study was granted by the Faculty of Agriculture, Kyambogo University in Uganda. The researcher employed ethical approaches, which are documented by Lichtman (2013) as a guideline. The objectives of this study were explained to all Agriculture teacher trainees that participated in the survey. The investigator developed a rapport with respondents, key emphasis on respect and protection of human subjects as the respondents of this study. All the personal information of the respondents were kept confidential, and informed consent was ensured by asking orally the research participants about their willingness to participate in the research, and informed of their choice to withdraw from participating in the study without any prior notice to the researcher. All data were analyzed as a whole so the individual data responses from respondents are masked.



## CHAPTER FOUR: RESULTS

### 4.0 Introduction

In this chapter, study results are presented in accordance with the specific objectives of the study to assess the pedagogical competences of teacher trainees of Agriculture; examine the Agriculture subject matter competencies of teacher trainees; and examine the influence of training processes on the competence of Agriculture teacher trainee in teaching the subject in Primary Teachers' Colleges in Eastern Uganda.

### 4.1 Response Rate

It refers to the actual number of respondents that answered and returned the questionnaire compared to the number of the respondents sampled to answer questions. The response rate should be at least 50% for the views raised to be representative of the area of study (Dillman et al., 2014). The response rate was determined as:

$$\begin{aligned} \text{Total response rate} &= \\ & \frac{\text{Total number of respondents who returned th questionnaires}}{\text{Total number in the sample}} \\ &= \frac{190}{20} \\ &= 95\% \end{aligned}$$

Therefore, the responses generated valid views of the population that were used to inform the study.

## 4.2 Demographic Characteristics

Demographic characteristics of the respondents focused on the gender, age, marital status, working experience and level of academic accomplishments. The demographic characteristics were measured using the frequency and percentages for each individual variable as summarized in Table 4.1.

Table 4.1 Demographic Characteristics

Demographic Characteristics	N	Percentage
Gender	190	
Female		41.6
Male		58.4
Marital Status	190	
Not Married		100.0
Are you employed as a teacher by any learning institution	190	
Yes		0.5
No		99.5
Level of Academic accomplishment	190	
O-Level		100.0
Age group	190	
15-20 years		10.5
21-25 years		88.4
25 years and beyond		1.1
Do you have any professional training in any area	190	
No		100.0

Table 4.1 indicates that a majority of the respondents were males (58.4%), all are not married (100%) and have attained Ordinary Level of Education (100%), with no professional training in any field (100%), and a majority of them are teacher trainees are not employed in any learning institutions (99.5%) and are aged between 21 to 25 years (88.4%). The more males compared to females among Agriculture teacher trainees in Primary Teachers' Colleges is reflection of Uganda's education system that selects out females in favour of men. The Agriculture teacher trainees because being the longer a person remains studying the longer it also takes for such a person to get married, which explains all the respondents to this study being not married. All the Agriculture teacher trainees had not attained professional training in any other field could be explained by the fact that most of them had just completed Ordinary Level (O' Level) and had proceeded for teacher training and constrains in financial resources might hinder such young people from attaining training in other professions. A majority of Agriculture teacher trainees not employed in any learning institutions could be explained by strict policies from the Ministry of Education and Sports for schools not to employ unlicensed teachers and/or teachers that have not attained professional qualification in teaching a particular level of education system in Uganda.

### **4.3 Learning Environment in Primary Teachers' Colleges**

A learning environment is the educational setting for learners and it affects their learning outcomes either positively or negatively. Agriculture Teacher Trainees in Primary Teachers' Colleges on Skills Training and Competence in

Eastern Uganda were asked about the various learning environments available for them in their respective PTCs as summarized in Table 4.2.

Table 4.2 Learning Environment of Agriculture Teacher Trainees in Primary Teachers' Colleges

Learning Environment	N	Mean (SD)
I learn agriculture subject on school crop farm	190	1.02 (0.125)
I learn agriculture subject from students garden	190	1.00 (0.000)
I learn agriculture subject from poultry farm	190	2.00 (0.000)
I learn agriculture subject from piggery, rabbitry and fish pond	190	1.98 (0.125)
I learn agriculture subject from walled classroom	190	1.00 (0.000)
I learn agriculture subject from farm in the community	190	1.59 (0.493)

Rated on a five-point Likert scale: 1= very high, 2= high, 3= moderate, 4=low, 5=very low

The highest mean score of 1.00 (SD=0.00) computed based on a 5-likert scale confirms that walled classrooms, student gardens (Mean=1.00, SD=0.00) and school crop farms (Mean=1.02, SD = 0.125) are the strongest predictors of learning environment of agriculture teacher trainees in primary training colleges in Eastern Uganda. The standard deviation of 0.00 confirms that there was little variations in the responses given by the respondents on their learning environment.

However, lack of poultry farms (Mean=2.00, SD=0.00), piggery, rabbitry and fishponds (Mean=1.98, SD=0.0125) and community demonstration farms

(Mean=1.59, SD=0.493) restricts the learning environments of agriculture teacher trainees in primary training colleges in Eastern Uganda.

This implies that limited training environments of Agriculture teacher trainees hampers the training of agriculture teacher trainees in primary training colleges in Eastern Uganda. Further, respondents were asked to rate on a scale of high, neither high nor low, and very low of the availability of the various learning environments of Agriculture teacher trainees in Primary Teachers' Training Colleges in Eastern Uganda and their responses are summarized in Table 4.3.

Table 4. 3: Rating the Learning Environment of Agriculture Teacher Trainees in Primary Training Colleges

Learning Environment	N	Mean (SD)
I learn agriculture subject on school crop farm	190	1.39(0.656)
I learn agriculture subject from students garden	190	1.65(0.551)
I learn agriculture subject from poultry farm	190	2.98(0.144)
I learn agriculture subject from piggery, rabbitry and fish pond	190	2.93(0.310)
I learn agriculture subject from walled classroom	190	1.24(0.426)
I learn agriculture subject from farm in the community	190	3.03(0.389)

Rated on a five-point Likert scale: 1= very high, 2= high, 3= moderate, 4=low, 5=very low

The lowest mean score of 1.24 (SD =0.00) computed on the basis of a 5-likert scale confirms that walled classrooms, student gardens (Mean =1.39, SD =0.656) and school crop farms (Mean = 1.65, SD = 0.551) were rated highly

of the learning environment of Agriculture Teacher Trainees in Primary Training Colleges in Eastern Uganda. The low standard deviation of 0.426 confirms that there was little variations in the responses given by the respondents on the learning environment. The findings confirm that the teaching of Agriculture in PTCs is mostly carried out in walled classrooms, followed by in crop farm and students' gardens. The fact that the teaching of the Agriculture in walled classrooms implies that the subject is largely taught in a theoretical way with less emphasis in hands-on which usually takes place in college farms.

However, highest mean of 3.03 (SD =0.389) confirms that there is inadequate use of community demonstration farms, poultry farms (Mean = 2.98, SD =0.144), piggery, rabbitry and fish ponds (Mean = 2.93, SD =0.310) were rated low in terms of the learning environments of agriculture teacher trainees in primary training colleges in Eastern Uganda. The less use of community demonstration farms, and animal related components of a farm could imply that those there is minimal interaction between the PTCs communities as the local environments and the animals are not integrated in the college farms for use in hand-on training of Agriculture teachers. Relationship between Learning Environment and Delivery of the Student Learning Outcomes is summarized in Table 4.4.

**The Relationship between the Learning Environment and Delivery of Learning Outcomes of Agriculture in Primary Teachers’ Colleges in Eastern Uganda**

The relationship between the learning environment for Agriculture and the delivery of learning outcomes for Agriculture teacher trainees is summarized in Table 4.4.

Table 4.4 Correlations between Learning Environment and Delivery of Student Learning Outcomes

		Learning Environment
Delivery of learning outcomes	Pearson Correlation	0.284**
	Sig. (2-tailed)	0.00
	N	190

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

Table 4.4 indicates that there is a strong positive significant relationship between learning environment and student learning outcomes ( $r=.284^{**}$ ;  $p=.000<0.01$ ). This implies that with better learning environments, there is likely to be better delivery of student learning outcomes of agriculture teacher trainees in primary teacher colleges and the reverse is also true.

These results are consistent with the earlier findings of the research that was conducted in Finland on learner’s competencies in vocational subjects that indicated that, no matter how trained and competent a teacher is, learners cannot understand fully, apply skills and concept learned without practicing them (Rissanen et al., 2019). According to the authors, schools use farms in the practical teaching of vocational subjects since they make learning real and

authentic. An ideal school farm should have plants and animals used to teach across all grades, a section for museum, demonstration, commercial section and project section (Njura et al., 2020). A school farm that has no activities and projects meant for learning is a field and not a farm (Smeds et al., 2015). Guthrie (2010) contends that in typical learning environment, the main resources for teaching of agriculture included; agriculture workshop equipped with metal and woodworking tools, gas and electric welders, tractors, power generators, cultivators, fuel storage tank, combined harvester, a science laboratory, laboratory facilities, the school farm, a departmental vehicle and funds for running the department. Thus, poor student performance is neither a measure of the subject difficulty nor incompetence of a teacher but it is as a result of the resources available for instruction and the degree to which students interact with their environment.

#### **4.4 The Relationship between Pedagogical Competencies of Tutors and Agriculture Teacher Trainees in Primary Teachers Colleges**

Objective two of this study was to assess the pedagogical competencies of teacher trainees of agriculture in Primary Teachers' Colleges in Eastern Uganda. Findings on this objective reflect the descriptive statistics, correlation statistics, regression analysis and the qualitative results. The descriptive statistics give the respondents' opinions on the various questionnaire items; while the factor analysis shows, which items under pedagogical competencies were the strongest predictors of student delivery of the learning process, as shown in Tables 4.5, 4.6 and 4.7.



Table 4.5 Rating Pedagogical Competencies of Tutors in Primary Training Colleges

Use of pedagogical skills	N	Mean (SD)
Participatory learning	190	1.18(0.389)
Hands-on learning	190	1.46(0.671)
From known to unknown	190	1.22(0.416)
Use of teaching and learning materials	190	1.52(0.640)
Active teaching and learning methods e.g. project, problem based learning, discovery	190	1.49(0.532)
Provide learners with meaningful feedback		1.41(0.492)
Focus on physical, mental, emotional stability of learners	190	1.55(0.530)
Organized and conducive learning environment	190	1.48(0.532)
Planning a lesson	190	1.21(0.405)
Developing scheme of work	190	1.26(0.476)

Rated on a five-point Likert scale: 1= very high, 2= high, 3= moderate, 4=low, 5=very low

teacher trainees' perceptions to the extent their tutors use their pedagogical skills in daily teaching experience were rated on a scale of high, neither high nor low, and Low (Table 4.5). The lowest mean of 118 (SD=0.389) confirms that participatory learning, lesson planning (Mean=1.21, SD=0.405), teaching from known to unknown (Mean=1.22, SD=0.416), organized and conducive learning environment (Mean=1.48, SD=0.532), and development of the scheme of work (Mean score = 1.26, SD=0.476). In addition, there is low use of hands-on teaching (Mean=1.46, SD=0.671), teaching and learning materials

(Mean=1.52 SD=0.640), provision of learners with meaningful feedback (Mean=1.41, SD=0.492), active teaching and learning methods e.g. project, problem based learning, discovery (Mean=1.49 SD= 0.532), and physical, mental, emotional stability of learners (Mean score=1.55 SD=0.530).

This implies that there is a need to develop specific agricultural and technical education that recognizes the establishment of village workshop schools to convert both females and male primary school dropout into productive members of the society since lack of diversified school learning environments hampers the training of agriculture teacher trainees in primary training colleges in Eastern Uganda. Further, Teacher Trainees Perceptions to the extent they use their skills in daily teaching experience were rated on a scale of High, Neither High nor Low, and Low and their responses are summarized in table 4.6.

Table 4.6 Rating Pedagogical Competencies of Agriculture Teacher Trainees in Primary Training Colleges

Use of pedagogical skills	N	Mean (SD)
Participatory learning	190	1.20(0.401)
Hands-on	190	1.18(0.463)
From known to unknown	190	1.27(0.447)
Use of teaching and learning materials	190	1.23(0.423)
Active teaching and learning methods e.g. project, problem based learning, discovery	190	1.33(0.472)
Provide learners with meaningful feedback	190	1.23(0.423)
Physical, mental, emotional stability of learners	190	1.37(0.526)
Organized and conducive learning environment	190	1.10(0.301)
Planning a lesson	190	1.18(0.389)
Developing scheme of work	190	1.14(0.345)

Rated on a five-point Likert scale: 1= very high, 2= high, 3= moderate, 4=low, 5=very low

Table 4.6 indicate of organized and conducive learning environment is rated low (Mean=1.10, SD=0.301), development of the scheme of work (Mean=1.14, SD=0.345), both lesson planning and hands on teaching (Mean=1.18, SD=0.389), and participatory learning (Mean score =1.20, SD =0.401).

Further, Agriculture teacher trainees in Primary Training Colleges in Eastern Uganda rated highly (Mean=1.23, SD=0.423) their use of teaching and

learning materials, provision of learners with meaningful feedback, from known to unknown (Mean score = 1.27, SD =0.447), active teaching and learning methods e.g. project, problem based learning, discovery (Mean= 1.33, SD =0.472), and physical, mental, emotional stability of learners(Mean= 1.37, SD=0.526) are key pedagogical competencies required of learners to effectively teach the agriculture subject matter.

### **Relationship between Pedagogical Competencies of Tutors and Delivery of Learning Outcomes**

The relationship between the pedagogical competencies of tutors and the delivery of Agriculture teacher trainees’ learning outcomes as presented in Table 4.7.

Table 4.7 Correlation between Pedagogical Competencies of Tutors and Delivery of Learning Outcomes

		Pedagogical Competencies
Delivery of learning process	Pearson Correlation	0.278**
	Coefficient	
	Sig. (2-tailed)	0.00
	N	190

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

Table 4.7 indicates that there is a strong positive significant relationship between pedagogical competencies and delivery of student learning outcomes ( $r=0.278^{**}$ ;  $p=0.000<0.01$ ). This implies that with better pedagogical competencies, there is likely to be better delivery of student learning outcomes

of agriculture teacher trainees in primary teacher colleges and the reverse is true.

These results were found to be consistent with the earlier findings by King (2017) that refers to pedagogical competencies as the means of teaching and learning management that covers discerning the students, making teaching planning and implementing it in the classroom, doing evaluation, and developing students' potential. This competence constitutes the key to efficient education because of close connection with three essential education factors: efficiency and achievement, teachers' professional development and societal change (Irina, 2011). Haenilah (2013) reasoned that in pedagogical competencies the most important competencies are an attempt to set up suitable condition for students to actualize themselves in knowledge comprehension, skills, or behavioral building; finally, its value is highly effected by academic, social, and personal skills as the requisite for constructing pedagogical competence. Therefore, pedagogical competence is necessary to be possessed by teachers so that they can help the students to achieve appropriate teaching competencies and the aim of education.

#### **4.5 The Agriculture Subject Matter Competencies of Tutors and Delivery of Agriculture Teacher Trainees' Learning Outcomes**

Objective three of this study was to assess the teacher competencies in the subject matter of teacher trainees of agriculture in primary teachers colleges in Eastern Uganda. Findings on this objective reflect the descriptive statistics, correlation statistics, regression analysis and the qualitative results. The descriptive statistics give the respondents' opinions on the various

questionnaire items, while the factor analysis shows which items under teacher competencies in the subject matter were the strongest predictors of student delivery of the learning process, as shown in Tables 4.8.

Table 4.8 Rating Tutors' Level of Competencies in the Agriculture Subject Matter

Tutors' competencies in the subject matter	N	Mean(SD)
Understanding of the subject matter	190	1.16(0.370)
Application of content in practical learning	190	1.25(0.436)
Understanding of facts and concepts	190	1.15(0.355)
Mind-set of the tutor towards Agriculture	190	1.29(0.457)
Relating content to local contexts and situations	190	1.28(0.627)
Mind-set towards hands-on learning	190	1.27(0.492)

Rated on a five-point Likert scale: 1= very high, 2= high, 3= moderate, 4=low, 5=very low

Teacher trainees perceptions of their tutors' level of competencies in teaching the Agriculture subject matter was rated on a scale of high, neither high nor low, and low (Table 4.8).

The lowest mean score of 1.16 (SD =0.370) confirms that understanding of the agriculture subject matter, facts and concepts are key competencies required of tutors to effectively teach the agriculture subject matter.

Further, teacher trainees of Agriculture in Primary Training Colleges in Eastern Uganda rated highly (Mean score = 1.25, SD =0.436) the application of content in practical learning, and relating content to local contexts and

situations, mind-set towards hands-on learning of the agriculture subject matter, and the mind-set of the tutor towards Agriculture subject (Mean= 1.29, SD =0.457) as the second key competencies required by tutors to effectively teach Agriculture subject matter.

The above quantitative findings were found to be consistent with the qualitative data gathered through expert panel interviews. According to a respondent from Mbale PTC on the tutors' competencies in the subject matter in Primary Training Colleges in their daily learning experiences.

This implies that there is a need to develop specific agricultural and technical education needs of Agriculture teachers to meet their training at both the pre-service and in-service levels to enable them have professional competencies needed by agriculture teachers to meet the development needs of the community and the agricultural sector at large. The relationship between tutors' competencies in subject matter and delivery of learning outcomes is summarized in Table 4.9.

#### **The relationship between Agriculture Subject Matter Competencies of Tutors and Delivery of Agriculture Teacher Trainees' Learning Outcomes**

The relationship between Agriculture subject matter competencies of tutors and delivery of Agriculture teacher trainees' learning outcomes is presented in Table 4.9.

Table 4.9 Correlations between Tutors' Competencies in Subject Matter and Delivery Learning Outcomes.

		Competencies in Subject Matter
Delivery of learning outcomes	Pearson Correlation Coefficients	0.411**
	Sig. (2-tailed)	0.00
	N	190

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

Table 4.9 indicates that there is a strong positive significant relationship between tutor competencies in the subject matter and delivery of student learning outcomes ( $r=.411^{**}$ ;  $p=.000<0.01$ ). This implies that with better tutor competencies in the subject matter, there is likely to be better delivery of student learning outcomes of agriculture teacher trainees in primary teacher colleges and the reverse is true.

The above findings are consistent with the earlier findings by Diep & Hartmann (2016) that contended that teaching competency should include teacher's competencies in integrating theory and practice in classrooms activities. Thus, vocational teachers must therefore, be able to design the objective of learning taking into account the learner's background and use of various teaching methods including practical approach to reflect the learning objectives (Ball et al., 2008).



#### 4.6 Perceptions of Agriculture Teacher Trainees in Primary Teachers Colleges on Delivery of Learning Outcomes

Respondents were asked to rate their Tutors competencies in the delivery of the student-learning outcome process in primary teachers colleges in Eastern Uganda. Findings on this objective reflect the descriptive statistics and the regression analysis the responses are summarized in Tables 4.10 to 4.13.

Table 4.9 Descriptive results on rating the level of Tutors Competencies in the Delivery of the student learning outcomes

Agriculture subject matter	N	Mean (SD)
Understanding of the subject matter	190	1.34 (0.474)
Application of content in practical learning	190	1.42 (0.494)
Understanding of facts and concepts	190	1.34 (0.476)
Mind-set of the tutor towards Agriculture	190	1.46 (0.663)
Relating content to local contexts and situations	190	1.42 (0.495)
Mind-set towards hands-on learning	190	1.42 (0.494)
Assessment of learners	190	1.34 (0.474)

Teacher trainees' perceptions in their level of competencies in teaching the Agriculture subject matter were rated on a scale of high, neither high nor low, and low (Table 4.10).

The lowest mean score of 1.34 (SD=0.474) confirms that understanding of the agriculture subject matter, facts and concepts, and assessment of learners are key competencies in the delivery of the agriculture subject matter learning process.

Further, Agriculture teacher trainees in Primary Training Colleges in Eastern Uganda rated highly (Mean score = 1.42, SD =0.494) the application of content in practical learning, relating content to local contexts and situations, and mind set towards hands-on learning of the agriculture subject matter, the mind-set of the tutor towards Agriculture subject (Mean score = 1.46, SD =0.663) as the second key competencies in the delivery of the agriculture subject matter learning process.

### **Influence of Training Process on the Delivery of Agriculture Teacher Trainee Learning Outcomes in Primary Teachers' Colleges in Eastern Uganda**

In objective four, further analysis was done using multiple regression to examine the influence of pedagogical skills, Agriculture subject matter competencies and learning environment on the delivery of learning outcomes as summarized in Table 4.11.

Table 4.10 Model Summary of Agriculture Teacher Training Process on the Delivery of Student Learning Outcomes

#### Model Summary

Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501 <sup>a</sup>	.251	.239	.433

a. Predictors: (Constant), learning environment, pedagogical skills, competencies in the subject matter

Table 4.11 presents the R-square value, which is the amount an independent variable is able to explain on the dependent variable. The value for R-squared (0.239) implies that skill training and competencies explain 23.9% of the

delivery of student learning outcomes in Primary Teachers' Colleges in Eastern Uganda.

### Analysis of Variance

A one-way analysis of variance (ANOVA) tests allow determination whether one given factor or variable (skills training and competencies) has a significant effect on other variables under study (delivery of student learning outcomes) and Table 4.12 present the results for the analysis of variance.

Table 4.11 ANOVA for Pedagogical Skills, Agriculture Subject Matter Competencies and Learning Environment on Delivery of Learning Outcomes

Model	Sum of Squares	Df	Mean Square	F	<i>p</i>
Regression	11.662	3	3.887	20.773	0.000 <sup>b</sup>
Residual	34.806	186	0.187		
Total	46.468	189			

Dependent variable: Delivery of learning outcomes

Predictors (Constant): Learning environment, pedagogical skills, and competencies in the subject matter

The findings in Table 4.12 indicate that skills training and competencies is significant and enhances delivery of student learning outcomes as it gives an F-value of 20.773 at a p-value of 0.000. This is significant since it is less the threshold p- value of 0.01. The regression analysis for pedagogical skills, subject matter competencies on delivery of trainee learning outcomes is summarized in Table 4.13.

Table 4.12 Regression Model for Pedagogical Skills, Agriculture Subject Matter Competencies and Learning Environment on Delivery of Trainee Learning Outcomes

Model	Unstandardized		Standardize		
	Coefficient		d		
	B	SE of B	Beta	<i>t</i>	<i>p</i>
Constant	0.146	0.186		0.785	0.433
Pedagogical skills	0.203	0.075	0.178	2.720	0.007
Competencies in the subject matter	0.362	0.071	0.335	5.071	<0.000
Learning Environment	0.241	0.069	0.224	3.498	<0.001

Dependent variable: Delivery of learning outcomes.

The model indicates that without pedagogical skills, competencies in the subject matter and learning environment, skills training and teacher competencies stands at 0.146 units. The learning environment has a positive influence ( $Beta=0.224$ ,  $p<0.001$ ) on delivery of learning process. With introduction of skills training and competencies, a unit increase in the learning environment results to increasing student learning outcomes by 22.4%. This implies that use of a conducive learning environment is more likely to improve

delivery of learning process. Regression results indicate that pedagogical skills have a positive influence ( $Beta=0.178$ ,  $p =0.007$ ) on delivery of learning process. Thus, a unit increase in pedagogical skills results in increase of student learning outcomes by 17.8%. This implies that use of appropriate pedagogical skills is more likely to enhance effective delivery of learning outcomes. Competencies in the subject matter have a positive influence ( $Beta=0.335$ ,  $p<0.000$ ) on delivery of learning process. Thus, a unit increase in competencies within the subject matter results to increasing student learning outcomes by 33.5%. This implies that having appropriate competencies in the subject matter is more likely to increase an individual's delivery of learning process.

Regression Equation:

$$Y_{\text{Trainee Learning Outcomes}} = 0.146 + 0.224 (\text{learning environment}) + 0.335 (\text{competencies in subject matter}) + 0.178 (\text{pedagogical skills}).$$

The above findings agree with most of the studies on skills training and competency that contends student learning outcomes is a relatively sedentary change in behavior in a person as a result of interaction between learners and the learning environment (Uno, 2012). According to them, low student learning outcomes is caused by several factors among which such as domination of use of theory in the teaching-learning process that discourages learners to develop and have an impact on learning outcomes. In addition, lack of or ineffective communication between learners and teachers, and teachers experience difficulties in applying competence-based learning in lesson delivery. This is visible when the teacher ignores some components in

the learning content, especially competencies that are directly critical for use in the world of work could greatly disadvantage a graduate who underwent such a limiting learning process.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

In this chapter, the summary, conclusions and recommendations were presented in accordance with the objectives of the study. Also, area for future research is included.

### **5.2 Summary of Key Findings**

In this section, the summary of key findings of the relationship between teacher training and learning outcomes of Agriculture teacher trainees in Primary Teachers' Colleges in Eastern Uganda are presented in accordance with the objectives of the study.

#### **5.2.1 The Relationship between the Learning Environment and Delivery of Learning Outcomes in Primary Teachers' Colleges**

There is a weak positive significant relationship between learning environment and Agriculture teacher trainees' learning outcomes ( $r=.284^{**}$ ;  $p=.000<0.01$ ) in Primary Teachers' Colleges in Eastern Uganda.

#### **5.2.2 The Relationship between the Pedagogical Competencies of Tutors and Agriculture Teacher Trainees in Primary Teachers' Colleges**

There is a weak positive significant relationship between pedagogical competencies and Agriculture teacher trainees' learning outcomes.

### **5.2.3 The relationship between Agriculture Subject Matter Competencies of Tutors and Agriculture Teacher Trainees**

There is a strong positive significant relationship between pedagogical competencies of tutors in the subject matter and Agriculture trainee learning outcomes in Primary Teachers' Colleges in Eastern Uganda and the reverse is true.

### **Influence of Training Process on the Delivery of Agriculture Teacher Trainees' Learning Outcomes**

The learning environment has a positive influence ( $Beta = 0.224, p < 0.001$ ) on delivery of learning outcomes. A unit increase in the learning environment results to increasing student learning outcomes by 22.4%. Pedagogical skills have a positive influence ( $Beta = 0.178, p = 0.007$ ) on delivery of learning outcomes. A unit increase in pedagogical skills results in increase of student learning outcomes by 17.8%. Competencies in the subject matter have a positive influence ( $Beta = 0.335, p < 0.000$ ) on delivery of learning outcomes. A unit increase in competencies within the subject matter results to increasing student learning outcomes by 33.5%.

## **5.3 Conclusions**

In this section, the conclusions are presented according to the objectives of the study.

### **5.3.1 The Relationship between the Learning Environment and Delivery of Learning Outcomes in Primary Teachers' Colleges in Eastern Uganda**

The investigator concludes that there is a statistically significant positive relationship between learning environment and student learning outcomes in



Primary Teachers' Colleges in Eastern Uganda, with a unit improvement in the learning environment results to a significant positive improvement in student learning outcomes by 22.4%.

### **5.3.2 The Relationship between the Pedagogical Competencies of Tutors and Agriculture Teacher Trainees in Primary Teachers' Colleges in Eastern Uganda**

There is a substantial relationship between pedagogical competencies and student learning outcomes in PTCs in Eastern Uganda, with a unit increase in the pedagogical competencies results to a significant positive improvement in Agriculture trainees' learning outcomes by 17.8%.

### **5.3.3 The Relationship between Agriculture Subject Matter Competencies of Tutors and Agriculture Teacher Trainees in Primary Teachers' Colleges in Eastern Uganda**

The investigator concludes that there is a statistically significant positive relationship between tutor competencies in Agriculture subject matter and Agriculture trainee learning outcomes in PTCs in Eastern Uganda, a unit improvement in the tutor competencies in subject matter resulting into improvement in student learning outcomes by 33.5%.

### **5.3.4 Influence of Teacher Training Process on the Delivery of Agriculture Teacher Trainee Learning Outcomes in Primary Teachers' Colleges in Eastern Uganda**

The learning environment ( $Beta=0.224$ ,  $p<0.001$ ), pedagogical skills ( $Beta=0.178$ ,  $p=0.007$ ) and competencies in Agriculture subject matter

( $Beta=0.335$ ,  $p<0.000$ ) have statistically significant positive influence on the delivery of learning outcomes. In addition, a unit increase in competencies within the subject matter, learning environment, and pedagogical skills result in increase of Agriculture teacher trainees' learning outcomes by 33.5%, 22.4%, and 17.8% respectively.

#### **5.4 Recommendations and Implications**

Overall, the investigator recommends that various measures need to be put in place to improve the teacher training process for the development of Agriculture teacher trainees with better competencies for the effective delivery of learning at the world of work.

##### **5.4.1 The relationship between the learning environment and delivery of learning outcomes in Primary Teachers' Colleges in Eastern Uganda**

The researcher a concerted effort of PTCs administrators, community leaders and Ministry of Education and Sports in prioritizing and establishing college farms as a living learning environment that is closely related to the world of work to promote hands-on training of Agriculture teachers.

##### **5.4.2 The Relationship between the Pedagogical Competencies of Tutors and Agriculture Teacher Trainees in Primary Teachers' Colleges**

The investigator recommends the PTCs administrators and Ministry of Education and Sports to develop programs that are directed at building the capacity of PTC tutors in active teaching and learning method like project based learning and problem based learning among others. These capacity building programs could help to enhance the teaching competencies of tutors for Agriculture teacher trainees to develop appropriate and relevant learning outcomes for use in the teaching world of work.

### **5.4.3 The Relationship between Agriculture Subject Matter Competencies of Tutors and Agriculture Teacher Trainees**

The investigator recommends that the retooling of PTCs tutors in active teaching and learning to develop their pedagogical competencies should be carried out in relation to the Agriculture subject content so that both the tutors and the Agriculture teacher trainees can relate the teaching methods and Agriculture content to be taught.

### **5.4.4 Influence of Training Process on the Delivery of Agriculture Teacher Trainees' Learning Outcomes**

The researcher recommends that the PTCs administrators and authorities could carry out integrated capacity building of tutors in essential and prioritized Agriculture Subject content, creating and using a conducive learning environment, and development of pedagogical competencies. In addition, PTCs authorities need to invest funds to create college farms that constitute of crop, animals, machinery, students' gardens and a section for experiments to assure all round training of Agriculture teachers.

### **5.6 Areas for further Research**

Basing on the findings of this study, the researcher recommends that further research be conducted on the influence of a school farm and its associated components on the training of Agriculture teaches in Primary Teaches' Colleges in Uganda.

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## APPENDIX

### Appendix I: Questionnaire for Teacher Trainees in Primary Teachers' Colleges

Dear Sir/Madam,

I am Nangono Mike, a Master's student in Agricultural Education and Extension at Kyambogo University. I am conducting a study titled '*Perceptions of Agriculture Teacher Trainees on Skills Training in Primary Teachers' Colleges and Teaching Competencies in Eastern Uganda*'. I am asking your help in this study by filling out this questionnaire based on your honest and true experiences. The information you give will only be used for academic purposes and will remain strictly confidential.

#### Identifiers

Name of PTC: .....

Category of PTC: .....

Sub region of location in Eastern Uganda: .....

#### Section A: Learning Environment

1. In what environments do you learn Agriculture subject matter?

Learning environments	Yes	No
I learn agriculture subject from School Crop Farm		
I learn agriculture subject from Students' garden		
I learn agriculture subject from Poultry Farm		
I learn agriculture subject from Piggery, Rabbitry, & Fish Pond		
I learn agriculture subject from Walled classroom		
I learn agriculture subject from Others e.g. farms in the community, industries, companies etc.		

2. To what extent do you learn Agriculture in these learning environments?

Learning environments	<i>Rating use of different environments for learning Agriculture subject matter</i>				
	Very high	High	Neither high nor low	Low	Very low
I learn agriculture subject from College Crop Farm					
I learn agriculture subject from I learn agriculture subject from Students' garden					
I learn agriculture subject from Poultry Farm					
I learn agriculture subject from Piggery, Rabbitry, & Fish Pond					
I learn agriculture subject from Walled classroom					
I learn agriculture subject from Others e.g. farms in the community, industries, companies etc.					

## Section B: Pedagogical Competencies

3. To what extent do your tutors use these skills in your daily learning experience?

<i>Use of pedagogical skills</i>	<i>Benefits attained</i>				
	Very high	High	Neither high nor low	Low	Very low
1. Participatory learning					
2. Hands-on					
3. From known to unknown					
4. Use of teaching and learning materials					
5. Active teaching and learning methods e.g. project, problem based learning, discovery etc.					
6. Provide learners with meaningful feedback					
7. Physical, mental, emotional stability of learners					
8. Organized and conducive learning environment					
9. Planning a lesson					
10. Developing scheme of work					



4. To what extent do you use these skills in your daily teaching experience?

<i>Use of pedagogical skills in teaching</i>	<i>Benefits attained</i>				
	Very high	High	Neither high nor low	Low	Very low
1. Participatory learning					
2. Hands-on					
3. From known to unknown					
4. Use of teaching and learning materials					
5. Active teaching and learning methods e.g. project, problem based learning, discovery etc.					
6. Provide learners with meaningful feedback					
7. Physical, mental, emotional stability of learners					
8. Conducive learning environment					
9. Planning a lesson					
10. Developing scheme of work					

### Section C: Competencies in the Subject Matter

5. What do you think could be the level of competence of your tutors in effectively teaching Agriculture?

Tutors' competencies in the subject matter	<i>Rating tutors' competencies in Agriculture subject matter</i>				
	Very high	High	Neither high nor low	Low	Very low
Understanding of the subject matter					
Application of content in practical learning					
Understanding of facts and concepts					
Mindset of the tutor towards Agriculture					
Relating content to local contexts and situations					
Mindset towards hands-on learning					

**Section D: Delivery of Learning Process**

6. What does could be the level of your competence in teaching Agriculture subject matter?

Teacher trainee competencies in the subject matter	<i>Rating tutors' competencies in Agriculture subject matter</i>				
	Very high	High	Neither high nor low	Low	Very low
Understanding of the subject matter					
Application of content in practical learning					
Understanding of facts and concepts					
Mindset of the tutor towards Agriculture					
Relating content to local contexts and situations					
Mindset towards hands-on learning					

7. My competency level:

My competency level	<i>Rating teacher trainee's competencies in teaching</i>				
	Very high	High	Neither high nor low	Low	Very low
In Agriculture subject matter					
In pedagogical skills					

**Section E: Demographic Characteristics**

8. Gender of the respondent:

Female	Male
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9. Age (in years)

.....

What is your current marital status?

Time spent in teaching (in years)	Yes	No
1) Not married		
2) Married		
3) Cohabiting		
4) Widowed		

10. Have you been employed as a teacher by any learning institution?

Yes	No
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11. If yes, how long have you been involved or employed in teaching? (in years)

Time spent in teaching (in years)	Yes	No
1) less than two years		
2) Two to three years		
4) Four years and beyond		

12. Level of academic accomplishment?

Academic level	1. Completed	2. Not completed
1) O' Level		
2) A' Level		
3) Diploma		

13. Do you have any professional training in any other area?

Yes	No

14. If yes, in what area are you a professional?

	1. Yes	2. No
1)		
2)		
3)		

*Thank you for completing the survey*