

Exploratory Case Study on Technical and Vocational Education and Training Teacher Training in Ethiopia

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Abstract. The purpose of this research is to investigate the preparation of technical and vocational education and training (TVET) teachers at Ethiopian Technical University. A case study research design was employed using both qualitative quantitative data collection methods. 22 academic staff members and 78 prospective teachers selected purposely participated in the study. The government has committed itself to reform the TVET system manifested through the promulgation of legal frameworks and endorsing sector-based strategies to create enabling environment for the effectiveness of TVET. However, these were not translated into action and did not enable TVET to achieve its objective of producing a competent and motivated workforce who can support the development of the country. The candidates who had been admitted for TVET teacher training were those with a poor academic background and who could not join the academic carrier and had deficiencies in theoretical knowledge, basic skills in the English language and mathematics. Despite the fact that the teacher training curriculum includes the major components of teacher education: subject matter, pedagogical and technological content knowledge, practical skill training, and other educational courses, it is neither guided by predetermined standards of knowledge, skill, and competence required to be gained by prospective teachers during the training nor confirmed by standard-based assessment for its success. The training delivery was not following the nature of TVET rather inclined towards theoretical knowledge with little industry linkage. Thus, the teacher training system needs to be reformed and guided by predetermined standards of knowledge, skill, and competence, due attention to TVET pedagogy, introducing an apprenticeship model, establishing a system of accountability, and adopting an externship program for continuous professional development of teachers at the university.

Keywords: TVET teacher training, standard, knowledge, skill, competence

Introduction

The teacher training program is a platform to start learning formally about the teaching profession and has a significant impact in shaping the personality of prospective teachers to build confidence, autonomy, and self-reliance in their profession (Darling & Lieberman, 2012; Barnes et al., 2018). It is considered as the determinant factor for the quality of teachers and taken as a prerequisite to ensure the quality of education and training to meet national standards for employment and increased productivity (MoE, 2010; UNESCO, 2012).

The training of TVET teachers is considered a complex task emanated from the unique feature of TVET itself as it strives to respond to the ever-changing technologies and labor market needs (Lauglo, 2009; Adamu, 2016; Dibia & Ojotule, 2018). The training of TVET teachers is expected to be comprehensive encompassing theoretical knowledge, skills on pedagogy, technology, practice, and industry exposure (Maclean & Kerre, 2009; Axmann et al., 2015) to help teachers to develop high-level knowledge, skills, and competence and enable them to design and develop demand-driven curriculum and translate them into practice.

In Ethiopia, systematic TVET teacher training is a recent phenomenon and began in the late 1970s modeled on school teacher training. The training was given in Vocational and

Technical Teachers Colleges. The first TVET teacher training College was the Addis Ababa University Teacher training Unit in 1967 (Girma & Nigatu, 1994). The number of vocational teacher-training institutions has gradually increased and the training has grown up into a scientific and systematic stage (Bünning et al., 2011). However, the training was weak and has faced huge difficulty in pedagogy and administration (Hunde & Tacconi, 2017). Teachers at the universities were teaching TVET teachers in the way they teach other university students due to the lack of knowledge and understanding about the nature of TVET which was not appropriate for those who need more practical and technological skills (CEDEFOP, 2010).

Currently, the Ethiopian Technical University is the only one dedicated to training TVET teachers in Ethiopia. The university was established as Institute in 2011 by proclamation 245/2011 with the mission to provide TVET teacher training at Bachelor and Masters Levels and to provide training for leaders and upgrading industry technicians. The University has 15 satellite campuses across the Regional States of Ethiopia. Nevertheless, the graduates of the university are criticized for their lack of skills and competence to provide relevant quality training (MoE-ESC, 2018).

Thus, the purpose of this research is to investigate the teacher training process at the Ethiopian Technical University and identify the gaps and challenges of the training.

Statement of the Problem

Technical and Vocational Education and Training teacher preparation is a difficult task and an ongoing debate worldwide (Bünning et al., 2011). This is because of the fast technological changes in the global market and the demand for new solutions. To this effect, many countries around the world are reforming their TVET teacher training through executing new policies and make the quality of teachers the priority agenda of their governments (Eicker, Haseloff, & Lennartz, 2013).

However, African countries including Ethiopia have given minimum attention to TVET teacher training, and inadequately trained teachers who have lack of theoretical knowledge and skills on pedagogical and technological skills, and lack workplace practices are recruited to provide training (Hunde & Tacconi, 2017; Wendkouni & Sawadogo, 2013) and resulted in poor quality TVET and mismatch between the training and labor market needs and has brought structural unemployment in the country manifested through graduate unemployment in one side and scarcity of skills on the other side (MoE-ESC, 2018). Moreover, TVET teachers' continuous professional development and refresher training does not give attention (MoE, 2008). The problem is becoming everybody's concern and requiring policy measures.

Objective of the Study

The main objective of the study is to examine the TVET teacher training process at the Ethiopian Technical University. It aims to identify the extent to which the training at the university is equipping teachers with appropriate knowledge, skills, and competence and empower them to provide quality training in their future responsibilities. It has the following specific objectives:

1. Examine the context of whether there is an enabling environment for TVET teacher training;
2. Examine whether the curriculum integrates the key components of TVET teacher education guided by predetermined standards of competence;
3. Assess the capacity of the university for its readiness in providing quality teacher training.

Basic Research Questions

To achieve the above stated objectives, the study is guided by the following research questions:

1. To what extent the TVET teacher training in Ethiopia has an enabling environment?
2. Does the curriculum guided by certain standards of knowledge, skills, and competence?
3. To what extent the university is capacitated to provide quality training?

Research Design and Method

The research is aimed to evaluate the teacher training process at Ethiopian Technical University. A case study research design is used to make an in-depth analysis of the teacher training process using qualitative and quantitative data collection & analysis methods. Multiple data collection instruments were used to collect data from different sources and able to triangulate the data, strengthen and amend the inadequacies (Cresswell, 2014). Hence, interviews, questionnaires, observation, relevant documents analysis, and curriculum review were used. The participants of the study were selected purposively based on their contribution to the training. A total of 22 academic staff members including the Dean of Students Academic Affairs, Director of Industry Linkage, Community Service Head, Department heads, English and Mathematics teachers, senior Expatriate teachers, and the university technical advisor were interviewed individually and in a group. Moreover, 104 top-performing prospective graduating students from all disciplines were selected purposely through their departments based on their academic performance and filled the closed-ended questionnaire.

Conceptual Framework of the Study

The conceptual framework that guides this research was the ASK-Competency Model (Pavlova, 2018) that deals with the capacity of an individual to perform a given task through equipping with the appropriate attitude, skill, and knowledge. The model uses common standards for TVET teacher education to define their level of competence in terms of knowledge, skill, and attitude to be achieved during the training. These competency standards describe what a TVET teacher should be able to do and what related skills, knowledge, and attitude are needed to be developed during the training including developing appropriate knowledge, and understanding, application of methods, and approaches of teaching and training (Grosch, 2017). In this regard, the competence standard helps to describe the important elements of the program such as contents to be thought, the length of time to cover the contents, credit points, and the learning and training environment, entry and graduation requirements, and assessment criteria.

The shift from supply-driven to demand-driven TVET approach to skills development to meet the needs of the labor market enables to align the skills, knowledge, and attitudes of TVET teachers with technological changes and help them to develop capacity for delivering demand-driven training. This demands teachers to develop theoretical competence familiar with the latest development in their profession, didactical competence to integrate new theories and technologies with their teaching, and also to have communication and decision-making skills that enable them to work autonomously.

Competence refers to successful individual performance in applying knowledge and skills in specific activities and is considered as a prerequisite for workers to carry out their responsibility and an indicator of an individual's level of capacity, capability, and performance (Ismail et al., 2017).

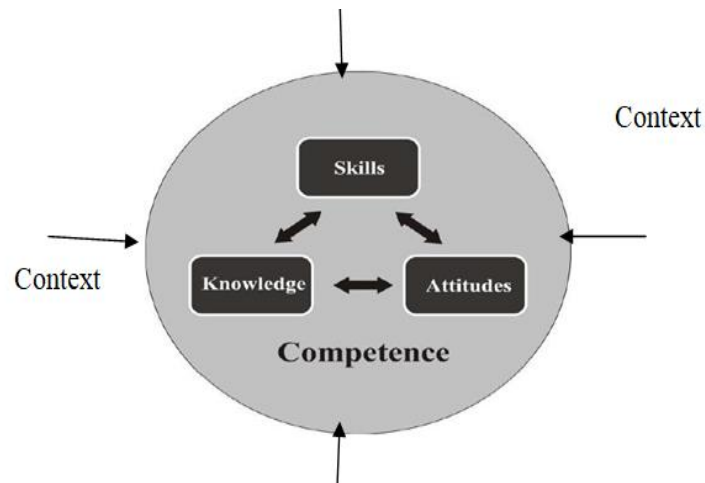


Figure 1. Pavlova (2018) ASK – Competency Model modified by the author

The context in this conceptual framework is the entire range of factors affecting the TVET teacher training system including the social, economic, cultural, legal, and political aspects of the country. These can be manifested by the level of understanding of the society towards TVET and the teaching profession, the commitment of leaders and decision-makers in issuing policies and legal frameworks to foster a suitable environment for teacher training, allocation of enough budgets for teacher training, and the provision of support.

Literature Review

Technical and Vocational Education and Training teachers are teachers who are trained on how to teach technical and vocational subjects and relevant skills (Ismail et al., 2017). TVET teachers are described by their twofold identities. One of their identities is attached to the industry for their knowledge and expertise to the specific industry that makes them industry advisors who are working with industries using reflection as a base for improving and innovating new technologies (Ralph, 2013), and the other identity is attached to teacher training institution as a pedagogical specialist with the responsibility of developing need-based curriculum and translate into practice (Gleißner & Müller, 2011). Their dual responsibilities requiring them to develop high-level competence in making judgments and decisions, the ability to work autonomously and independently in their responsibilities (ILO, 2012).

Thus, TVET teachers have a significant role in the success of TVET to achieve its objectives in facilitating national economic growth and development (Ciraso et al., 2017). According to Orr (2009), TVET teachers are different from other teachers for their walk and talk actions. The preparation of TVET teachers is considered as the main determinant factor for their quality. The TVET teacher training curriculum demands the integration of theory and practice, and the interrelations of previous experiences with the current practice, pedagogical, and didactical knowledge as well as practical exposure to the industry (Bünning et al., 2011). The shift of teachers' role towards a facilitator demands teachers to use new approaches and strategies to revolutionize the teaching and training processes (Ismail et al., 2017), and have a responsibility to evaluate its success (Grollmann, 2009). To that end, technology can provide them a new approach for learning and increases the potential for constructivist learning processes through which students can access information far beyond the scope of their teachers, and also the curricula can be customized to students' specific learning styles (Ahmed, 2011).

According to Grollmann (2009), prospective TVET teachers need to develop four areas of capabilities during their training period: (1) professional expertise that enables to adapt learning and teaching strategies to suit individual learners', (2) pedagogical expertise a capacity of using flexible delivery and assessment to suit the systems of the workplace; (3) subject matter content and educational sciences, and (4) practical skills: having technical expertise in their subject area. Moreover, developing dispositions, values, and ethics such as the ability to provide need-based learner supports, commitment to self-development, capacity to deal with the fast technological changes, managing time and knowledge is an important aspect of the teaching profession.

Experiences around the world are showing that there are different TVET teacher training modalities depending on the context of countries (Gleißner & Müller, 2011). These include the Apprenticeship Model where TVET teachers have attended theoretical foundation training in the universities and practical training in the companies supervised by skilled workers who have additional pedagogical and didactical training followed by a research project (Dittrich, 2010). The Teacher Model emphasis on pedagogic and didactics; Engineer Model: here an emphasis is on disciplines of science and with marginal pedagogy, and Professional science model that integrates a knowledge-based understanding of technology, work processes, and didactics. China and the Philippines also use another model described as "Concurrent, Consecutive and Short courses models". In a concurrent model, all the training such as subject matter, vocational pedagogy, technical and industrial training are delivered concurrently. In the consecutive model, a bachelor degree holder in technological disciplines is provided vocational pedagogy training by the university whereas in a short courses model teachers can get training based on their choice or institutional requirements and structured programs over the period (usually with once per week attendance of class) to fill their gaps or develop their professional needs.

Results and Discussion

The purpose of the research was to examine the preparation of TVET teachers by the Ethiopian Technical University with the assumption that the training is not enabling teachers to become competent for their responsibility. A case study research design was used for an in-depth analysis of the problem. The participants of the study were selected purposely based on their contribution to get in-depth, valid, and reliable information. A total of 21 academic staff and one technical advisor of the university, of which 5 (22.7%) of them were expatriates from China, the Philippines, and India who stayed for many years in Ethiopia and who have good undemanding on the Ethiopian TVET system were interviewed. Out of 104 questionnaires distributed to prospective graduating students, 78 (14 masters students and 64 bachelor students) (75%) questionnaires were collected and analyzed supplemented by the information collected by other methods. The results are presented and discussed in line with the research questions.

The Context of TVET Teacher Training in Ethiopia

Following the 1994 Education and Training Policy, the government of Ethiopia has made consecutive reforms in the TVET sector to create enabling environment for TVET to achieve its objectives of producing a competent and motivated middle-level workforce who can support the transformation of Ethiopia from agricultural lead to industry lead economy. To that end, the promulgation of TVET proclamations 391/2004 and 954/2016; the endorsement of TVET strategies 2008 and 2020, and the five consecutive education sector development programs (ESDPs), and the development of the Ethiopian Education Development Roadmap in 2018 are the major millstones. However, these initiatives were not

properly translated into action and enable TVET to achieve its objectives of transforming Ethiopia.

There is an argument for the rational TVET has failed to achieve the level of social recognition reflected by low achieving students are joining in the TVET sector and TVET teacher training had no due consideration. Since 2001, the TVET curriculum had gone through frequent changes and has brought instability and created a lack of confidence in teachers. The participants of the interviewee were argued that the frequent changes made were not based on critical evaluation for the success and failure of the system and the TVET teacher training is the neglected part of the TVET system. There is no ample teacher training universities and colleges resulted in a shortage of TVET teachers that urged institutions to recruit untrained and unqualified teachers from different fields of specialization. To that effect, large numbers of teachers having TVET certificate levels 3-5 who were not trained to become a teacher were recruited. There was a "C flooding" strategy where many TVET graduates were recruited for the teaching profession. Moreover, many other teachers were recruited from graduates of engineering fields who have no knowledge and understanding of the nature of TVET. Both groups have serious deficiencies and are unable to provide quality training. The situation was described as "*an incident that geared TVET to failure...*".

Currently, the only TVET teacher training institution is the Ethiopian Technical University and it is not in a position of a high standard to provide quality teacher training. One of the problem of the university is the leadership where the university leaders have little knowledge and understanding about the nature of TVET teacher training and they didn't give due attention to the quality of the training rather they focus on routine administrative issues. They are not allocating enough budget for the purchase of training materials and facilities.

The quality of teacher training starts with the selection of candidates to be trained as TVET teachers. Nevertheless, the candidates admitted by the university to attend their bachelor's degree study were those who were graduates of TVET with Certificates 3-5 and named 'C level trainers' and those who were admitted for masters' training were who have Bachelor Degrees graduated from the TVET Institute itself (the current Technical University) and other university engineering graduates and who were employed as TVET trainers. All of them were selected by the Federal TVET Agency through Regional TVET Agencies based on the criteria set forth by TVET Agency: work experiences, performance evaluation results, and competence assessment (COC) results. In addition, the university is administering entrance exams. The exam has 60 multiple choice questions: of which 15 questions focus on subject matter knowledge, 15 questions on pedagogy, 15 questions on English, and 15 mathematics. However, most of the candidates couldn't get pass marks (50%) because of their poor background and lack of basic skills of English language and mathematics. Nevertheless, they had got admission. To that end, both groups of the research participants equivocally criticized the selection process for its political interference, social networking and the COC certification doesn't measure individual's competence and inability to show the level of performance of individuals.

Moreover, candidates with different backgrounds are attending their training together the same curricula and using the same training strategy and found difficult. For instance, among students who are attending their bachelor training, 62 (96.9%) were graduates of TVET Certificates 3-5 and 2(3.1%) were grade 12 complete. These groups were teaching in different TVET institutions where 41(64%) in Poly Technique Colleges and 23(35.9%) in TVET Institutes. All these prior background of the candidates have significant impact on their competence. Some of the candidates have better practical skills in their occupational areas while others might not have. Those who were trained in TVET institutions had less privileged in getting quality training during their training time than in Polytechnic Colleges. Those who came from the remote regions might not have opportunities to get quality training.

Research participants mentioned that there are candidates from the Gambella region have critical deficiencies and they are highly challenged to attend the training. The problem was described as " *how individuals who can't measure the diameter of an object can provide training for others?*".

Both group of students who are attending their training at bachelor and masters levels argued that the problems are emanated from multiple reasons including the selection criteria of candidates, absence of predetermined standards of competence to be achieved during the training, leaders awareness limitations on the nature of TVET, and problem of international comparability of the training at P-value 0.01.

Availability of Competency Standards and Curriculum Relevance

It is identified that the teacher training curriculum is not guided by predetermined standards of knowledge, skill, and competence required to be acquired during the teacher training. There is a lack of expertise and readiness to develop and implement such competency standards. Teachers of the university are using the course syllabus and they are using the curriculum of other universities' engineering fields which have a different objective.

For instance, research participants from the Automotive Technology department mentioned that the training on Automotive Technology is benchmarking international standards set by car companies such as Toyota so that there might not need to develop another standard. Similarly, the ICT department is using the curriculum of other Ethiopian universities. However, such arguments might be challenged by the specific need for TVET teacher training and might require customizing the contents.

On the other hand, research participants from manufacturing fields criticize the curriculum for its lack of relevance to the local societal needs described " *all the machines, books and training materials are imported and we are using them to train. However, we told our students to solve the problems of their community. The Ethiopian traditional technologies are not included in the curriculum and we are not working with people who have traditional skills...*". There is a lack of expertise in designing need-based curriculum and translates them into practice and also a lack of awareness of what is needed by society.

Similarly, the two groups' students have a similar understanding related to the lack of curriculum relevance with a p-value of 0.00. Moreover, they argued that the curriculum has no vertical integration with the occupational standards at the lower levels of TVET.

Thus, despite, the task of TVET teacher training is enabling teachers to prepare their students for employment and it demands the ability to relate the teaching and training to the real-life context using relevant methods and approaches (Grosch, 2017), there is a mismatch between training by the university and the demand of the teaching profession.

The analysis of the curriculum used by the university showed that the curriculum encompasses major components of the TVET teacher education: subject matter content knowledge, practical and pedagogical courses, general and professional courses, and industry training. However, it is not properly translated into practice and enables teachers to develop appropriate competence to carry out their responsibilities (MoE-ESC, 2018).

The course distribution of each level: for Master's, students are expected to take a total of 48 credits. Of which 12 credits (25%) are pedagogical and professional courses such as occupational standard management and curriculum planning, research projects, resource management, and supervision, and the rest 36 credits (75%) credits on their areas of specialization. While undergraduate students are expected to take 109-122 credits depending on the nature of the departments. Of which 12 credits on educational courses, 21 credits on basic courses including Mathematics, English, Civics and Ethical Education, Entrepreneurship, and TVET Management; 5 credits for Information and Educational Technology. However, the Industry practice has no given credit. This causes conflict and

dissatisfaction among the university staff and administration. Students and major subject area teachers are not convinced by the number of credits for pedagogical and other educational courses. They feel that the number of credits for such courses are exaggerated while teachers from pedagogy and education areas go for the necessity of such credits. The subject areas teachers argued that the how of the training has given more emphasis than the what to be thought and described the situation as *"without having enough content to transfer what is the use of knowing the means of transferring the content?...pedagogical courses are given 3 credits whereas important courses in major areas are forced to be combined or have given small credits"*. Participants reflected their perception why such problem is happening and mentioned that there is conflict of interest of academic staff from pedagogy and education areas. In this regard, 51.4% of student participants argued that the time allotted for major courses is not sufficient particularly, the time for practical training is minimal and 56.1% student participants indicated that the training is not enabling them to develop the confidence to work independently and autonomously and they couldn't find their expectation realistic and the training is not helping them to be a reflective practitioner for their future responsibility.

The University tried to implement 50:50 training model where 50% theoretical knowledge and 50% practical skill training. However, it is realized and the training is inclined to theoretical knowledge than practical skill training and in some fields it could cover up to 80% of the training. This is due to students' background and the competence of teachers at the university. Particularly, undergraduate students who have TVET Certificates are deficient in theoretical knowledge and have difficulty in mathematics and the use of the English language. This has significant influence on them to understand the subject matter knowledge. For instance, in the construction field, students were certified in tilling, painting, bar bending, etc, which are specialized in specific areas which has not significant contribution for the current training. For the reason that the curriculum at the bachelor level are organized comprehensively with broad theoretical knowledge and practical and pedagogical skills. While these students from different backgrounds come together and attending training, it might have incontinence and demand teachers of the university to have high-level skills to implement differentiated teaching strategies to address the different needs of students. To that effect, some teachers in woodwork Technology tried to conduct prior experience assessments of students at the beginning of the training and provide training on an individual basis based on their needs. However, such an approach is not widely practiced since most of the teachers of the university didn't have such disposition and commitment.

In addition, research participants from mathematics and English departments were strongly arguing students are not at the level of the standard to be admitted for the teacher training program and described their limitations as *"students can't read and write in English and can't calculate simple arithmetic...all reference books, manuals, and specifications and occupational standards are written in English and any technology demands the application of mathematical tool "*. while the knowledge and skills of these courses are considered as a tool for science and technology. They further mentioned their concerns that nowadays students have developed a fear of learning mathematics and are not interested to learn the English language.

The other critical issue raised was the course ownership related with the appropriateness of expertise to provide pedagogy and professional courses. The major subject teachers argued that such courses should be given by staff members who have knowledge and understanding about the field. They believed that the how and what of the training shouldn't be separated rather the knowledge of what to teach and how to teach should be combined. (Goldman, 2009). Knowing educational theories and practices is not enough rather it demands having basic knowledge and skills about TVET in a general and specific discipline

in particular including industry experiences to identify the how of doing things in the industries.

From this point of view, the current pedagogical course delivery demands attention and those who have appropriate knowledge and expertise in the area of TVET should be involved. The same is true for the Entrepreneurship course where entrepreneurs with proven experience should provide the training, not other teachers who don't have practical experiences.

The 50% practical training is expected to be carried out both in the university and in the industries through cooperative training with the assumption that the industry is the real learning site for practical training where trainees can get hands-on experience and they can get advanced skill training that fit the industries. However, most of the interview participants and 65.2% of student respondents confirmed that cooperative training is not practical. There are different reasons for this including fear of damage on machinery and wastage of time in the production line, the industry owners are not convinced of the relevance of the training with their needs due to their dissatisfaction by the current graduates of TVET who are not serving their needs. Cooperative training couldn't be realized by the current modality. For instance, in Construction Technology, cooperative training could be given onsite following the maturity phases of the construction process which might not fit with the schedule of the industry and the time allotted in the curriculum. This demands either mutual planning among the university and the industries or shifted apprenticeship program. It was also mentioned that the management of the cooperative training is not found appropriate where students are sent accompanied only with a letter written by the university without creating networking and awareness about the purpose of the training with industries. Thus, unless otherwise there is mutual understanding on the benefits of the training between the government and the industry or designing a compensation mechanism for them, cooperative training couldn't be realized.

In addition, the assessment system in the university was criticized for the qualities of exam papers and projects were not checked by the committee for their validity and reliability so that there is no evidence of whether students are equipped with the required knowledge, skills, and competence.

The Capacity of the University to Provide Quality Training

The capacity of the university can be assessed in terms of its human and physical resources.

Teachers' Competence

Teachers at the university can be considered as the primary factor for the quality of teacher training for their responsibility to design a need-based curriculum and translate them into practice. To that effect, their ability will be critical. There are two categories of teachers in the university described as local and expatriate. Expatriate teachers are from China, the Philippines, and India, and local teachers have different educational backgrounds: Some of them have a TVET background and others Engineering. Those from the TVET have better practical skills but lack theoretical knowledge than from Engineering and vice versa. Despite, as far as there is an interest and motivation to upgrade oneself the gaps can be minimized and might not be an obstacle to provide quality training. However, research participants mentioned that most local teachers neither exerted their effort to fill their deficiencies nor are interested to learn and share experiences from others, and they lack industry experiences. They lack devotion and commitment to spend their time in developing and reforming the curriculum and teaching materials and practice in the workshops and laboratories to create new teaching approaches to support their students. They rather invest their time on part time works for additional income.

The purpose of having foreign teachers in the university is twofold: knowledge transfer and training delivery. However, its implementation has multiple limitations. On the one hand, local teachers are not ready using the expertise of the foreign teachers and on the other hand, foreign teachers themselves have limitations in their knowledge, skill, and competence and unable to provide quality training. The problem emanated from their selection and recruitment process by the university. Research participants described the issue as *"a teacher with a qualification of accounting was recruited to teach ICT and the one who has irrigation qualification was recruited to teach construction"*. Because of such problems departments were forced to terminate the contract of such teachers. But, there are best expatriate teachers who are providing good practical training in fields such as Automotive, wood, and manufacturing technologies.

There are visible difference between expatriate and local teachers reflected in their teaching strategies and engagement in project works. Local teachers do not spend much of their time in the workshops and they preferred simple projects than big projects. This seems contradicting with the TVET teacher codes of ethics manifested by mastery of the learning and teaching process as a facilitator, a motivator, and displaying the ability to design, implement and evaluate education processes continuously (Ralf, 2009; ILO, 2012) beyond their technical skills. To that effect, teachers at the university do not only impart technical and specialized knowledge but also are expected to be role models for their students (Gleißner & Müller, 2011).

Availability and Sufficiency of Workshops and Laboratories

The observation at the university helps the researcher to see and test what is there and what is happening in the actual Environment. The University has organized a research center equipped with computers and ICT infrastructure and there are well-established workshops in some fields such as Manufacturing Technology, Wood Science, and Automotive Technology, Garment, and Textile Technologies. However, there are departments like Leather Technology providing training without having a workshop. The university is using the Ethiopia Leather Development Institute workshop which is located far from the university and seems challenging for its accessibility both for the teachers at the university and students to make practical exercises at the time of need. To that end, 59% students were dissatisfied because of lack of accessibility of workshops and laboratories.

In addition, shortage of consumable training materials was a serious problem and significantly affecting the quality of the training. Two major reasons were identified: inefficient procurement process by the university and the government procurement policy. There are cases where materials had been purchased but were not useful due to their irrelevance for the training. Such a problem was happened due to the lack of participating appropriate experts in the preparation of specifications.

ICT and Educational Technology

The university is trying to establish ICT infrastructure and facilities to provide students better opportunities to access information elsewhere. However, students have skill limitations to use technologies. In this case, 55.2% of students believed that students have a shortage of skills to use a computer and accessing information from the internet and 61.6% responded that they have lack of skills to use software such as auto CAD. Both groups of students (masters and bachelor) have similar responses on the issue with a P-value =0.00.

This is quite contradictory to the expectation TVET teachers need to develop. They are expected to have skills in technology for its potential to enhance knowledge construction and to equip learners with the kind of skills required for all aspects of their lives, rather than just focusing on content mastery.

Conclusions

Technical and Vocational Education and Training is a preferred human resource development strategy for its capacity to updating and advancing the knowledge, skills, and competence of individuals and enable them to respond to the dynamic changes in societal and labor market needs. However, TVET in Ethiopia has failed to achieve its mission due to a low level of social recognition and shortages of quality TVET teachers. The limitations of TVET are emanated from their training system where the training by the Technical University is not preparing them to be competent enough to carry out their teaching responsibility autonomously and independently. The curriculum is not guided by competency standards of knowledge, skill, and competence of graduates required to acquire during the training period, the training delivery is inclined towards theoretical knowledge than developing practical and technological skills, teachers at the university are not at the level of a high standard to provide quality training and the participation of industries in cooperative training is minimal. Therefore, the TVET teacher training system needs due attention and policy intervention.

Recommendations

The research identified that TVET teacher training in Ethiopia is facing multiple challenges and is not able to produce quality teachers. Thus, the study tries to come up with possible options for the improvement of the Ethiopian TVET teacher training system.

1. The unique feature of TVET should be well understood and get attention and the teacher training should be guided by certain standards of competence to be achieved at the end of the training followed by a standard-based assessment.
2. The delivery of pedagogical and professional courses is found a point of argument in the university and it seems a valid argument. Thus, it demands intervention. There can be short-term and long-term strategies. The short-term intervention could be providing short-term training for the pedagogy teachers on duty on customized TVET pedagogy and encourage them to immerse in industries. The long-term intervention could be designing a vocational pedagogy training program as a field of specialization and produce professionals who can train TVET teachers.
3. Training in Technology demands developing comprehensive knowledge, skill, and competence and requires much investment and time. Thus, the duration of the teacher training should get due consideration and should be determined carefully benchmarked other countries' experiences.
4. Cooperative training was found not practical and might not be realized shortly. Thus, it should be shifted to the apprenticeship model to allow trainees longer time (six months to one year) and get practical in the industry.
5. Subject matter teachers of different professions at the university have lack practical skills and industry experience. Thus, externship programs should be designed in the form of teachers' continuous professional development schemes.
6. One of the factors affecting the quality of TVET teacher training at the university is the leadership for the lack of knowledge and understanding of the nature of the training. Thus, putting the right person for the right work and position and establishing a system of accountability would be better action.
7. Attracting professionals who have the best mind and proven skills is very critical to provide quality TVET teachers. Hence, the government should make an effort to build the image of TVET and the university can devise a strategy to incentivize and motivate academic staff through research grant awards, seminars, and scholarships.

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