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Original Article

## Perceptions of Pre-Service Technical Teachers on the Teaching and Learning Activities in Teacher Instructor Colleges of Uganda

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*Perceptions,  
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Colleges.*

Understanding perceptions about the teaching and learning activities has implications on the way teacher training programs can be improved and influences trainers' motivation. The aim of the study was to examine pre-service technical teachers' perceptions of the teaching and learning activities in teacher-instructor colleges in Uganda. The following research questions guided the study; "Is the time allocated for the teaching and learning activities adequate; how is the tutoring conducted; are the pre-service teachers satisfied with the assignments given; do the pre-service teachers trust the teaching and learning process and are the pre-service teachers satisfied with the equipment and materials used for training? The study adopted across sectional survey design. Data was collected from 168 pre-service technical teachers using a researcher-constructed questionnaire. The data gathered was analysed using SPSS and presented as descriptive statistics. The findings revealed that time for teaching and learning; tutoring (organization of training), and assignments given were adequate; pre-service technical teachers trusted the teaching and learning process; however, they observed that the equipment and materials were inadequate for training. It was therefore recommended that the government increase the budget for technical teacher instructor institutions; lobbying for funds through; private partnerships, companies, international donor agencies, tax rebates, fellowships, and research grants to purchase adequate training equipment and engage policy makers to create mechanisms for responding to constant technology advancement for technical teacher instructor training institutions to cope.

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## INTRODUCTION

In Technical, Vocational Education and Training (TVET), one of the core elements is the interaction of the teachers and students through the teaching and learning processes of which the students are expected to learn the knowledge, skills, and attitudes in order to practice in their different trades (Asplund et. al., 2022). In TVET, the circumstances trainers work in, the learners they teach, and the credentials they provide are more varied than those in other advanced learning institutions (Wheelahan, 2010, p. 9), and 'the demands on TVET trainers are more multifaceted than for the other trainers in schools or higher education' (Wheelahan, 2010, p. 11).

The teaching profession requires both cognitive abilities (knowledge and skills) as well as emotional abilities (attitude and behaviour); therefore, during the preparation of teachers, emphasis should be on promoting the right values and attitudes as well as the cognitive abilities (Çiftçi et. al., 2009). The prospective technical and instructor teachers are required to be competent enough in practice, in their instruction subjects and up to date with the knowledge, technical skills requirement, and the right attitude and beliefs in the subjects they teach (Andersson and Köpsén, 2015) and trending workplace practices (Organization for Economic Co-operation and Development (OECD), (2021).

Recently, more researchers have focused on exploring pre-service teachers' attitudes and beliefs before and after training programs, for the purpose of determining how to improve the programs and courses that prepare pre-service teachers (Li, 2016). For instance, teachers' attitudes and self-efficacy play a significant role in their pedagogical choices on whether and exactly how to incorporate information and communication technologies in their training (Pozas et al., 2022); on how to deal with students with behavioural difficulties (Massé et al., 2022).

In their study of the insights of teaching-learning, Entwistle and colleagues (2002) argued that the discernment for the teaching and learning situation is crucial to accepting the significance of learning at university and that they have an impact on student learning more directly than the approaches of learning themselves (Entwistle et al., 2002).

**Technical Teacher Instructor Education in Uganda**

In Uganda, Kyambogo University, a public university offers, assesses, and certifies technical teacher instructors who facilitate learning at craft certificate levels in technical institutions. Through the department of Technical Teacher and Instructor Education (TT&IE) and other affiliated instructor training institutions, Kyambogo University has been offering the Diploma Instructor Technical Teacher Education (DITTE) since 2012. On the DITTE programme, various technical and vocational fields are offered to prospective technical teacher instructors such as metal fabrication, agriculture, electrical and electronics technology, automotive technology, civil and building engineering, leather technology, fashion, and design. The programme is also offered by other affiliated institutions which include National Instructor College-Abilonino (NICA) (Northern region), Nakawa vocational training college, KALLOTTE instructor technical institute (Central region), Jinja vocational training institute (Eastern region), and African College of Commerce & Technology (ACCT)-Kabale (Western region). The overall objective of the programme is to produce personnel that demonstrates knowledge, skills, and attitudes in technical education and industrial skills for the purpose of teaching and instructing learners at craft certificate and Uganda Junior Technical Certificate (UJTC) levels.

### Statement of the Problem

It is important to understand pre-service teachers' beliefs, attitudes, and practices on the teaching and learning activities because they are closely related to the approaches for dealing with the challenges in teachers' professional lifetime and overall well-being. Not only do they influence student motivation to learn, but they also shape their learning environment and achievement and generally improve educational processes (OECD, 2009). A 2023 study, conducted in Uganda revealed that vocational teaching was ineffectual in terms of knowledge and teaching practice and that many teachers emphasized the need for more support (Russon and Wedekind, 2023). Pre-service teachers' opinions of the teaching and learning activities have implications on the quality of training since they impact course design practices such as modifications in curricula for teachers' early professional development and job-related guidelines (Kintu and Wanami, 2019). Additionally, perceptions of the teacher training processes provide control and direction for designing training program targets, content, or methods' (Massé et al., 2022 p. 2). However, there has been little theoretical and empirical research conducted regarding pre-service technical teachers' perceptions of the teaching and learning activities in technical teacher instructor colleges of Uganda. Therefore, the purpose of the paper was to examine the perceptions of pre-service technical teachers on the teaching and learning activities in technical teacher instructor colleges of Uganda. The following research questions guided the study:

- Is the time allocated for the teaching and learning activities adequate?
- What are the tutoring practices in technical teacher instructor colleges?
- Are the pre-service teachers satisfied with the assignments given?
- Do the pre-service teachers trust their trainers?

- Are the pre-service teachers satisfied with the equipment and materials used during the training?

### THEORETICAL FRAMEWORK

The study was based on the idea of 'signature pedagogies' broadly defined as 'types of instruction that establish the crucial ways in which prospective practitioners are prepared for their new vocations' (Shulman, 2005 p. 52). Shulman's idea of 'signature pedagogy' when applied to technical and vocational areas of teaching and learning, enhances the learner in the professional work areas to intellectually think, perform, and act with integrity as a professional. Further, Shulman notes that 'signature pedagogies' develop "habits of the mind, habits of the heart, and habits of the hand" (p. 56).

In relating the habits of the mind to engineering, Lucas and Hanson (2016) argued that engineering habits of the mind involve the following aspects: the connection of different systems, problem finding, visualizing, improving through various experiments, designing and prototyping, creative problem solving, and adapting, testing, and re-thinking. They concluded that for those involved in the teaching and learning of engineering, there was a need to "cultivate learners who think like engineers"; similarly, but not from an engineering perspective Claxton (2012) noted that habits of mind are particular skills and attitudes to teaching and learning such as "resilience, leadership, flexibility, resourcefulness, creativity, communication, team working, reflection and metacognition" (p. 6). Therefore, in the preparation of technical and vocational teachers, an articulation of signature pedagogies can lead to a critical reflection on the progress of learning, and the response provides learning with persistence, hence the development of pre-service teachers' competences.

### LITERATURE REVIEW

Some studies regarding the perception of teachers on teaching and learning activities are highlighted below. In a 2020 study, Widarto and colleagues explored teacher's perceptions of the blended

learning model and how it impacts applied learning. Their research adopted a descriptive quantitative method and 41 respondents selected from mechanical engineering vocational teachers filled out the questionnaire. The major finding from the research indicated that the use of cooperative learning, problem-based learning, and project-based learning methods were constrained by limited internet access but on a positive note, the general use of ICT had a positive impact on learning. They suggested that vocational teachers should always organize teaching and learning consistently (Widarto, et. al., 2020).

In a 2019 study, Puspitasari and Soeharto explored vocational education students' perceptions of the utilization of blended learning models. Their study adopted a descriptive approach and data was collected using questionnaires. The results of their study showed that 80.38% of the vocational education students positively perceived the blended learning model, implying that if implemented, then learning would achieve its goal (Puspitasari & Soeharto, 2019).

In a 2022 study, Pylväs and colleagues examined vocational students' perceptions of Self-Regulated Learning (SRL) in Finnish vocational education and training work-based settings. Data was gathered by interviewing 33 respondents, chosen from the fields of construction, social and healthcare, business, and administration. Results indicated that learning at work promoted vocational students' motivation and many of the vocational students monitored their own performance. However, there were shortcomings in the students' SRL behaviour and there was a need for social support and self-efficacy (Pylväs et al., 2022).

In Botswana, Ookeditse (2022) studied vocational teachers' perceptions of the relevance of curriculum to the transition of students with disabilities into employment. Using a quantitative research approach, data was collected from 158 participants. Overall, Participants had positive beliefs about transition components and components in the training. However, their views

were varying based on gender and teaching experience (Ookeditse, 2022).

In a 2020 study, Asplund and Kilbrink undertook a learning study in which two university-based researchers collaborated with a vocational teacher at an upper secondary vocational school. Their study integrated conversational analysis and variation theories as didactical tools to analyse how teaching and learning took shape when teachers and students interacted in learning how to TIG-weld. Results highlighted changes in the teacher's teaching, and they argued that the method should be used to develop different forms of teaching and learning subject content in technical and vocational education (Asplund & Kilbrink, 2020).

In another study, Nurtanto and colleagues measured vocational teachers' perceptions related to Science, Technology, Engineering, and Mathematics (STEM) understanding. Their study employed a total of 157 respondents. The results indicated that the perception of vocational teachers obtained a score of 77.5%. ( $M = 3.87$ ,  $SD = .63$ ). Regarding the implementation of learning, they suggested that it should consider; preparation, implementation, and collaboration for the success of STEM learning (Nurtanto et al., 2020).

In a 2017 study, Sagli investigated how teachers and students in upper secondary schools perceive vocational orientation in the English subject. Using interviews, data was gathered from nine vocational students and three English teachers. The findings indicated that both students and teachers were positive towards vocational orientation though faced numerous challenges. The students were of the view that English does not always match the expectations they have for their future jobs. Whereas the teachers, did not have sufficient competence in the students' specializations and the schools did not attempt to improve their vocational competence (Sagli, 2017).

In a 2022 study, Zhou and colleagues did a systematic literature review on Vocational

teachers' professional learning outcomes in the past decade. They analysed 54 journal articles published between 2010 and 2021. These results highlighted that the outcomes of vocational teachers' learning were connected to the vagaries in their cognition and behaviour (Zhou et. al., 2022).

In Australia, Cox and Prestridge (2020) conducted a wide-ranging digital survey about the pedagogy in online education. Their findings indicated that vocation education teachers considered good online pedagogy as student-centered however, they noted that administration work and marking took much of their workload instead of student-centered practices like building rapport (Cox & Prestridge, 2020).

In 2023, Zhou did a conceptual review of the flipped learning approach as an innovative pedagogy in vocational learners' education. The investigations revealed that the flipped learning approach, as a type of blended learning was beneficial for learners and instructors as a learner-centered approach in vocational education (Zhou, 2023).

In 2019, Fernández-García and colleagues examined student perceptions of secondary education teaching effectiveness including teacher characteristics (educational level, gender, and teaching experience). A total of 7,114 Secondary students and 410 teachers in Spain, participated in the study. Results indicated that educational level had a significant effect on teaching skills domains and that female teachers were perceived to outperform their male counterparts by students (Fernández-García et. al., 2019).

## MATERIALS AND METHODS

### Research Design

The study adopted across sectional survey design. According to Tashakkori and Creswell, the design provides a description of trends and attitudes or opinions of a population (Tashakkori and Creswell, 2007). Additionally, Cohen et al. (2004) argue that a research design involves gathering primary data from part of a population and then

determining the incidence, distribution, and inter-relations of the variables within the population. These key aspects were appropriate for the study and provided an understanding of pre-service technical teachers' perceptions of the teaching and learning activities in teacher-instructor colleges of Uganda.

### Target Population

Kombo and Tromp (2006) define a target population as a group of individuals, objects, or items from which samples are taken for measurement. The target population for the study included pre-service technical teacher instructors from the following institutions: Kyambogo University, Nakawa vocational training college (central region), Jinja vocational training institute (eastern region), National Instructors' college Abilonino (northern region), African College of Commerce-Kabale (Western region). Kyambogo University was specially chosen because, for a long time, it has been training instructors for technical and vocational institutions. Furthermore, through her department of technical teacher and instructor education, Kyambogo University assesses and certifies instructors from other affiliated instructor training institutions in the country. The other technical teacher instructor colleges were chosen because they are affiliated to Kyambogo University.

### Sampling Technique and Sample Size

A total of 180 pre-service technical teachers were selected to participate in the study. These were randomly selected from their programmes of study. The researcher followed the timetables at the different technical teacher instructor institutions, which made it easy to involve pre-service teachers from different programmes. With the help of the trainers, the names of all the pre-service teachers in each programme were written on a piece of paper which was then folded and put into a box. After a thorough shaking of the box, the researcher randomly picked the papers and the names of the pre-service technical teachers found were the ones that took part in the study. The sample size of the study was determined using Krejcie and Morgans' table (1970) of determining

sample sizes. Accordingly, a sample size of 180 for a target population of 345 was used.

### Data Collection Instrument

A questionnaire was used to gather data from pre-service technical teachers in instructor training colleges. It consisted of sections relating to teaching and learning activities in the colleges. The questionnaire was constructed by the researcher based on the 5Ts (Time, Tutoring, Tasks, Trust, and Tools) as advanced by Nielson (2011) regarding vocational didactics (teaching and learning). Nielson (2011) argues that the development of competence in vocational education depends on the 5Ts i.e. the time allocated for training activities, how the tutoring (training) is conducted, and the assignments given the trust; which is the relationship between the trainers and pre-service technical teachers, and the equipment and materials used during the training. The questionnaire had closed-ended items. The close-ended items were set on a five point-Likert scale ranging from 1 representing “strongly disagree” and 5 which represents “strongly agree”.

### Validity and Reliability of the Questionnaire

According to Dykema and colleagues, validity refers to the extent to which an instrument measures what it is supposed to measure and performs what it is designed to perform (Dykema et al., 2010). Whereas reliability is the ability of an instrument to collect data that produces constant results (Wong et al., 2012). For this study, the questionnaire was tested for validity and reliability. The researcher distributed the item amongst 05 senior members at the school of education at Kyambogo University. The staff members rated the appropriateness of the items in the instruments using expert judgment. Content validity was done through exploratory factor analysis to ensure sample adequacy as well as ensuring absence of validity errors. To ensure reliability the questionnaire was pre-tested and re-tested using Cronbach’s coefficient alpha method of internal consistency, and the items were found to have a coefficient of 0.94, a value which is acceptable according to Cortina (1993).

### Data Collection and Analysis

The questionnaire items were administered to the pre-service technical teachers in the instructor training colleges. A total of 180 pre-service technical teachers were given the questionnaires to fill out. Of these, 168 questionnaires were properly filled and returned. After gathering the data, the researcher then coded and analysed it using SPSS version 20 software. The researcher used descriptive statistics in the form of frequencies, percentages, means, and standard deviations for interpretation in relation to the research questions. The data analysed was tabulated.

### Ethical Considerations

The research proposal and an informed consent document were first submitted to Mbarara University of Science and technology Research Ethical Committee (MUST-REC) for approval. The committee approved both documents. After approval, the documents were forwarded to the Uganda National Council for Science and Technology (UNCST) for registration. The UNCST registered the research protocol and then issued a research permit. The informed consent document ensured the voluntary participation of the respondents and assured them of their privacy and anonymity.

## RESULTS AND DISCUSSION

### Demographic Characteristics of Pre-service Technical Teachers

This section presents the demographic characteristics of the pre-service technical teachers. It includes the gender, age, study programmes, and year of study. *Table 1* shows that 64.3% of the respondents were males, whereas the remaining 35.7% were females. This indicates that the number of male pre-service technical teachers in the study was higher than that of their female counterparts. *Table 1* shows that 92.9% of the respondents were between the age range of 20 -30. The remaining 7.1 % were between the age ranges of 31-40. None was indicated in the age brackets of 41-50 years and 51 years and above. This indicates that the

majority of the pre-service technical teachers who participated in the study were in the young age bracket.

**Table 1: Gender and age of pre-service technical teachers**

		Frequency	Percentage
Gender	Male	108	64.3
	Female	60	35.7
	Total	168	100.0
Age group	20-30	156	92.9
	31-40	12	7.1
	Total	168	100.0

**Study Programmes and Year of Study**

From *Table 2*, it is evident that the majority of the respondents, that is, 60% were from year 1

whereas 40% were from year 2. The majority of the respondents were from the DITTE Agriculture class year one (14.9%).

**Table 2: Study programmes and year of study of pre-service technical teachers**

Study programmes	Year of study (N=168)			
	Year 1		Year 2	
	f	%	f	%
DITTE metal fabrication	10	5.95	06	3.57
DITTE Civil Engineering	15	8.93	06	3.57
DITTE Electrical Engineering	15	8.93	12	7.14
DITTE Automotive Engineering	10	5.95	10	5.95
DITTE Electronics	10	5.95	12	7.14
DITTE Agriculture	25	14.9	06	3.57
DITTE Leather technology	05	2.98	08	4.76
DITTE Fashion and design	10	5.95	08	4.76
TOTAL	100	60.0	68	40.0

**Teaching and Learning Activities in Technical Teacher Institutions**

Data was gathered through administering questionnaires to pre-service technical teachers. A total of 180 pre-service technical teachers were given the questionnaires to fill out. Of these, 168 questionnaires were properly filled and returned. The findings were as indicated below:

***Pre-service Technical Teachers' Rating of the Teaching and Learning Activities***

Pre-service technical teachers were invited to rate their agreement about the teaching and learning activities. They were invited to fill out a researcher-constructed questionnaire. The questionnaire was constructed based on the 5T's (Time, Tutoring, Tasks, Trust, and Tools) as advanced by Nielson (2011) regarding vocational didactics (teaching and learning). The responses

were gathered using a five point Likert scale and were indicated by 'strongly agree', 'agree', 'not sure', 'disagree', and 'strongly disagree'. Scoring weights of 5, 4, 3, 2, and 1 were used for 'strongly agree', 'agree', 'not sure', 'disagree', and 'strongly disagree' respectively.

The analysis of the pre-service technical teachers' opinions was done using mean and standard deviations. Standard deviation is the average spread of scores around the mean. According to Kean University (2013) research guidelines, when the standard deviation is greater than the mean, then the mean is inappropriate as an illustrative measure of central tendency. Accordingly, for this study, the values of the standard deviations were less than the mean values as indicated in the tables below, and hence, the mean was deemed appropriate to rate the teaching and learning activities.

**Table 3: Pre-service technical teachers' opinion on the adequacy of the time for teaching and learning (N=168)**

Statement	SA		A		N		D		SD		Mean	Std Dev
	f	%	f	%	f	%	f	%	f	%		
Adequate time is available to cover training content	57	33.9	61	36.3	-	-	48	28.6	-	-	3.77	1.21
Pre-service technical teachers are given enough time to practice tasks	60	35.7	49	29.2	12	7.1	37	22.0	10	6.0	3.67	1.32
Adequate rest time is allowed between training sessions	38	22.6	95	56.5	1	0.6	30	17.9	4	2.4	3.79	1.06
There is proper time management during the training process	36	21.4	60	35.7	24	14.3	36	21.4	12	7.1	3.43	1.24
Pre-service technical teachers learn at their own pace	60	35.7	60	35.7	12	7.1	24	14.3	12	7.1	3.79	1.27

*Key: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree*

From items presented to the pre-service technical teachers as indicated in *Table 3*, all five items were rated above the mean average. This implied

that pre-service technical teachers agreed that enough time was available for training.

**Table 4: Pre-service technical teachers' perception of the organization of training (N=168)**

Statement	SA		A		N		D		SD		Mean	Std Dev
	f	%	f	%	f	%	f	%	f	%		
Teaching is learner-centered	79	47.0	50	29.8	13	7.7	25	14.9	-	-	4.10	1.07
The modules have been organized from simple to complex	35	20.8	84	50.0	24	14.3	-	-	24	14.3	3.63	1.23
There is a proper choice of training methods and techniques	10	6.0	96	57.1	12	7.1	48	28.6	2	1.2	3.38	1.00
There is continuous assessment of pre-service technical teachers	83	49.4	60	35.7	-	-	15	8.9	9	5.4	4.16	1.15
Feedback from the study progress is adequate	24	14.3	70	41.7	13	7.7	48	28.6	13	7.7	3.26	1.23
During the instructional process, a record of pre-service technical teachers' competency is taken	24	14.3	83	49.4	12	7.1	37	22.0	12	7.1	3.41	1.18
Trainee individual differences catered for during the training	11	6.5	84	50.0	12	7.1	60	35.7	-	-	3.28	1.03
Study counselling is adequate.	12	7.1	83	49.4	24	14.3	37	22.0	12	7.1	3.27	1.10

*Key: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree*



From items presented to the pre-service technical teachers as indicated in *Table 4*, all the eight items were rated above the mean average. This implied

that pre-service technical teachers agreed that the organization of training was good.

**Table 5: Pre-service technical teachers' perception of assignments given (N=168)**

Statement	SA		A		N		D		SD		Mean	Std Dev
	f	%	f	%	f	%	f	%	f	%		
Assessment is based on demonstration of skills from tasks and assignments	70	41.7	60	35.7	-	-	36	21.4	-	-	3.99	1.14
Real-life assignments are given	59	35.1	95	56.5	12	7.1	-	-	1	.6	4.26	.64
Pre-service technical teachers are guided to accomplish tasks	72	42.9	80	47.6	12	7.1	2	1.2	2	1.2	4.29	.75
Assignments given are supported by practice.	46	27.4	108	64.3	12	7.1	-	-	-	-	4.20	.56
The assignments are revised often to reflect what is required in the world of work	36	21.4	84	50.0	36	21.4	10	6.0	2	1.2	3.85	.87

*Key: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree*

From items presented to the pre-service technical teachers as indicated in *Table 5*, all five items were rated above the mean average. This implied

that pre-service technical teachers agreed that the assignments they were given during training were adequate.

**Table 6: Pre-service technical teachers' perception of their trust in the teaching and learning process (N=168)**

Statement	SA		A		N		D		SD		Mean	Std Dev
	f	%	f	%	f	%	f	%	f	%		
Lecturers and technicians are facilitators of learning	93	55.4	72	42.9	-	-	-	-	-	-	4.56	.49
The program content is adequate	46	27.4	108	64.3	-	-	-	-	12	7.1	4.13	.74
There is a good trainer-trainee relationship	36	21.4	100	59.5	12	7.1	13	7.7	7	4.2	3.86	.98
The study programmes meet trainee expectations	48	28.6	84	50.0	12	7.1	12	7.1	12	7.1	3.86	1.13
Lecturers and technicians clearly have the skills for training	84	50.0	60	35.7	12	7.1	9	5.4	3	1.8	4.27	.94
The quality of teachers is good	63	37.5	93	55.4	1	.6	8	4.8	3	1.8	4.22	.83
Teachers have a high level of motivation	60	35.7	60	35.7	36	21.4	7	4.2	5	3.0	3.97	1.01

*Key: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree*

From items presented to the pre-service technical teachers as indicated in *Table 6*, all seven items were rated above the mean average. This implied

that pre-service technical teachers trusted the teaching and learning process in their institutions.

**Table 7: Pre-service technical teachers' perception of the equipment and materials used during training (N=168)**

Statement	SA		A		N		D		SD		Mean	Std Dev
	f	%	f	%	f	%	f	%	f	%		
Modern training equipment is used for instruction	22	13.1	48	28.6	-	-	60	35.7	37	22.0	2.75	1.42
Adequate instructional equipment and materials are available	24	14.3	35	20.8	-	-	59	35.1	49	29.2	2.56	1.46
The training tools and equipment used reflect those in the real world of work	60	35.7	60	35.7	12	7.1	13	7.7	23	13.7	3.72	1.38
Pre-service technical teachers are allowed to practice with training equipment and materials	83	49.4	60	35.7	-	-	23	13.7	1	.6	4.20	1.03

*Key: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree*

From items presented to the pre-service technical teachers as indicated in *Table 7*, two items, that is, 'Modern training equipment is used for instruction' (2.75), and 'Adequate instructional equipment and materials are available' (2.56), were rated below the mean average score. However, their other items were rated above the mean average. This implied that pre-service technical teachers regarded the training equipment and instructional materials as inadequate for training.

## DISCUSSION

### Time for Teaching and Learning

The pre-service technical teachers revealed that **the available time for training was adequate**. However, they highlighted the issue of delays with the provision of timely feedback on the assignments. In their study on the importance of feedback Hattie and colleagues (2021) concluded that:

*Feedback can be powerful, but it is also the most variable. Understanding this variability is critical for instructors who aim to improve their students' proficiencies. There is so much advice about feedback sandwiches (including a positive comment, then a specific feedback comment, then another positive comment), increasing the amount of feedback, the use of*

*praise about effort, and debates about grades or comments, but these all ignore the more important issue about how any feedback is heard, understood, and actioned by students (Hattie et. al., 2021 p. 7-8).*

### Organization of Training (Tutoring)

The findings indicated that there was adequate tutoring for pre-service technical teachers. Competence development among the pre-service technical teachers can be enhanced by introducing innovative teaching pedagogies. The finding aligns with Zhou's (2023) conclusion when he reviewed the concept of the flipped learning approach. The approach was deemed beneficial as an innovative pedagogy to learners and instructors in vocational education. In the view of the researcher, this approach can be applied to technical and vocational teacher training as a blended learner-centred technique to enrich pre-service professional work thinking and performance.

### Tasks and Assignments

The findings further indicated that pre-service technical teachers agreed that the assignments were adequate. In the view of the researcher, an effective way to assess progress in teaching and learning in TVET is by giving assignments for students to practice. Regarding the assessment of

learning in Vocational Education and Training (VET), the European Training Foundation (ETF) (2020) highlights that:

*Assessments, whether formative or summative, need to capture learning effectively. “Authentic” assessments, which may include demonstrations of work-based tasks; multi-media portfolios; and so on invite learners to perform ‘real-world tasks’, whether routine tasks or tasks that draw on complex problem-solving skills. Assessors may use rubrics setting out performance criteria and gradations of quality levels, to assess learner competencies (ETF, 2020 p. 5).*

### Trust

In regard to trust in the teaching and learning process, the findings revealed that pre-service technical teachers trust the process. The finding was in line with Niittyalahti and colleagues’ (2021) observation when they studied vocational student profile engagement. They reminded us that ‘student engagement is supported by interest and enthusiasm for the curriculum, strong connectedness to other students, and suitable ways to learn and study’ (Niittyalahti et. al., 2021 p. 2).

### Tools and Materials

On the issue of instructional equipment and materials used for training, the findings revealed that pre-service technical teachers were of the view that these were inadequate in their institutions. Asplund and colleagues argue that in the field of vocational education, the learning processes involve the interaction of teachers and students to learn a specific content knowledge as well as the use of physical objects like machines and hand tools to develop expertise for practicing the profession. In the view of the researcher, when the machines and hand tools are inadequate, the pre-service technical teachers won’t have the required competence to practice their profession proficiently (Asplund et al. 2022). Furthermore, training on adequate machines, hand tools, and objects develops trainee competence thus

enhancing ‘habits of the mind, habits of the hand and habits of the heart’ (Shulman, 2005, p. 52).

### CONCLUSIONS

On the issue of time for teaching and learning, the pre-service technical teachers were contented with the available time for learning. In regard to tutoring (organization of training), tasks, and assignments, the study established that pre-service technical teachers perceived them as being adequate for training. **Furthermore, pre-service technical teachers trusted the teaching and learning process.** It is important for pre-service technical teachers to trust the teaching and learning process because it ensures honest dialogue on whether learning took place or not, such that desired solutions can be sought. With regard to instructional tools and materials, pre-service technical teachers were of the view that these were inadequate. In technical and vocational education, equipment and materials are important for skills development and should always be adequate for effective training.

### Recommendations

Technical teacher instructor institution administrators should lobby for more funding through; private companies, international donor agencies, tax rebates, fellowships and grants, etc. to fund the purchase of the expensive latest instructional equipment and materials. Policymakers have a role to play in creating mechanisms for responding to constant technology advancement and enabling technical instructor teacher training institutions to utilize them in the training of pre-service technical teachers. Further, the research results imply that the Uganda TVET policy of 2019 should be fast-tracked to enhance competence development among technical and vocational teachers which in turn impacts student learning outcomes.

Additionally, the study suggests further research on student career choices as technical and vocational teachers since it can have an influence on the perception of technical and vocational education. Policymakers should vigorously advocate for career guidance at all the lower levels

to attract female technical teachers in technical teacher instructor institutions. The government should consider an increased budget for technical teacher instructor institutions to enable them to purchase the latest relevant training equipment and materials similar to that in the world of work.

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