Perspectives of teacher educators on the challenges of training technical and vocational education teachers in Ethiopia

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Abstract

Shortage of qualified teachers is a critical problem in the Technical and Vocational Education and Training (TVET) sector. This study investigates the barriers that hinder the preparation of competent TVET teachers in Ethiopia. A qualitative case study involving 20 purposively selected teacher educators was used. The study revealed numerous challenges including weak student admission criteria, a lack of teacher competency standards, irrelevant curriculum, theory-focused training, limited resources, ineffective quality assurance system, leadership issues, and gaps in teacher educators' practical and pedagogical skills, industry experience, interest, and motivation. The study concluded that TVET teacher training is beset by various limitations and urgently requires reform. In this regard, it is critical to attract high-quality and motivated candidates, establish competency standards, adapt the curriculum to meet the specific needs of TVET teachers, involve industries in the training process, and enhance the competencies of teacher educators through industry placements.

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Introduction

To effectively deliver high-quality Technical and Vocational Education and Training (TVET) and support a nation's economic advancement, teachers must possess a high level of competence (Wals, 2012). The quality of teachers is directly influenced by the nature of their training programs (Darling-Hammond, 2012).

Technical and vocational education and training teachers are expected to develop a need-based curriculum, translate it into practice, and enable the training to respond to labor market needs (Orr, 2019). They have also advisory roles to closely support industries to be more productive (Grollmann, 2009). They can do these responsibilities if they are properly trained and develop appropriate competencies (McGrath, 2022). Hence, the TVET teacher

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training program needs to be comprehensive, knowledge-based, responsive, context-sensitive, reflective, and analytic to enable teachers to develop the required competencies (Asghar & Ahmad, 2014; Bünning et al., 2011; Dreher, 2009).

The experiences of countries with better TVET systems, such as Germany, the Philippines, Australia, and Indonesia, show that TVET teacher training is a priority agenda for governments, educators, and researchers (Dreher, 2009). They tried to link TVET teacher training with industries by integrating on-the-job training and a standard-based assessment and certification. Similarly, the African Union Commission advises the African governments to prioritize the quality of TVET teacher training pedagogies (African Union, 2007).

Teachers' competence is a proven ability and improved capability to carry out teaching responsibility. It is described as capabilities in subject matter knowledge, skills in technology pedagogy, and expertise (Nagarajan & Prabhu, 2015; Orr, 2019). Competencies are classified into four areas: (1) pedagogical, (2) personal, (3) social, and (4) professional (Malloch & Helmy, 2015). They are also described as essential capabilities of TVET teachers in terms of attitude, skill, and knowledge (Grosch, 2017).

Teacher training requires predetermined competency standards that specify teachers' knowledge, technical skills, and pedagogical skills to develop during training (Axmann et al., 2015; Bünning et al., 2011). These standards help the teacher training institutions to determine the type of courses for developing essential competencies, not only subject-specific but also transversal skills such as planning, leadership, communication, and teamwork.

Moreover, TVET teacher training needs to implement innovative pedagogy that integrates theoretical knowledge with practical problem-solving, self-regulation, and reflection skills and allows team and personalized learning (Lucas, 2012; Marope et al., 2015). It should also build new strategies and models for teaching and learning and help teachers develop vocational identity (Stanely, 2015).

Statement of the Problem

In Ethiopia, TVET teacher training started in 1967 at the Addis Ababa University teacher training unit at the diploma level, followed by Kotebe College of Teacher Education in 1976 (Zewdie & Fantaye, 1994). The training modeled the school teacher training (Hundie & Taccuni, 2017), which might not fit the training of TVET teachers. The Nazareth College of Technical Education was also established in 1993 and trained teachers at diploma and bachelor levels (Lasonen J.et al., 2005).

Following the massive expansion of TVET in Ethiopia in 2001, the TVET teacher training program was expanded to other universities, including Jimma, Hawassa, Bahir Dar, and Mekelle universities in 2004 to upgrade the qualification of TVET teachers from diploma to bachelor's degrees (Hundie & Tacconi, 2017). The training had administrative and pedagogical challenges, including instructors' lack of understanding of the nature of TVET and their intention to use conventional teaching methods focusing on theoretical knowledge with less emphasis on practical and technological skills. Later on, the training of these universities was terminated. Adama University, previously called Nazareth College of Technical Teacher Education, continued providing TVET teacher training until it was promoted to Science and Technology University in 2015.

Gradually, TVET teacher training was moved to the Federal Technical and Vocational Education and Training Institute, established through Proclamation 245/2011 of the FDRE government. The institute is mandated to prepare quality TVET teachers and leaders for Bachelor's and Master's Degrees. Currently, the institute is the only TVET teacher training institution in Ethiopia.

In Ethiopia, a trainer qualifications framework was introduced in 2010. The framework aimed to guide the training of teachers and their recruitment. In this framework, TVET teachers are categorized into three groups based on their level of qualification. A-level trainers, those with master's degrees; B-level trainers, those with bachelor's degrees; and the third category was C-level trainers who have TVET certificates at levels 3, 4, and 5 (MoE, 2010). However, teachers are criticized for lacking knowledge, skills, and competencies and for their inability to translate occupational standards, resulting in demand and supply mismatches (Teferra et al., 2018; Yamada et al., 2018).

In Ethiopia, TVET teachers have been unable to provide need-based quality training to support the development initiatives of the country (Hagos & Kemenade, 2013; Hundie & Taccuni, 2017; MoE, 2015; Yamada et al., 2018). They lack theoretical knowledge and technological and pedagogical skills. Limited industry experience, less interest in teaching, and a tendency to use the profession as a transition route to other professions were also reported to be problems of TVET teachers in Ethiopia (Teferra et al., 2018).

The present study, therefore, aimed to investigate the challenges that hinder the preparation of quality TVET teachers. In light of this, the study was guided by the following research question: What are the perspectives of teacher educators on the challenges of quality TVET teacher training?

Methods

Design

The study sought to examine the barriers that hinder the provision of quality TVET teacher training. Thus, an exploratory qualitative case study was employed to explore and explain the situation in its context (Creswell, 2014; Gay et al., 2012). The study used in-depth semi-structured interviews to develop new insights constructed through the collaborative efforts of the participants and the researcher (Cropley, 2019; Walia, 2015) supplemented with onsite observation. The study was conducted on the Federal Technical and Vocational Training Institute, the only TVET teacher training institution in Ethiopia.

Participants

The study participants are TVET teacher educators at the Federal Technical and Vocational Training Institute. Since the study aimed to analyze the TVET teacher training process in detail, participants were selected purposely (Maxwell, 1996) based on teaching experience criteria to share their views and experiences. Thus, twenty teacher educators were chosen from department heads, the academic affairs office, the quality assurance office, the

industry linkage office, common course teachers (English and mathematics), and three expatriate teachers from China, India, and the Philippines.

The participants were approached using a formal letter from the Department of Curriculum and Instruction at Addis Ababa University with the permission of the Director General of the Institute. For the sake of anonymity, the participants were coded using numbers

Data Gathering

The data was collected using semi-structured interviews. The interviews were guided by questions such as "Do competence standards guide teacher training? "Do you feel the curriculum suits the needs of teachers?" "What are the significant challenges of teacher training?". The interviews provided interactive dialogues between the research participants and the researchers and enabled us to understand what was happening in the context (Halcomb & Davidson, 2006). The interview sessions were conducted individually based on an interview protocol. Explanations were made about the purposes of the interview, and the participants signed consent forms. All interview sessions were recorded, transcribed, and returned to the interviewees for confirmation. The interviews were conducted from February to April 2023.

Data Analysis

Before data analysis, a critical review of the interview transcriptions was made. Using the Nivivo software, the data were coded and put into categories and themes for interpretation and analysis (Saldana, 2013). Thematic analysis was used for its flexibility to analyze rich and detailed data (Braun & Clarke, 2006).

Thus, ten themes emerged during data analysis and interpretation. These were (1) the image and understanding of TVET, (2) teacher competency standards, (3) curriculum relevance, (4) training delivery, (5) student admission, (6) industry participation, (7) quality of teacher educators, (8) resources and facilities, (9) quality assurance, and (10) leadership.

Results

This study sought to explore the barriers that hinder the preparation of competent TVET teachers through interviews. The participant teacher educators shared their firsthand experiences and insights regarding the challenges faced during teacher training. The results of this study are presented as follows.

Image and Understanding of TVET Teachers

The study participants noted that technical and vocational education and training (TVET), in general, and TVET teaching, in particular, are often viewed as inferior, serving as a last resort for individuals with limited academic backgrounds. Teaching within the TVET sector has received inadequate consideration, evidenced by the recruitment of instructors lacking the necessary pedagogical expertise, subject knowledge, and passion for the

profession. One participant vividly captured the prevailing attitude towards TVET in Ethiopia by stating the following:

> In Ethiopia, there exists a pervasive bias towards TVET among individuals regardless of their level of education. Blue-collar jobs are often unfairly stigmatized. Those laboring in workshops dressed in dark guan are frequently labeled as mere daily wage earners, whereas white-collar professionals are accorded greater respect and social statutus (Participant (P) 15, February 10 2023).

In support of this point, another participant eloquently articulated the issue by stating, Even the teacher educators at the institute show little enthusiasm for involvement in Technical and Vocational Education and Training, instead opting for positions in traditional university education" (P1, April 2, 2023).

The government has been neglecting the training of TVET teachers, evident in the lack of adequate institutions dedicated to this sector. This issue is becoming increasingly severe, as only the Federal TVET institute is currently offering teacher training, despite its limited campus size and low enrollment capacity.

Teacher Competency Standards

The participants of the study noted that TVET teacher training lacks predefined standards to guide curriculum development and delivery of training. Rather, it relies on the curricula of various Ethiopian universities with distinct missions. As articulated by one interviewee, "the graduate profiles in the TVET curriculum bear resemblance to those outlined in the engineering curricula of other universities" (P1, March 6, 2023).

Furthermore, instances arose where international factory standards, particularly those of car manufacturers, were compared in order to determine their potential usefulness in guiding training practices. However, it is important to note that while factory standards can serve as a valuable reference point for training purposes, they should not necessarily dictate the quality of teacher training. Training standards, on the other hand, outline the specific goals and outcomes that learners are expected to achieve.

In light of this, all participants recognized the importance of establishing comprehensive competence standards for TVET teacher training. These standards would outline the knowledge, skills, and attitudes that teachers should develop throughout their training in order to effectively perform their roles.

The Curriculum

All participants noted that although the institute's initial plan was to have training consisting of 50% theory and 50% practical components, in reality, the focus has been more on developing theoretical knowledge among trainees. In some, up to 80% of the training is theoretical. One participant stressed the importance of recognizing the multifaceted nature of TVET teacher training, stating:

> Being a TVET teacher is like hitting three targets with one shot: 1) serving as a technology teacher who plays a crucial role in molding a skilled workforce, 2) acting

> as an industry consultant tasked with enhancing and innovating technologies to boost productivity, and 3) operating as an entrepreneur capable of generating income and contributing to the economy (P20, March 6, 2023).

Nevertheless, participants raised concerns about the curriculum's inability to adequately equip teachers for their responsibilities. In line with this, one participant suggest the following proposal: "Technology training is a demanding process, necessitating both teachers and students to dedicate substantial time and effort to workshops, labs, projects, and demonstrations. Therefore, I propose that the training should follow a 70:30 or 60:40 ratio" (P20, March 6 2023).

The participants highlighted the ongoing efforts to revise the curriculum in order to better meet the needs of TVET teachers. However, the revision process has been criticized for failing to identify gaps in the curriculum, lacking active participation from key stakeholders, and having a shortage of experts in curriculum development. As a result, there has been a tendency to simply replicate the curriculum of other institutions. The lack of understanding and commitment from the institute's leaders in attracting skilled curriculum experts is exacerbating the issue.

In addition, one participant emphasized the importance of regular class attendance, ongoing monitoring, and evaluation of students' progress in technology learning. However, there are ethical concerns among students, as some tend to leave classes immediately after being marked present, and the continuous assessment component is not being given enough emphasis. Currently, only 20% of the grade is allocated to continuous assessment, with 30% for the midterm and 50% for the final exams. The participant suggested that this assessment structure may work well for supportive and general courses like English and mathematics, but may not be suitable for technology-focused subjects. In this regard, one of the participants had the following to say:

> In the previous semester, I allocated 60% of the grade for student practical activities and projects, and the remaining 40% for mid and final exams. Despite this, the registrar rejected this grade and required me to make changes. It became evident that there is a lack of understanding when it comes to teaching technology and learning, and that the teacher training system in this country is different from that of other nations (P20, March 6, 2023).

Furthermore, participants expressed concern about the limited study time available for completing the teacher training program, which hindered their ability to focus on practical activities and acquire essential skills. One participant described the situation as follows:

> The insufficient duration of the training program results in students being inadequately prepared. The time allocated for some necessary technology courses, such as general workshop practices and technical drawing, is inadequate as it is only offered for one semester. However, these courses require up to four semesters to cover comprehensively. Additionally, there is a lack of teaching practice that would allow students to gain practical experience in a real teaching environment with mentor support and supervision (Participant 2, March 6, 2023).

Many participants expressed concerns about the training being overloaded with too many courses crammed into a short period of time. They believed that this approach resulted in a shallow understanding of the material, preventing teachers from acquiring the necessary knowledge and skills. Furthermore, one participant specifically noted that there were significant gaps in both vertical and horizontal integration with the lower-level TVET curriculum. At the lower level, the training is tailored to be highly specialized and hands-on, focusing on specific vocational skills such as machining, welding, painting, and plastering.

In their previous training, students did not acquire the necessary theoretical knowledge, mathematics skills, and proficiency in the English language. These subjects are fundamental for the current teacher training program. However, the curriculum offered here is generic covering both theoretical and technological knowledge, which can be daunting for students. The lack of proficiency in English and mathematics is particularly concerning as it hinders their ability to fully engage with the training. In fact, as one participant stated, mathematics in that campus was considered as “nuclear science" (P10, February 15, 2023).

The curriculum has been criticized for its failure to incorporate Ethiopian indigenous technologies which are essential for teachers to develop the necessary knowledge and skills to integrate them into the curriculum effectively. For instance, the teacher training program lacks training on Ethiopian local technologies such as cultural dressmaking, pottery, and jewelry-making. As one participant noted, there are challenges in “documenting, registering, integrating, and translating these indigenous technologies into actionable practices within the education system and training programs” (P15, February 10, 2023). This has hindered the community from enhancing productivity and addressing societal issues.

Student Admission

The majority of research participants noted that the primary focus of the institute was to enhance the qualifications of C-level teachers who had obtained certificates in 3 to 5 areas from TVET colleges by enabling them to earn bachelor's degrees. These teachers were originally trained for hands-on craftsmanship but joined the world of teaching as part of the country's efforts to address shortages in TVET educators through the "C-flooding initiative" launched in 2010. Despite being permitted to teach at levels 1 and 2, these teachers lack pedagogical expertise, genuine enthusiasm for teaching, and motivation.

The process of admitting students involves two stages. In the initial stage, the Office of the State Minister (formerly the Federal TVET Agency) screens applicants based on criteria such as teaching experience, performance evaluations, and certification of competence. However, many participants criticized this stage for being influenced by political factors and social connections, as well as for its limited ability to accurately assess individuals' competencies and address administrative issues.

The second stage consists of an entrance exam administered by the institute to assess applicants' knowledge in various subjects, pedagogy, English language, and mathematics. Despite this, some applicants who did not perform well on the exam were still admitted. However, these students faced challenges during the training due to their lack of theoretical knowledge, technical skills, and proficiency in English and mathematics.

Notably, the students from Gambella and Somalia regions faced particularly significant difficulties, including shortcomings in literacy and numeracy skills, which made it difficult for them to fully participate in the training program.

The majority of participants in the study strongly criticized the decision to upgrade C-level teachers to remain in teaching roles. This change is deemed to have a negative impact on the overall success of TVET and specifically on teacher training programs. Participants highlighted the challenges faced by teacher training programs, emphasizing that students were significantly lacking in English reading and writing skills. This problem, according to the participants, should not be overlooked, as the medium of instruction for teacher training is English, and all training materials, manuals, and machine specifications are also in English. Furthermore, participants pointed out that despite the importance of mathematics in technology, students struggle with basic arithmetic and applying mathematical concepts.

Participants also expressed grave concerns about the ethics and readiness of students to learn. They criticized students for showing disrespect towards their teachers, not valuing time, having poor work habits, and lacking the commitment needed to spend much time in workshops and laboratories. Additionally, students were seen as not recognizing the government's efforts in providing for their basic needs such as food, accommodation, and clothing for workshop duties, as well as paying their monthly salary during training. Participants also noted that students were more concerned about obtaining certificates and securing their future job rather than focusing on their education.

Fortunately, the decision to admit more C-level teachers into the system has been halted. Participants revealed that only 450 C-level teachers were in the system and this will be the final group admitted that summer. There was hope among participants that the newly approved education and training policy, set to take effect in January 2023, will bring significant changes to the education system. The policy includes a plan to introduce streaming to TVET after completion of grade twelve, which is expected to attract students with higher educational backgrounds to enroll in TVET teacher training programs.

Course Distribution and Training Delivery

The interview highlighted the tension between subject matter teachers and pedagogical teachers regarding ownership of pedagogical courses. The debate mainly revolved around the delivery of pedagogy and supportive courses, as teachers had differing views on the necessity of these courses. Participants also raised concerns about credit allocation and how pedagogy courses are delivered.

Subject matter teachers acknowledge the importance of pedagogical skills, but they argue against excessive credit allocation for pedagogical courses. They also question the inclusion of unnecessary courses that take up a significant amount of training time. One participant expressed this sentiment by saying, "What is the importance of focusing on teaching methods without having a solid understanding of the content? It could turn teachers into performers, like actors in a play" (P1, April 2, 2023). The overall consensus is that teachers need to have a strong foundation of knowledge and skills in their specific subject area to be effective educators. Generally, there was an agreement that for teachers to be

successful educators, they must possess a strong foundation of knowledge and skills in their specific subject area.

In order to become effective teachers, trainers must enhance their expertise and capabilities in their specific field of study. During an interview, one of the participants described the challenges they faced during their four-year teacher training program as follows:

> Out of the four years required to complete teacher training, the pedagogical, general, and supportive courses comprised one and a half years. In particular, the first year's courses were worth a total of 47 credits, which seemed excessive. Additionally, less relevant courses were offered 3 or 4 credits, while essential subject matter courses were either merged or undervalued in terms of credit allocation (P1, April 2, 2023).

The issue of course overlap was highlighted as a significant time-consuming problem for students in their major area courses. An example of this is the overlap between General Psychology and Educational Psychology. Besides, the contents of educational technology were reported to be irrelevant to current needs. As a result, participants suggested that these courses be revised or removed altogether.

Many participants expressed the belief that courses like teaching methods, English language, mathematics, and research methods should be taught by individuals who have a strong understanding of technology in order to better align the content with subject matter knowledge. This would enable students to better link pedagogical concepts with their specific area of specialization. However, the current curriculum predominantly features generic pedagogy rather than subject-specific pedagogy, resulting in courses being taught by experts in general pedagogy who may lack the necessary understanding of the subject matter.

Participants stressed the importance of English instruction that focuses on developing students' vocabulary related to technology and their ability to articulate processes and procedures within a production context. Otherwise, as noted by one participant, “teaching an American or British slang will not add value” (P20, March 6, 2023). They believed that this approach would greatly enhance students’ comprehension of the subject matter. They also highlighted the need for mathematics courses to concentrate on fundamental concepts in solid and geometric mathematics rather than advanced topics like calculus and integration.

One participant suggested that the institute should provide pedagogical training for subject matter teachers to improve their teaching methods. Another participant, with a background in pedagogy, echoed this sentiment and emphasized the importance of aligning supportive pedagogy courses with subject matter content to help students make meaningful connections in their learning. They proposed that subject matter teachers could deliver these courses. In line with this, one participant had the following say.

> The institute provides general pedagogy training with pedagogy teachers, but it lacks subject matter pedagogy training which is essential. In Germany, subject matter teachers possess pedagogical skills and are responsible for offering pedagogy courses (P10, February 15, 2023).

Yet another participant further supported the above argument by stating, "If I were assigned to offer pedagogy courses to automotive students, I would need to immerse myself in an automotive shop, familiarize myself with the concepts and procedures of automotive technology, and customize my content to meet students' needs" (P15, February 6, 2023).

This participant further suggested that collaborative or team teaching methods can be good strategies, for they create mutual understanding between subject matter and other teachers, enabling them to integrate subject matter content with pedagogy and technology. Drawing from practical experiences in TVET colleges, the participant elaborated on a successful approach implemented by the college to address challenges. This involved forming teams comprising teachers from diverse educational backgrounds, including engineering, graduates from Adama Technical University, and those from TVET colleges. Each group was assigned specific roles, with engineers focusing on designing bill of quantities, Adama Technical University graduates developing training modules, and TVET graduates handling practical skill training. This "three-in-one model" was commended for its success in enhancing training quality. The participant recommended team teaching as a transitional strategy until teacher training programs can sufficiently build capacity for educators to deliver comprehensive training independently.

During an interview, a participant shared his visit to Tanzania and proposed that the Ethiopian TVET teacher training program adopt a consecutive approach rather than an integrated one. His suggestion entailed sending students who have completed their subject matter training at TVET colleges to a specialized university for intensive pedagogical training lasting three to six months.

Teachereducators' Competence

The institute's teacher educators are selected from university graduates in engineering fields, graduates of Adama TVET teacher training college, and individuals with backgrounds in education. In addition to local talent, the institute also recruits teachers from countries like India, China, and the Philippines.

However, despite the diverse background of the educators, many study participants have expressed concerns about the overall competence of the teaching staff. These concerns stem from perceived limitations in various areas, such as providing practical training, developing curriculum, bringing industry experience to the classroom, and demonstrating a genuine passion for the teaching profession.

Furthermore, teacher educators have been criticized for their lack of dedication and enthusiasm in participating in workshops and labs to stay current with cutting-edge technologies and provide adequate support for their students. Instead, they often prioritize earning extra income through part-time work. This hinders their ability to effectively utilize innovative teaching strategies that promote independent learning and cater to the individual needs of their students. In agreement with this viewpoint, one of the participants expressed the following sentiment: "Educators show greater enthusiasm for smaller-scale projects as opposed to larger ones, such as crafting cupboards, beds, and shelves to generate revenue for the institution. Even if they do not need these items for personal use, they tend to opt for purchasing them instead" (P 18, March 10, 2023).

Participants were grateful for the institute's commitment to enhancing the skills of educators through opportunities like international exposure visits and various professional development programs, including a Higher Diploma Program in pedagogy, as well as master's and Ph.D. programs both locally and internationally. The institute was also appereciated for its plan to launch an externship program for teacher educators and an internship program for students to provide valuable industry experiences.

Resources and Facilities

The institute has invested resources in establishing workshops and research centers. The workshops for Manufacturing, Wood, Automotive, and Garment Technologies are well-organized for practical training. However, training programs like Leather and Water Technologies began without proper laboratory facilities, as the institute plans to construct the necessary workshop and lab. Currently, as one of the participants (Participant 7) mentioned, the leather training utilizes the Ethiopian Leather Development Institute workshop, which is inconveniently located far from the institute. Similarly, the water training lacks a laboratory, causing a reliance on theoretical knowledge. Additionally, some machines are malfunctioning, and there is a shortage of training materials and equipment, impacting the quality of training provided.

The majority of participants in the study have expressed concerns regarding the institute's capacity. Originally established as a Polytechnic College with a small campus in 2010, the institute was later upgraded to a higher level by Proclamation 245/2011 to train teachers and TVET leaders for the entire TVET sector. Despite this elevation in status, there was no corresponding expansion of workshops and laboratories to accommodate the increased responsibilities.

As one of the participants (P 3) stated, the institute's equipment is outdated and insufficient to provide advanced training, especially in the face of rapidly changing technology. This issue is compounded by the fact that teacher educators struggle to operate sophisticated machines during industry visits, as they are not well-versed in the latest technologies.

However, it should be noted that one participant did appreciate the institute's machines for providing basic training, indicating that there may be differing opinions on the overall effectiveness of the institute's resources. The following excerpt epitomizes this idea:

> While the precision levels of machines continue to advance, the fundamental principles of science remain constant. The equipment available in our institute helps students in developing basic knowledge and skills that serve as a foundation for more advanced technologies. The key is to grasp the fundamental aspects of the technology (P20, March 6, 2023).

The inadequate availability of training materials and equipment poses a significant challenge to the quality of training provided. Participants identified two key factors exacerbating this issue: the government's stringent procurement policy hindering flexible purchasing processes and the institute's inefficient procurement procedures, resulting in lengthy delays in acquiring necessary resources. As reported by one participant, "A purchase

request submitted at the start of the semester may not be fulfilled until the end of the training" (P12, March 25, 2023). Additionally, many participants asserted that the scarcity of training resources significantly undermines the overall quality of the training program.

Industry Participation

Without exception, all interview participants emphasized the minimal involvement of the industry in the training program. Both teacher educators and students have no interaction with the industry, which was identified as a significant issue for two main reasons: a lack of understanding regarding the purpose and significance of cooperative training, and a lack of legal support to facilitate collaboration between the industry and the teacher training institute. Furthermore, industries are reluctant to participate due to the absence of incentive mechanisms, lack of reimbursement for machine damage, and concerns about resource wastage and production delays. The scheduling and management of cooperative training also present significant challenges.

One participant articulated the importance of cooperation between training providers and industry in the following manner:

> Effective cooperation in training necessitates a shared understanding and strategic planning. For example, training in construction technology mandates hands-on experience that aligns with the various stages of the construction process. Hence, it is imperative for both parties to collaborate on setting a schedule for these activities. Failure to do so may result in the need to transition to an internship program (Participant 8, April 15, 2023).

Quality Assurance

Establishing a strong quality assurance system is paramount for ensuring the relevance and effectiveness of teacher training. However, some participants have raised concerns that the training lacks such a system. Despite the institute's initial plan to balance theoretical and practical training at 50% each, there have been cases where the ratio skewed to 80% theoretical and 20% practical in certain fields. This discrepancy in the allocation of training components raises questions about the quality of the program.

Moreover, the minimal emphasis placed on ongoing student projects in the assessment process is problematic. This could be seen as a clear indication of a lack of comprehensive evaluation of student learning. Additionally, the absence of industry involvement in curriculum development and training delivery poses a challenge in ensuring the relevance of the training to real-world practices.

Furthermore, there appears to be a gap in systematic follow-ups for the assessment of exams and student projects. This lack of monitoring hinders the ability to verify whether students are meeting the expected learning outcomes. Addressing these issues is crucial for enhancing the overall quality and effectiveness of the teacher training program.

Leadership

The TVET sector is currently under the jurisdiction of the Ministry of Labor and Skills, leading to significant administrative challenges related to student placement and the

promotion of teacher educators. Participants pointed out that the leaders appointed to lead the institute lack a thorough understanding of TVET teacher training. They show little interest in overseeing the quality of education and fail to establish partnerships with industries. Instead, they focus on mundane administrative tasks and provide misleading reports that overshadow the institute's issues.

Additionally, the management of partnerships with industries is lacking, resulting in students being sent for practical training without a clear understanding of how the institute and industries can collaborate effectively.

Discussion

Globally, Technical and Vocational Education and Training is widely recognized as an effective strategy for developing human resources by enhancing individuals' skills and preparing them for the workforce. It is crucial for sustainable socio-economic growth and poverty alleviation (Adamu, 2016; Paryono, 2017). In Ethiopia, the government has prioritized TVET as the primary approach for human resource development, with approximately 80% of secondary school graduates being directed towards TVET programs over the past two decades (MoE, 2015). However, the quality and relevance of TVET in the country face significant challenges, leading to a mismatch between the skills offered and those demanded by the job market (Yamada et al., 2018). The shortage of well-trained and skilled TVET instructors is a pressing issue in Ethiopia, causing widespread concern (Teferra et al., 2018).

In Ethiopia, TVET is often given little importance and is seen as a last resort for students who may not excel academically. Teachers for TVET programs are typically selected from university graduates in various fields, as well as individuals who hold certificates in levels 3, 4, and 5 in hands-on skills, but lack formal training in education. As a result, these instructors often lack essential pedagogical skills and show little passion or enthusiasm for teaching. Many of these teachers are now seeking to upgrade their qualifications to a bachelor's degree level, but are facing challenges due to deficiencies in their own educational backgrounds, particularly in subjects like mathematics and English. This situation highlights the urgent need for the Ethiopian government to prioritize TVET and invest in improving the quality of education and training provided in these programs (Maclean, 2011).

Teacher training for TVET programs requires significant financial resources, making it a costly endeavor that cannot solely rely on government funding. Unfortunately, the Ethiopian government has shown minimal commitment to this critical initiative, as evidenced by inadequate budget allocations and a lack of collaboration with industry partners to offset training expenses.

In Ethiopia, there are over 50 publicly funded universities, yet only one institution dedicated to training TVET teachers. This disparity highlights the government's lack of prioritization for TVET education. Additionally, teacher educators and students within the TVET sector lack enthusiasm and motivation to pursue a long-term career in teaching. Instead, many view teaching as a temporary stepping stone to other professional pursuits,

further exacerbating the shortage of qualified TVET instructors (Ethiopian Academy of Sciences, 2016).

In order for TVET to effectively contribute to Ethiopia's transformation, the government must follow through on its promises by prioritizing TVET teacher training and ensuring the successful implementation of TVET programs.

Teacher training necessitates specific qualification standards that outline the expected level of knowledge, skills, and attitudes that teachers should attain throughout their training (Grosach, 2017). Nevertheless, the current benchmarking of professional profiles from universities with differing missions and standards to that of productive factories may not fully meet the unique requirements of TVET teachers. Therefore, customization is essential to ensure alignment with the specific needs of TVET teachers.

The study's results reveal that the TVET teacher training program lacks relevance and fails to meet the needs of TVET teachers. There is a noticeable shortage in expertise in curriculum development, leading to the failure to incorporate Ethiopian indigenous technologies into the curriculum. This problem is also evident in the unequal distribution of credits for essential courses, such as general workshop practices and technical drawing, compared to the exclusion of fundamental courses like teaching practice and subject matter pedagogy that help graduates in forming a vocational identity (Broek et al., 2015).

While benchmarking is an effective strategy for learning from others, it must be tailored to suit the unique needs of teachers, rather than blindly adopting curricula from universities with different educational goals. The goal of benchmarking should be to equip teachers with the knowledge, skills, and attitudes necessary to fulfill their future responsibilities (Seezink & Powell, 2011). Therefore, any revision to the TVET teacher training program should be based on a thorough needs analysis of TVET educators and a deep understanding of the specific characteristics of TVET teacher training.

Furthermore, participants voiced their concerns over the lack of integration of traditional Ethiopian technologies, including cultural dressmaking, metal works, jewelry making, and pottery, in the TVET teacher training curriculum. They emphasized the importance of incorporating these skills to equip teachers with the ability to create curricula that address real-world societal challenges. (Asghar & Ahmad, 2014).

Teachers in TVET play a crucial role as both curriculum specialists and industry advisors, requiring a comprehensive and reflective training that demands significant time, readiness, and courage to engage with technology (McGrath, 2022). Unfortunately, students enrolled in TVET teacher training programs often have weak educational foundations and face considerable challenges in mathematics and English language skills. Lacking interest and motivation in their studies, these students are primarily focused on obtaining a certificate rather than truly engaging with the material. This troubling trend poses a serious threat to the success of TVET in equipping students with the skills needed to thrive in the workforce.

The overload of first-year courses, comprising 47 credits, is consuming a significant amount of study time. This is affecting the delivery of subject-specific courses, resulting in a crowded and tense training environment that hinders graduates from acquiring the necessary theoretical knowledge and developing practical and technological skills (Grosch, 2017). As a result, graduates may lack the proficiency needed to fulfill their duties effectively.

There is an evident disagreement between subject-specific and pedagogical instructors regarding the importance of pedagogical and general courses. It is crucial for both parties to reach a mutual understanding about the importance of establishing a solid foundation of knowledge that promotes the development of transversal skills such as critical thinking, collaboration, and communication. These skills are essential for students to analyze, synthesize, and apply knowledge effectively (Dibia et al., 2018).

Therefore, it is imperative to review the distribution of courses and allocation of credits to ensure that essential courses for the teaching profession are included. Sufficient time should also be dedicated to practical training to better prepare graduates for their future roles.

Teacher educators play a crucial role in ensuring the quality of teacher training programs. It is essential for them to receive continuous professional development to stay updated with the rapidly changing educational landscape (Orr, 2019). Unfortunately, teacher educators at the institute lack expertise in various key areas such as curriculum development, pedagogy, technology, practical skills, and industry experiences. This lack of knowledge and skills hinders their ability to create effective training materials and implement new technologies that are essential for producing competent teachers.

The involvement of industries in Technical and Vocational Education and Training (TVET) teacher training is vital for aligning skill needs and training practices (Mordi, 2020). However, in Ethiopia, the participation of industries in TVET programs is minimal due to a lack of awareness about the benefits of such collaborations and the absence of a legal framework to guide the partnership between industries and training institutions.

Shortages of resources and facilities significantly impact the quality of teacher training programs. Budget constraints and procurement procedures further exacerbate the issue. Given that TVET teacher training requires substantial investments that exceed government funding, it is imperative to engage the private sector and other development partners to share the financial burden and responsibilities (Mordi, 2020). Industry partnerships can help bridge the skills gap created by deficiencies in teacher training institutes, ultimately improving the quality of education and preparing teachers for the evolving demands of the workforce.

Quality assurance is a crucial component of teacher training that ensures teachers attain the necessary knowledge, skills, and attitudes to foster confidence in their professional pursuits. However, the teacher training institute's quality assurance process is currently deficient. This is primarily due to the absence of competency standards, insufficient curriculum alignment, ineffective delivery of training, failure to incorporate indigenous technology, and inadequate monitoring and evaluation of exams and student projects. A comprehensive quality assurance system is imperative to address these deficiencies.

The effectiveness of TVET teacher training hinges on the quality of leadership within the institution, as it plays a crucial role in establishing a conducive environment for the training process (Shrestha, 2021). However, the leaders in teacher training institute often fall short in their understanding of technology teaching and fail to prioritize attracting high-caliber experts. Additionally, they were less successful to establish meaningful partnerships with industries, opting instead to mask issues in teacher training with misleading reports and

emphasizing mundane tasks over improving the overall quality of education. To address these shortcomings, it is imperative for the government to implement merit-based leadership appointments.

Conclusions and Implications

The study sought to explore the challenges faced in TVET teacher training that impede the provision of high-quality training. Findings revealed various challenges including a negative perception and limited understanding of TVET teacher training, weak admission criteria, students with low academic backgrounds, , lack of curriculum relevance, competence gap of teacher educators and absence of industry experiences, insufficient industry involvement, resource shortages, inadequate quality assurance mechanisms, and ineffective leadership. Consequently, there is a pressing need for policy intervention by the Ethiopian government to overhaul the TVET teacher training system.

Based on the research findings, it is recommended that the government make strategic decisions to enhance the quality of TVET teacher training. These decisions should encompass implementing transformative policies aimed at to attractig the best minds to the field of TVET, setting clear qualification standards outlining the necessary knowledge, skills, and attitude for TVET teachers. Ensuring the curriculum remains current and relevant through industry participation, strengthening industry connections to improve teacher educator capabilities, allocating adequate funding, appointing leaders based on merit, and establishing a rigorous quality assurance system are also measures expected from the Ethiopian government.

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