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Original Article

Improving TVET Program in Nepal: A Need for Restructuring Diploma and Pre-Diploma Curricula

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Abstract

This article analyzes the diploma and pre-diploma curricula developed and implemented by the Council for Technical Education and Vocational Training in Nepal and identifies the need for restructuring these curricula to better align with the objectives of technical and vocational education and training (TVET) and industry requirements. Adopting an interpretivist approach, the study is based on qualitative data collected through document analysis, focus group discussions, and interviews with various stakeholders. The analysis reveals that the current curricula place excessive emphasis on general subjects without adequate integration of technical skills. Limited stakeholder participation in the curriculum design process, an overemphasis on summative student assessments, and the curricula's inadequacy in preparing students for employment raise concerns about their relevance. The study highlights the need to restructure diploma and pre-diploma curricula by reducing the content of general subjects, enhancing the integration of soft skills, and incorporating workplace-based learning. To improve TVET programs, Nepal should develop a national curriculum framework, reform the student assessment system, increase stakeholder involvement, and design competency-based curricula.

Keywords: *Competence-based Curriculum. TVET Curriculum. Diploma/pre-diploma Curriculum. Restructuring of TVET Curricula, Curriculum Assessment. TVET in Nepal.*

Introduction

The goals of Technical and Vocational Education and Training programs in Nepal focus on producing skilled human resources for the job market. These programs also help open job

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opportunities for graduates. They play a role in improving economic conditions for both individuals and the country. In addition, they create paths for continuing education throughout life and provide a different route for education that lasts a lifetime. The Council for Technical Education and Vocational Training (CTEVT) develops the curricula for diploma and pre-diploma levels in different subjects. Using those curricula, the council's own institutions, along with affiliated ones, partner institutions, and community schools through the Technical Education in Community Schools (TECS) initiative, run diploma and pre-diploma courses in a wide range of areas. In addition, certain community schools deliver technical education for students in grades 9 through 12. They use a curriculum developed by the Curriculum Development Centre (CDC) under the Ministry of Education, Science, and Technology.

Nepal has seen a steady rise in the number of institutions offering TVET programs, both managed by the government and private owners. Still, when we look at enrolment numbers across different TVET programs, they show no real growth over the last five years (CTEVT, 2023; MOEST, 2022; Baral, 2024). So, those patterns do not support the idea that adding more institutions for TVET increases the enrolments. In addition to small numbers of students participating, there are worries about low rates of graduation, high dropouts, and poor completion rates (CTEVT, 2023). In these contexts, there has been a question about how relevant the curricula are in these TVET programs (MOEST, 2022; Baral, 2023; Renold et al., 2024). These issues raise questions regarding the quality, relevance, effectiveness, and efficiency of the program. One pertinent question in this context is, how appropriate is the overall program structure and curriculum design for achieving the objectives of TVET? Subsequent questions include: How effective and participatory was the curriculum development and revision process? What knowledge, skills, and competencies are included in the curricula? Are these curricula effectively addressing the needs of the industry, specific occupations, and individual students? How well have these curricula adapted to technological changes and advancements in knowledge within the sector? Are curriculum development and revision activities continuous or sporadic? On what basis does the CTEVT modify the curriculum? How is the curriculum document organized? Does the curriculum specify competencies? Are the specified competencies, content, pedagogy, and assessment strategies aligned? The direct connections between these issues related to the curriculum motivated us to conduct a study focused on these questions.

In this context, we conducted a study to seek answers to those questions related to the diploma and pre-diploma curriculum of CTEVT. Specifically, this study involved an in-depth analysis of the structure and process to identify issues and potential options for improvement. By reviewing the diploma and pre-diploma curricula, this article highlights the need for restructuring these programs.

Purpose of the Study

The overall objective of this study was to assess the extent to which curricula of diploma and pre-diploma programs align with their respective program objectives. The specific objectives of this study were to:

a) Assess the program structure of the diploma and pre-diploma programs against the established program objectives.
b) Review the curriculum development process and analyze the stakeholders' perspectives on the relevance of various diploma and pre-diploma curricula, and
c) Identify the areas in the diploma and pre-diploma curricula that need to be restructured and revised.

Literature Review

The literature review section begins with a conceptual discussion on Technical and Vocational Education and Training (TVET), which helps identify the overall objectives of TVET programs. Following this conceptualization, it discusses the concepts and processes involved in designing a competency-based curriculum. These conceptual and theoretical discussions on the curriculum development process and competency-based curriculum provide a foundation for assessing the methods used in curriculum development. Finally, the review presents a framework for curriculum assessment, which guides the design of the subsequent study process. The empirical review includes studies and reports related to the diploma and pre-diploma curricula of CTEVT.

Conceptual and Theoretical Review

Conceptual and theoretical review begins with conceptualizing technical and vocational education and training and discusses competence-based curriculum. It also discusses the process of developing competence-based curriculum in TVET and the possible framework for curriculum assessment.

Conceptualizing TVET. There are multiple interpretations of TVET. Tikly (2013) discussed three approaches to conceptualizing TVET: the human capital approach, the sustainable development approach, and the capabilities and social justice approach. He argued that the human capital approach is too narrow and instrumental in its view of development, while the sustainable development approach incorporates normative dimensions but primarily focuses on universal solutions. Tikly posited that the capabilities and social justice approach offers a human-centered perspective on development and may represent a promising future direction for TVET. He elaborated on the capabilities approach in the context of TVET, stating, "TVET is seen as a means for supporting the development of a range of capabilities that are conceived as opportunities to develop functioning that individuals, their communities, and society at large have reason to value" (Tikly, 2013, p. 4). Global practices indicate that the primary objectives of TVET programs are to cultivate skilled human resources for the workforce and to offer career advancement opportunities for school leavers. Furthermore, TVET encompasses "education and training which aims to equip people with knowledge, know-how, skills, and/or competences required in occupations or more broadly in the labor market" (Cedefop, 2014, p. 292). It also involves "the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding, and knowledge relating to occupations in various sectors of economic and social life" (UNESCO, 2003, p. 7). TVET programs assist "youth and adults develop the skills they need for employment, decent work, and entrepreneurship, while promoting equitable, inclusive, and sustainable economic growth. . ." (UNESCO, 2016, p. 4). However, the global trends of technological advancement and the evolving nature of job markets necessitate that the TVET programs should be made more flexible by integrating basic foundational skills such as literacy and numeracy, various soft/transversal skills, occupation-specific technical skills, and diverse workplace-based skills. This flexibility will empower individuals to meet their needs and promote a culture of lifelong learning. This global trend advocates for a balanced perspective among the conceptual or philosophical understandings of TVET, rather than holding strictly to any single viewpoint.

Competence-based Curriculum. The narrower concept of curriculum views it as a list that includes a sequence of content and learning objectives, often equated with the curriculum as a document. In contrast, the broader interpretation of curriculum extends beyond the planned curriculum, encompassing both the intended and the practiced or implemented aspects. Grundy (1987) stated, "the curriculum is not a set of plans to be implemented but rather is constituted

through an active process in which planning, acting, and evaluating are all reciprocally related and integrated into the process" (p. 115). Thus, a curriculum serves as both a document and a practice that includes teaching, learning, and assessment activities. While assessing a curriculum, there is a need to assess the curriculum development process, the intended curriculum (the curriculum document), the practice (the teaching-learning process), as well as the quality and relevancy of the product (graduates) for the job market. Competency-based curriculum is a way of aligning curriculum with industry needs. It makes sure that the TVET graduates have adequate skills and competencies for the job market.

There are various definitions of competence. For instance, competence is defined as "the skills, knowledge and understanding, qualities and attributes, sets of values, beliefs, and attitudes that lead to effective managerial performance in a given context, situation, and role" (Woodall and Winstanley, 1998, cited in Chouhan & Srivastava, 2014, p. 16). Similarly, competence refers to "the capability of applying or using knowledge, skills, abilities, behaviors, and personal characteristics to successfully perform critical work, tasks, specific functions, or operate in a given role or position" (Chouhan & Srivastava, 2014, p. 16). Additionally, Mulder and Winterton (2017) define competence as "the state of being able, or the generic capability that is a necessary requirement to perform; the set of characteristics that enable performance" (p. 14). Competence encompasses a combination of knowledge, skills, abilities, attitudes, and behaviors that enable an individual to perform specific tasks effectively. The design of a competence-based curriculum emphasizes the achievement of clearly defined competencies. For which, the curriculum development process begins with the identification of these competencies. In the context of Technical and Vocational Education and Training (TVET) and other professional education, "competence is seen as the generic, integrated, and internalized capability to deliver sustainable effective (worthy) performance (including problem-solving, realizing innovation, and creating transformation) in a certain professional domain, job, role, organizational context, and task situation" (Mulder, 2014, cited in Mulder & Winterton, 2017, p. 14). Consequently, competence refers to the combination of knowledge, skills, and attitudes pertinent to core or employability skills, technical proficiency, and occupation-specific knowledge and skills. The objectives of competence-based training (CBT) are to "bridge the link between curriculum with teaching, assessment, and the world of work" (Boahin, 2018, p. 30). European Union (EU) defines competence as "the proven ability to use knowledge, skills, and personal, social, and/or methodological abilities in work or study situations and in professional and personal development" (2008, p. 4). In the context of TVET, three types of competencies are crucial for effectively performing occupational tasks: generic skills, occupation-specific technical knowledge and skills, and workplace-related skills.

There is a growing emphasis on the practice of competency-based curriculum, particularly in TVET. A competency-based curriculum aligns educational programs with industry needs, ensuring that TVET graduates possess the necessary skills and competencies for the job market. There is an increasing trend toward designing competence-based curricula in TVET (Manase and Nyamu, 2024; Gesslers and Peters, 2020). UNESCO (2017) states, "A competency-based curriculum is a curriculum that emphasizes what learners are expected to do rather than mainly focusing on what they are expected to know" (p. 10). The competence-based curriculum is learner-centered and adaptive to the evolving needs of students, teachers, and society. Learners can "acquire and apply the knowledge, skills, values, and attitudes to solve situations they encounter in everyday life" (UNESCO, 2017, p 10.). Competence-based education creates a system designed for student success and fosters continuous improvement, often referred to as mastery-based, proficiency-based, or performance-based education (Sturgis and Casey, 2018). Sturgis and Casey identify five elements of competence-based education: (a) students advance upon demonstrated mastery; (b) competencies include explicit, measurable, and transferable learning objectives that empower students; (c) assessment is

meaningful and provides a positive learning experience for students; (d) students receive timely support based on their individual learning needs; and (e) learning outcomes emphasize competencies that include the application and creation of knowledge, along with the development of essential skills and dispositions.

Key differences between competence-based and traditional time-based curricula are as follows: traditional time-based curricula emphasize content, including knowledge, skills, and attitudes, while competence-based curricula focus on outcomes and the demonstration of competence. In traditional time-based curricula, the goals, assessment methods, and program completion times are, respectively, knowledge acquisition, norm-referenced assessments, and fixed summative evaluations. In contrast, competence-based curricula prioritize knowledge application, criteria-referenced assessments, and variable completion times (Usoro & Ezekiel, 2017).

Developing Competence-based Curriculum in TVET. Curriculum developers follow fundamental steps and processes that are common across most educational systems and institutions when creating competence-based curricula. Torres et al. (2015) identified four essential elements of competence-based learning: students must demonstrate mastery of all competencies; students advance only after demonstrating mastery, and they can re-demonstrate mastery as needed; multiple measures are used to assess competency; and activities such as apprenticeships, blended learning, and dual enrolment can provide credit for graduation in addition to attending classes and taking examinations. Before developing TVET programs and curriculum, we need to answer the following questions (Boahin, 2018, p. 31): How has an industry or occupation changed over the last five years? How is it likely to change over the next five years, and what training is required for whom and by whom? They point out that while responding to these questions we need to follow the following process and steps: identifying need and demand, identifying workplace competencies, and writing, accreditation, implementation, and review of curriculum. Adopting CBT is 'to minimize the mismatch of skills, attitudes, and knowledge between the needs of industry and what is taught in the TVET learning environment' (Usoro & Ezekiel, 2017, p. 238). As we develop CBT programs and curriculum by identifying occupational standards of industry, it is assumed that the program addresses the needs of industry. As in Torres et al. (2015), for successful competence-based TVET program, we need to define and adopt competencies in unambiguous and specific statements, develop both formative and summative assessments to measure students' progress, provide students and teachers with necessary support, and create and adopt the structures that promote competence-based learning in designing and implementing successful and effective competency-based learning.

Curriculum Assessment: A Framework. Curriculum assessment is a systematic process of gathering information about the effectiveness of curriculum. Its aim is to assess whether the intended learning outcomes of the program or course were achieved or not, which is a product-oriented concept. Curriculum assessment also judges curricular processes, including the curriculum development and implementation process.

Among various curriculum assessment models, Tyler's model examines how clearly objectives are defined, how appropriately learning experiences are designed, and how students' achievement has been assessed against those objectives; the discrepancy model focuses on identifying the gaps between desired outcomes and actual outcomes for the purpose of identifying corrective actions; and the Stufflebeam's CIPP model assesses the context, input, process, and product of the curriculum (Boschee, Whitehead & Boschee, 2019). However, curriculum assessment is not a theory-driven act; it is a practical activity to assess the actual practices. Therefore, many people prefer to use combinations of different models in curriculum assessment activities. In the case of TVET curriculum assessment, we may use some kind of combined model or an eclectic model (Boschee, Whitehead & Boschee, 2019).

In this study, as the context variables, we assessed overall program structure and the nature of skills included in the curriculum, which helped assess the curriculum against the overall purpose of the program. We analyze the curriculum development process and the curriculum document as the input and the teaching-learning activities, student assessment, and the curriculum evaluation and feedback system as the process while assessing the curriculum. However, graduates' competencies and performances, the product aspect of the CIPP model, have not been included explicitly in this study. First, we reviewed the curriculum development and revision process, which also identified how participatory the process was. Second, we reviewed the curriculum document, including the overall structure of the program. It identified the extent to which the basic or fundamental knowledge, soft or transversal skills, technical and vocational skills, and workplace-based skills have been included and balanced in the curriculum. Similarly, we reviewed the curriculum components in the document, including the overall program objectives and competencies, contents and tasks, teaching-learning activities, and assessment schemes. Such curriculum assessment helps assess the curriculum document, including learning outcomes, contents, and their sequence, which guide the teaching, learning, and assessment process. These three reviews were based on document or content (curriculum) analysis. Fourth, we collected field data from providers, experts, instructors, and students to assess whether the curriculum delivery and assessment process aligned with objectives and explained how effective the delivery and assessment process was. It also collected data on the relevancy of the course for industry and self-employment.

Likewise, empirical review includes review of diploma and pre-diploma curriculum of CTEVT. Baral (2023), by presenting the enrolment trends in the past five years (BS 2075 to 2079) in various engineering diploma and pre-diploma programs, identified decreasing trends in student enrolments. He found that the quality and relevance of the curriculum, which includes the prescribed curriculum as well as the practiced curriculum, including teaching-learning activities and assessment strategies and practices, is one of the reasons for decreasing trends in student enrolments. Further, Baral (2023) identified two issues concerning the curriculum of TVET. First, although the composition of curricula has a satisfactory standard, the focus of diploma and pre-diploma curricula is too much on theory, which hinders the development of hands-on skills. Second, there was a lack of meaningful participation of relevant experts and practitioners in the curriculum development and revision process, which contributed to disconnecting the curriculum from ground realities and industry needs. In response to the need, the TVET Industry Strategy, 2019 seeks the contribution of industry in skills need assessment, course design and development, implementation, and assessment and evaluation. Paudel (2024) identified passive participation of employers in the curriculum development process as the process of participation 'often ruled by government officials and academicians.' He also mentioned that a lack of shared responsibility in the implementation of the curriculum does not support effective learning in the classroom as well as the workplace. A study conducted by Renold et al. (2024) suggested improving industry collaboration and a competence-based short-term curriculum. They found a significant skills gap, particularly in soft skills, in TVET graduates. Baral (2024), by analyzing the stakeholders' perspectives, identified declining trends in enrolment in long-term engineering programs of TVET, which has some connections with the relevancy of these curricula.

The sixteenth national plan of Nepal (NPC, 2024) set the strategies of revising diploma and pre-diploma curricula to make it more relevant to the need and to align with NQF, the implementation of NQF and TSSP (2023-32), and developing and implementing an accreditation plan in TVET. The Ministry of Labor, Employment, and Social Security prepared a five-year periodic plan (2022-23 to 2026-27) including the strategies for collaboration with industries for the provision of apprenticeships and industry-based curriculum development. The TVET Strategic Plan (TSSP, 2023-32) prepared by the Ministry of Education, Science,

and Technology (MOEST, 2022) indicated that curricula are heavily theory-focused with limited provision for practical training and included several irrelevant contents, which makes it difficult to complete within the specified duration. It also mentioned that the programs are more focused on university access than the preparation of a competent workforce. It further mentioned that the participation of Business and Industry Associations (BIAs) seems ceremonial in the curriculum development process, and there are several inconsistencies and incoherences between skills testing levels and NQF/NVQF levels and programs and between and among the National Skill Testing Board's (NSTB) standards and curriculum. The teaching and learning practices, quality of instructors, and assessment system are equally important for effective implementation of curriculum and ensuring quality in delivery. TSSP also identified the need for improvement in these areas. Identified issues in these areas were the dominance of theory-focused teaching, learning and assessment, and difficulty in retaining qualified instructors.

The Government of Nepal has prepared the National Qualification Framework (NQF) and endorsed it, although it is yet to be implemented. As in Tuck (2007), the NQF of Nepal classifies various levels of competencies in a continuum. There are eight levels of qualification in the framework in which each level is defined with the expected knowledge, skills, and attitude in both TVET and general education, as well as informal learning recognized by skill testing on the same continuum. The NQF helps compare different qualifications on transferability and permeability. The NQF also helps to compare qualifications with the International Standard Classification of Education (ISCED). It also guides curriculum development by providing skills standards for various levels of qualification. While developing the curriculum of different programs there is a need to adopt the competencies defined in each level of qualification. For example, while designing pre-diploma and diploma-level curriculum, we need to consider the competencies of level 4 and level 5 in the NQF. In this way, NQF provides a basis for curriculum development at various levels of TVET programs. However, in the case of Nepal, the NQF has not been implemented formally, and thus there are no formal practices for considering the NQF as a basis for preparing curricula of various levels and programs. One of the requirements of aligning TVET curriculum of various levels and programs with NQF/NVQF is to develop competence-based curriculum and training (Shrestha & Wagley, 2022).

These reviews indicate some gaps in the diploma and pre-diploma curriculum of CTEVT but did not analyze the curriculum structure, curriculum development process, and assessment methods and process to identify the gaps and ways of minimizing those gaps. In this context, this study analyzes the curriculum structure and process as well as assessment methods and processes and identifies the gaps and alternatives for improving the relevance and effectiveness of TVET diploma and pre-diploma programs.

Research Methodology

The overall methodological approach adopted for this study was qualitative with a constructivist approach. Constructivist "emphasizes how individuals actively construct their own understanding of reality through their cognitive processes. It recognizes that there are multiple realities and highlights the co-construction of knowledge between researchers and participants" (Shannon-Bake, 2023). In the process of curriculum assessment, there are several dimensions of subjectivity, multiple interpretations, sociocultural influences, and diverse value perspectives that suggest generating different understandings rather than finding a truth.

Data Collection Method, Process, and Tools

This study used qualitative data collection methods, including analysis of curriculum, focused group discussions (FGDs), interactions, and interviews with different stakeholders. We reviewed the documents related to objectives and practices of TVET as well as concepts and practices of curriculum in TVET. The review also includes curricula of diploma and pre-diploma programs of CTEVT, relevant policies, strategies, working policies, and plans. We also reviewed relevant research, studies, and various task teams' reports related to curriculum. We collected records of curriculum, enrolments, and graduation in different programs of CTEVT using secondary sources, including official records and records uploaded to the CTEVT's website. Furthermore, we developed guiding questions for FGDs, interviews and interactions to collect data from various stakeholders. We collected field data from five distinct groups of participants. The field covered the CTEVT constituent, affiliated, TECS, and partnership institutions. We invited principals, program coordinators, and available instructors from school/institutions and conducted FGDs. In each school visited, the team selected students randomly for interaction. The following were the research participants, tools, and data collection methods and process for the field study:

- Using guiding questions, we conducted two face-to-face FGDs with a total of twelve representatives from industry/occupation and professional/occupational organizations and sector skill committee members.
- We used guiding questions and conducted face-to-face interaction with twenty-five people from CTEVT member secretaries, directors of different divisions, ex-member secretaries, and directors of curriculum, including curriculum officers of CTEVT.
- We used interview questions and conducted face-to-face as well as virtual interviews with twelve selected principals and coordinators of different TVET providers, schools, training centers, private providers, TECS schools, and partnership schools from the Kathmandu Valley.
- Using FGD guidelines, we conducted five FGDs with the selected forty instructors working in various diploma and pre-diploma programs in five different institutions/schools.
- Using FGD guidelines, we conducted five FGDs with thirty-eight selected students studying at various diploma and pre-diploma programs in five different institutions/schools.
- We observed the classrooms and labs of five schools visited and collected data about the teaching, learning, and practical activities.

Data Analysis

We analyzed both the data from document study and field study. We collected field data and recorded in a notebook, with a few recordings on an audio recorder. To maintain anonymity, we coded data and used pseudonyms for people before categorizing the data. We read, re-read the transcribed data, and identified seven themes with several sub-themes for data analysis. While analyzing the data from diverse sources and participants' views, we triangulated whenever possible; however, if the data did not match, we recorded the differences in the analysis as diverse or alternative views. Based on the data analysis, we summarized the findings related to the objectives of the study and concluded by indicating the way forward for the improvement in diploma and pre-diploma curriculum.

Ethical Considerations

During the data collection, analysis, and report writing, we maintained ethical standards. We clearly communicated the research process and purpose to the participants before starting the data collection. Similarly, we respect participants' rights to withdraw from the participation. Besides, we did not expose participants' personal information and used pseudonyms during the data coding and data analysis process.

Document Analysis

The study begins with an overview of the curriculum of diploma and pre-diploma programs and then reviews the curriculum development and revision process of CTEVT. By reviewing relevant studies, reports, and policies and program documents, it discusses the relevancy of the diploma and pre-diploma curriculum of CTEVT.

Review of Curriculum of Diploma and Pre-Diploma in Nepal

CTEVT has curricula of various diploma and pre-diploma programs, which are being implemented in constituent, affiliated institutions of CTEVT, partnership institutions, and TECS. The reviews are based on the document (a curriculum review) and data received from CTEVT. We reviewed the structure of the program and the course, as well as different components of the curriculum such as entry requirements; course delivery; student assessment; structure of curriculum document; instructors' qualification; and curriculum development and revision process.

Program Structure. The duration of most of the diploma programs is three years, conducted either in a semester system consisting of six semesters or a yearly system consisting of three years in total. CTEVT prepares diploma-level curriculum in five different areas, including agriculture (plant and animal science), forestry, engineering, health, and hospitality. There are altogether forty-three programs at the diploma level. Each of the Forestry and hospitality has only one program; agriculture has four programs, whereas engineering and health have 15 and 16 different programs, respectively. However, currently, out of forty-three programs, only thirty-five are running (CTEVT, 2024).

The duration of most of the pre-diploma programs is 18 months, whereas the duration of apprenticeship-based pre-diploma programs is 24 months. CTEVT developed curricula in six different areas, including agriculture (plant and animal science), forestry, engineering, hospitality, health, management, and the humanities. There is one or more than one program in each area. There are thirty-three programs for pre-diploma programs in these six areas; among them, eight are apprenticeship-based; others are regular class-based with OJT. Forestry has only one program, hospitality has three programs, and agriculture has five programs, whereas engineering, health, and management and the humanities have 15, 5, and 4 different programs, respectively. However, currently, out of thirty-three programs, only twenty-seven are running (CTEVT, 2024).

Course Structure. The curriculum documents of different programs show that the course structure of each program includes two types of courses: general courses and discipline-specific technical courses. The general courses, like Nepali, English, mathematics, physics, biology, chemistry, etc., cover almost one-third of the courses in most of the diploma program, which seems very heavy and overloaded. It separates two disciplines—general and technical—as these courses are taught separately without integrating with the technical contents. There is no any justification for including such general courses at different durations. For example, in some programs, a separate Nepali language subject is included in one semester, but in others it

is included in two semesters; in some programs, social studies is also included. Neither transversal/soft skills nor skills required for workplaces are included in the curriculum, which are particularly important parts of the TVET program (Jeremy & Lubart, 2023; Oviawe et al., 2017). The pre-diploma programs focus on discipline-specific technical courses. The curriculum does not include foundational skills required for workplaces. However, the 6-month-long OJT could cover some aspects of workplace-based skills.

Entry Requirements. There are different entry requirements for different programs. School Leaving Certificate (SLC)/School Education Examination (SEE) pass with different GPA or different subject-specific letter grades or pre-diploma pass with different percentage of scores and entrance test of CTEVT are included as the entry requirements for diploma level. One of the questions about the entry requirements is, why do we need different entry requirements for different areas? Or would it be possible to make uniform entry requirements for all areas? Also, there is a need to justify that there are the same three-year courses in diploma for pre-diploma pass students, as there might be several repetitions in the courses. For example, for pre-diploma level, the same SEE pass criteria seem irrelevant. However, there are some variations in entry requirements for different programs, which need to be justified.

Course Delivery. The course delivery process does not adequately encourage innovative, differentiated, and inclusive pedagogy in the teaching and learning process. There is a need for a revision of weightage for theory and practical activities.

Student Assessment. Summative assessment has been overemphasized, but assessments that support student learning—formative assessments—are not emphasized adequately. Again, there is the provision for assessing 64 to 80 percent of the course with test items, mostly lower levels of cognitive capacity (mostly, remembering and understanding level), leaving technical, other relevant skills, and higher-order skills/thinking without assessing. In pre-diploma level, there is a provision of assessing and accumulating 50 percent marks in each subject for grading purposes from internal assessment and 50 percent with test items for theory and practical work for practical activities. Again, there is the provision to pass both practical and theoretical examinations, as well as both internal and external assessments.

Structure of Curriculum Document. Each curriculum document includes two parts. The first part describes the program, and the second part describes the curriculum at different subjects within the program. For example, the first part of the diploma program in Food/Dairy Technology includes: introduction to the program, rationale of the course, program title, aim and objectives of the program, target location and group size, entry criteria, duration, medium of instruction, pattern of attendance, teacher and student ratio, qualification of teachers and instructors, instructional media and materials, teaching and learning methodologies, mode of education, examination and marking scheme, grading system, certification and degree awards, disciplinary and ethical requirements, possible career opportunity, and course structure of all semesters. In the second part, each course is described with the name of the course, credit hours per week, and total hours with theory and practical, and full marks. Similarly, it includes the overall objectives of the course, unit division with objectives, contents, working hours, general teaching methods, and assessment strategies. It also elaborates the unit-wise practical activities with contents, objectives, and time.

Instructors' Qualification. Instructors' minimum academic qualification for diploma courses is a bachelor's degree in the related field for technical subjects and a master's degree for general courses. For pre-diploma courses, instructors' minimum qualification is a bachelor's degree in the related field or a diploma in the related field with at least five years of experience. The minimum qualification for teaching assistant is TSLC/Diploma in a related subject with two years' practical experience. However, there is no requirement for pedagogical training for instructors.

From the above review of different curriculum documents at the diploma and pre-diploma levels, we summarize the key findings in relation to curriculum structure and curriculum documents as follows:

a) There is a global tendency to design competence-based curricula (CBC) in TVET, which is lacking in diploma and pre-diploma curricula. In some subjects, learning objectives are not stated in behavioral terms; most of the learning objectives represent only a lower level of cognitive knowledge.
b) In some courses, learning objectives are not included; inclusion of only content may create difficulties in defining the scope of the content.
c) The layout and format of the curriculum documents are not uniform.
d) To adopt technology and knowledge advancement and changes in performance and work procedures, there is a need for regular updates of curriculums, but some courses are not reviewed for a long time.
e) There are only two types of courses in the curriculum for diploma level: general courses like Nepali, English, Mathematics, Sciences, and Social Studies in some programs, and technical courses. Important skills, such as soft or transversal skills and workplace-based skills, which are needed for TVET graduates, are missing from the curriculum. The pre-diploma program focuses on technical skills, but soft skills are missing, and workplace-based skills are not included adequately. Contents in general content areas such as Nepali, English, Mathematics and Sciences in most of the diploma programs are overloaded and lack of integration with the technical skills.

Curriculum Development and Revision Process. CTEVT designs curriculum using three broad steps (CTEVT, 2080 BS). First, CTEVT begins the curriculum development process by identifying the needs. CTEVT identifies areas and programs for curriculum through the collection of public requests received from various sources, including media, professional organizations, graduate employees, business organizations, various workshops/discussion programs, and reviews of literature. Second, CTEVT forms a curriculum drafting team in each subject as identified by the need assessment report. The task team includes 10–14 members, including instructors, university teachers, representatives from industry/occupation/ professional organizations, and curriculum experts. The drafting team prepares the structure of the curriculum and drafts the curriculum. Third, the drafting team sends the draft of the curriculum to the subject committee for their recommendations. The subject committee reviews the draft curriculum and sends the revised draft to the curriculum approval committee for approval with its feedback. The curriculum approval committee either approves the curriculum or sends it to the technical committee for review. When the curriculum committee sends the draft curriculum to the technical committee, the curriculum committee approves the curriculum as per the suggestion of the technical committee.

The curriculum revision process starts with the review of studies, assessment of programs and curriculum, review of new developments in the area, and demand for employment. Based on these reviews, if the need for revision is realized, the CTEVT forms a curriculum revision team. The team identifies the need and conducts workshops for revision of the curriculum. The rest of the process is like the development of a new curriculum as it goes through the subject committee to the curriculum approval committee.

Analysis of Field Data

This section analyses the data collected from FGD and interactions with different stakeholders, as well as data collected from the observations of schools and institutions. To identify different stakeholders' views on curriculum, we collected data from the following five groups of people: experts who participated in curriculum development, including curriculum

officers from CTEVT and sector skill committee members; representatives from industry/occupation and professional/occupational organizations; principals and coordinators of different TVET-provider schools, training centers, private providers, TEC schools, and partnership schools; instructors; and students. Besides, the team observed classrooms and infrastructure of visited institutions. The data collected was categorized into the following seven themes and analyzed under these themes.

Program Objective and the Structure of Programs

Each program document mentions that the objective of the program is to produce 'a middle-level technical workforce equipped with knowledge and skills related to the field to meet the demand of such a workforce in the country to contribute to the national economic development in Nepal.' However, the curriculum structure does not align with the objective of the program, as curricula includes several contents from general subjects. One of the instructors in a FGD mentioned that the general subject contents are too heavy and not relevant to the program, and at the same time, the intakes in these programs are of average and below-average grade achievers in SEE, who may not be able to do the same level of general course as in general science in grades 11 and 12.

Instructors and some people from industries and occupations suggested reviewing the theory and practical weightage and activities to increase practical activities. Participants identified the need for some kind of work-based learning in the form of internships or OJT in all diploma programs. Participants from industries and occupations, and some experts and instructors suggested designing competence-based curriculum for diploma and pre-diploma levels. Regarding the duration of diploma programs, there is the possibility of reducing it by six months if general subject content is reduced.

Curriculum Development Process and Participation

Participants in FGDs suggested wider and meaningful participation of trainers and people from industry/occupation in the curriculum designing process. One of the participants in a FGD said, *"the curriculum development process of diploma and pre-diploma was expert-driven, which resulted in heavy content load with theory focus."* The same view was shared by instructors, experts as well as participants from industry. Similarly, there is a lack of a system for continuous assessment of curriculum and revision of curriculum based on the assessment. In most cases, curriculum revisions seem to be a discontinuous event happening at five- or more-year intervals. Such periodic revision may not be able to address the needs of technological advancement and the demands of industries and occupations.

Teaching Learning and Practical Activities

The participants viewed that the curriculum document has no meaning if it is not implemented effectively. Implementation of curriculum requires effective teaching and learning processes, including assessment and practical activities. They suggested improving teaching and learning activities by incorporating more practical and real-life experiences and feedback systems. Some students (e.g., mechatronics and biomedical) said that they do not have sufficient opportunities to participate in practical activities as there is a lack of equipment. Similarly, students, instructors, and principals have similar views about the adoption of modern technology in mechanical engineering. There is a provision of six months' OJT in pre-diploma programs, but such work-based experiences are not included in several diploma programs. Participants in the FGDs explained that there are different practices regarding OJT in pre-

diploma; for example, some institutions have been working effectively with industry/organizations for OJT, some institutions have been just working to meet the requirements, and in some programs, it was difficult to get a place for OJT.

Assessment and Grading

Although there are practices of internal assessment and final examination, the focus of assessment is summative/grading rather than continuous improvement. However, students must pass both theory and practical tests separately, as well as internal and final assessments. Most of the participants in FGDs and interviews mentioned that due to the provision to pass separately in internal and external assessment, students usually prepare for the final examination rather than learning and skill acquisition. They also suggested reviewing the weight of theory and practical activities. Instead of a pass/fail system, experts, some instructors, principals, and industry representatives suggested grading of four to six levels as it minimizes resource wastage.

Curriculum Updates, Dissemination, and Curriculum Assessment

In most cases, curriculum revisions seem like a disconnected event happening at some five-or-more-year intervals. Such periodic revision may not be able to address the needs of technological advancement and the demands of industry, business, and occupation. There is a lack of systematic and continuous curriculum assessment, feedback, and improvement systems. All instructors said that there were no provisions for curriculum orientation or dissemination.

Infrastructure, Resources, and Curriculum Materials and the Curriculum Implementation

There are some guidelines for conducting different programs, which are assessed during the approval of a program or affiliating the institutions for a program. However, participants mentioned that there are institutions running without proper infrastructure, curricular materials, laboratories, and teaching learning materials, including practical activities. Several affiliated and TEC schools are running with inadequate resources, in which decreasing trends in enrolment is one of the reasons for such resource limitation. Some of them have inadequate resources, teaching materials, and limited teachers/instructors; some of them even compromised on the working hours and practical activities, which were also observed at the visited institutions. Due to low enrolment, some affiliated and TEC schools have already closed such programs, which was also observed in some of the visited schools, and more institutions are thinking of closing the program. Similar decreasing trends of enrolment are found in several constituent institutions of CTEVT and technical programs at grades 9–12 in public schools, but they are continuing the program even in the situation of low enrolment because they receive the minimum running cost, including instructors' salary from the government.

Implementation of NQF and Curriculum Alignment

Although NQF has been prepared and endorsed by the government with eight levels of qualifications, and each level of qualification has been defined with certain competencies, the curriculum development of different programs needs to adopt such competencies. However, in the case of Nepal, the NQF has not been implemented formally, and thus there are no formal practices for considering the NQF as a basis for preparing curricula for various levels and programs. Therefore, the curricula of diplomas and pre-diplomas are hardly aligned with NQF.

Discussion

The analysis of various curricula, FGDs, interviews, and interactions with various stakeholders indicated that CTEVT's diploma curricula are heavily loaded with basic/fundamental knowledge such as English, Nepali, mathematics, and various science subjects, which has been hindering the learning of technical subjects/content and contributing to low graduation rates. The structure of the curriculum was the result of unclear goals for the program, as there was confusion among CTEVT management and curriculum experts about the goals of the diploma program. The participants of FGDs, interviews, and interactions agreed that the objective of the TVET program is to produce skilled human resources for industry, business, and occupations, but the practice still focuses on preparing students for higher education. This dual mentality has contributed to producing graduates who are neither able to enroll in higher education nor able to work effectively in related jobs or professions.

The general subjects have been included without proper linkages and integration with technical subjects/skills, which raises questions about the program's purpose of producing skilled human resources for industries/occupations. Three skills - technical skills, transversal/soft skills, and workplace-related skills and attitudes - are equally important for TVET graduates (Jeremy & Lubart, 2023; Oviawe, Uwameiye & Uddin, 2017), but transversal /soft skills have hardly been appeared in diploma programs, and workplace-related skills are absent from several diploma programs. In pre-diploma programs, the provision of OJT may contribute to acquiring some workplace-based learning. However, even in pre-diploma level programs, there are no provisions for soft skills, and workplace-based skills are not included systematically. Assessment of curriculum indicates that the content of several technical subjects seems overloaded, necessitating review and revision.

There is a global tendency towards designing competency-based curricula in TVET (Manase and Nyamu, 2024; Gesslers and Peters, 2020), which has not been practiced in designing diploma and pre-diploma curricula of CTEVT. In some programs, the learning outcomes are stated inappropriately; some generalized types of teaching and learning activities are included, which have not contributed to responding to diverse content and context. The assessment scheme focuses on summative purposes, not formative ones. In the curriculum development process, there are some provisions for the participation of various stakeholders; however, most practices indicate a lack of genuine participation. Not only the participation but also the need identification task seems a formality. The established DACUM process has not been adopted while designing curricula (CPSC, 2023). As a result, curricula are mostly expert driven with heavy theoretical knowledge. Therefore, the relevancy of the curriculum has been questioned, particularly by people from industry, business, and occupations. Several diploma programs are detached from workplace-based learning, as there is no provision for internships or OJT.

The practical skills and experience of graduates seem inadequate. There are inadequate provisions and practices for practical tasks in some programs and institutions. There are issues with effective delivery of courses because of lack of proper orientation of the curriculum, lack of effective monitoring, and inadequate resources. It is necessary to disseminate, elaborate, and specify the curriculum. Similarly, developing curricula and providing reading materials for students are necessary. These provisions are not adopted in practice. A lack of a system for continuing professional development of instructors has contributed negatively to the quality of delivery process. The NQF has not been implemented yet, and there is no provision for updating qualifications in TVET, which has contributed to diverting the program objectives towards the preparation for higher education.

There is a temptation to open the door to higher education, but success in this case seems negligible. There is a lack of coordination and harmonization with similar programs

conducted at public schools in grades 9–12. The assessment system focuses on the final examination, which demotivates skills learning. The pass/fail grading system is not contributing to learning improvement and skill advancement, which calls for an alternative grading system. CTEVT requires an additional six months to complete the results and certification, which makes it take almost four years to complete the diploma program. Again, even if students cannot complete the last semester, they cannot get any qualification or certification because of the lack of a system of modular courses/programs.

Conclusion

Based on the analysis of data and discussion of results in the previous sections, this study identified the need for restructuring the diploma and pre-diploma curriculum of TVET in Nepal. While restructuring the diploma and pre-diploma curricula, there is a need to consider the main objectives of TVET programs: producing skilled human resources for the world of work, helping them get employment, contributing to economic growth, and providing an opportunity for continuous learning in the field. To restructure the curriculum, we need to focus on reducing the overload of general subject contents, including English, Nepali, mathematics, general sciences, and social studies, by including only those aspects of the contents that we can apply for learning and performing skills. Besides, it is necessary to integrate soft or transversal skills and workplace-based skills into the curriculum. For workplace-based skills and attitudes, we need to include internships or on-the-job training (OJT) in all the areas of diploma and pre-diploma programs, with an appropriate follow-up and feedback system. Similarly, we should review the discipline-specific technical knowledge and skills to make them more relevant to the job and the context.

We need to involve industry/occupation in the curriculum design and implementation process by ensuring their meaningful participation. Similarly, there is a need to design competence-based curricula in both diploma and pre-diploma programs. We need to implement the NQF and link it to the curriculum development process. To improve curricula, it is necessary to incorporate curriculum evaluation and feedback as an integral part of the curriculum development and revision process. This study identified the need for modular courses with multiple entry and multiple exit points in TVET in Nepal. It also suggested that developing the National TVET Curriculum Framework could help restructure the overall TVET programs in Nepal.

Data Availability Statement

The raw data supporting the conclusions of this article will be made available by the corresponding author, without undue reservation.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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