

**EÖTVÖS LORÁND UNIVERSITY
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Continuing Professional Development Practices of TVET Teachers in Kenya

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1 Introduction

Technical and Vocational Education and Training (TVET) plays a critical role in social and economic development (UNESCO, 2001). Accordingly, the quality and relevance of TVET is an important policy and research issue (Rawkins, 2018). Indeed researchers have focused on the many factors that influence the quality and relevance of TVET, and while multiple factors have been identified, the Continuing Professional Development (CPD) of TVET teachers has been shown to play a critical role (Cedefop, 2016; Rawkins, 2018). Accordingly, encouraging and supporting TVET teachers to undertake effective CPD is an important policy goal.

However, despite its importance, effective TVET teacher CPD remains unavailable to many teachers across the world (Axmann et al., 2015; Rawkins, 2018) and especially in Sub-Saharan Africa (Grijpstra & Papier, 2015; Haßler et al., 2020). Moreover, due to limited research, TVET teacher CPD practices remain unclear. In particular, it is not always clear what content TVET teachers learn in their CPD, what learning methods they use, or how effective their CPD practices are in developing desired TVET teacher competencies or the impact of their CPD activities on teaching practices (Stanley, 2021). This lack of insight into the content, methods, effectiveness and impact of TVET teacher CPD is more common in developing country contexts where research on TVET remains limited. The lack of data and research in turn hinders the development of policies and programmes to support the continuing professional development (CPD) of TVET teachers. Haßler et al. (2020) thus note that the CPD of TVET teachers in Sub-Saharan Africa should be further researched and developed in evidence-based ways.

Kenya is one such country in Sub-Saharan Africa where a key concern over the years has been that TVET teachers in the country have been unable to improve their professional competencies (Akala & Changilwa, 2018; Sifuna, 2020). Moreover, yet to be developed is a formal policy on the Continuing Professional Development of both general and vocational teachers. In the absence of policies and professional guidelines, teacher CPD in Kenya remains under resourced and poorly targeted (Lowe & Prout, 2018).

Within this context and given the limited research into the CPD practices of TVET teachers, it remains unclear how TVET teachers in Kenya improve their professional competencies, the challenges they face, and the policy options available to improve TVET teacher CPD in Kenya. It is also unclear how different factors, learning needs and teacher motives influence TVET teacher CPD in the country. In addition, the meanings TVET teachers in Kenya hold about teaching and teacher CPD and how the held meanings influence their CPD practices have not been investigated. This study therefore sought to address the existing research gap into the CPD practices of TVET teachers in Kenya and to identify appropriate measures to support TVET teacher CPD in Kenya.

1.1 Objectives and research questions

A key objective of the study was therefore to identify and evaluate the CPD practices of TVET teachers in Kenya. Attaining this objective called for an exploration of the conceptions and held meanings about TVET teaching and TVET teacher CPD, identifying the perceived learning needs and the consequent formal and informal learning activities that TVET teachers engage in to address their learning needs. Meeting this objective also called for assessing the extent to which past CPD activities meet the criteria for effectiveness. A second objective was to investigate the factors that influence the CPD practices of TVET teachers in Kenya including the costs and challenges TVET teachers face when they participate in CPD. The third and final objective was to use the insights gained from the study to identify and propose policies to improve TVET teacher CPD in Kenya.

Research questions

Accordingly, to guide the attainment of the study objectives, the following research questions were posed to guide the study:

Research question 1: What meanings are held by TVET teachers in Kenya about teaching and teacher learning? How do the held meanings influence TVET teacher CPD practices?

Research Question 2: What are the Continuing Professional Development (CPD) practices of TVET teachers in Kenya?

Research question 3: How do personal factors and contextual factors influence the CPD practices of TVET teachers in Kenya?

Research question 4: How effective are TVET teacher CPD practices in Kenya?

Research question 5: What motives, benefits, costs, and challenges are associated with TVET teacher CPD in Kenya?

Research question 6: What policy changes can lead to effective TVET teacher CPD in Kenya?

1.2 Preliminary assumptions

The study adopted a mixed methods approach, and did not aim at testing specific initial hypotheses. Still, it was possible to identify and articulate several preliminary assumptions which guided the study. One normative assumption was that TVET teacher CPD is valuable in its own light and it is therefore worthwhile to study it and seek measures to improve it.

A theoretical assumption was that conceptions of the world influence practices. Accordingly, the study sought to understand how TVET teachers in Kenya conceptualize teaching and teacher CPD, as well as how those conceptions influence their CPD practices. A related methodological assumption was that teachers can identify their conceptions of teaching and teacher CPD, can do so truthfully, and can express the conceptions clearly and without bias. Similar assumptions were made with respect to motives for TVET teacher CPD. Other methodological assumptions were that teachers could accurately recall their past CPD activities and that the data collection instruments validly and reliably collected data related to the CPD practices of TVET teachers in Kenya.

Another theoretical assumption was that TVET teacher CPD is influenced by personal and contextual factors. Accordingly, the study aimed at identifying these factors and their effects. A methodological assumption stemming from this assumption was that it is possible to identify these factors, and to assess their effects on the CPD practices teachers adopt. Accordingly, the study investigated the effects of personal characteristics such as gender, age, career stage, and prior educational experiences on the CPD practices teachers adopt. Similarly, the effects of contextual factors such as student assessment practices, professional guidelines, and availability of learning opportunities were investigated.

Underlying the analysis of the effects of these factors was that the assumption that these factors either encourage or hinder participation in CPD. Analysis of the collected data thus focused on increases or decreases in participation rates due to variations in the factors. Another assumption was that it is not just the presence of a particular factor that influences practices, but that absences also influence practices and their outcomes. Factors were thus taken to vary not just by type and magnitude but to also vary by presence or absence.

This ontological assumption thus led to the examination and interpretation of observed CPD practices in terms of both what exists and what lacks. In particular, it was assumed that the absence of TVET teacher CPD policies influence the CPD practices of TVET teachers in Kenya as well as the effectiveness and outcomes of the practices. Moreover, it was assumed that it is possible to identify policy proposals to guide and improve TVET teacher CPD in Kenya. Accordingly, the study sought to identify policy proposals that can guide and improve TVET teacher CPD practices in Kenya.

2 Theoretical background

The study started with a narrative review of literature and followed the recommendations given by Bryman (2012) on conducting narrative reviews of literature. Unlike systematic reviews which describe and aggregate past findings, narrative reviews seek to integrate and interpret past research findings and develop a new conceptual understanding (Bryman, 2012; Gessler & Siemer, 2020; Hobson et al., 2009). Based on the objectives of the study, the review of literature focused on the Continuing Professional Development (CPD) practices of teachers with a special focus on TVET teachers. The review aimed at developing a broad understanding of teacher CPD centred on the key aspects that characterize teacher CPD and the factors that influence how teachers participate in CPD.

The review led to a reconceptualization of teacher CPD and a consideration of theoretical propositions that could explain teacher CPD practices. Consequently, a theoretical framework was developed to explain teacher CPD practices based on the key attributes of teacher CPD, general characteristics of teachers, and the factors that influence how teachers participate in CPD (Njenga, 2022b). This is briefly summarized below.

The review of literature started with the view that teacher CPD refers to all learning that teachers as professionals take after their preparatory training with the aim of improving their professional competencies (Desimone, 2009; Friedman & Phillips, 2005; Richter et al., 2011). To better understand and explain teacher CPD practices, the study reviewed various analytical frameworks on teacher CPD. These frameworks focused on diverse aspects of teacher CPD, e.g., the age and stage-based characteristics of teacher development (Day & Gu, 2007; Kelchtermans, 2004); how teachers are viewed and consequently the forms teacher CPD takes (Lewin & Stuart, 2003); the learning methods that characterize teacher CPD (Kennedy, 2014; Sachs, 2001); the outcomes and contents of teacher CPD (Harland & Kinder, 2014); the rational actor characteristics of teachers (Heystek & Terhoven, 2015), and; the adult learner characteristics of teachers (Appova & Arbaugh, 2018; Beavers, 2009; Lawler, 2003). From this review, it was concluded that teacher CPD practices are characterized by a multiplicity of aims, diversity of content and a broad range of learning methods.

In addition, it was concluded that teacher CPD practices are influenced by the *characteristics of teachers*. These characteristics include the characteristics of teachers as adult learners (e.g., independence, self-directedness, etc.), characteristics of teachers as rational actors (e.g., goal-directedness, considerations of costs & benefits etc.), characteristics of teachers as reflective practitioners (e.g., held meanings, prior experiences etc.) and biographical attributes (e.g., age, gender, career stage, motivations etc.).

Various *contextual factors* that influence teacher CPD were also identified, including, the availability of teacher CPD opportunities, the costs, challenges, benefits and outcomes associated with teacher CPD, and existing educational policies and professional guidelines. Other contextual factors include the nature of the student body, the curriculum and evaluation system, the type and location of school and organizational attributes such as collegiality and support from the school administration and teacher employer.

Theoretical framework

An analysis of the literature led to the conclusion that teacher CPD is a context-bound and goal-oriented adult learning activity that is characterized by different aims, content, methods, and intervening factors. Contextual factors and personal factors set the aims

and desired outcomes of teacher CPD, the content teachers can learn, and the learning methods teachers can use as part of their CPD.

By viewing teachers as adult learners and rational choice takers, principles of derived from the Adult Learning framework and propositions from the Rational Choice Theory were then used to explain the interaction of the factors and the resulting CPD practices. Observed CPD practices, such as participation in various CPD activities, the content learnt and the learning methods used, were thus explained as outcomes of the rational choices made by teachers with regard to their CPD: *timing* (if and when to participate), *content* (what to learn) and *learning methods* (how to learn). As adult learners, teachers make these choices influenced by their beliefs and past experiences, and therefore seek content and learning methods that best align with their motives and learning goals. The choices teachers make and the factors that influence these choices were graphically summarized in the conceptual framework shown in Figure 1 (Njenga, 2022b).

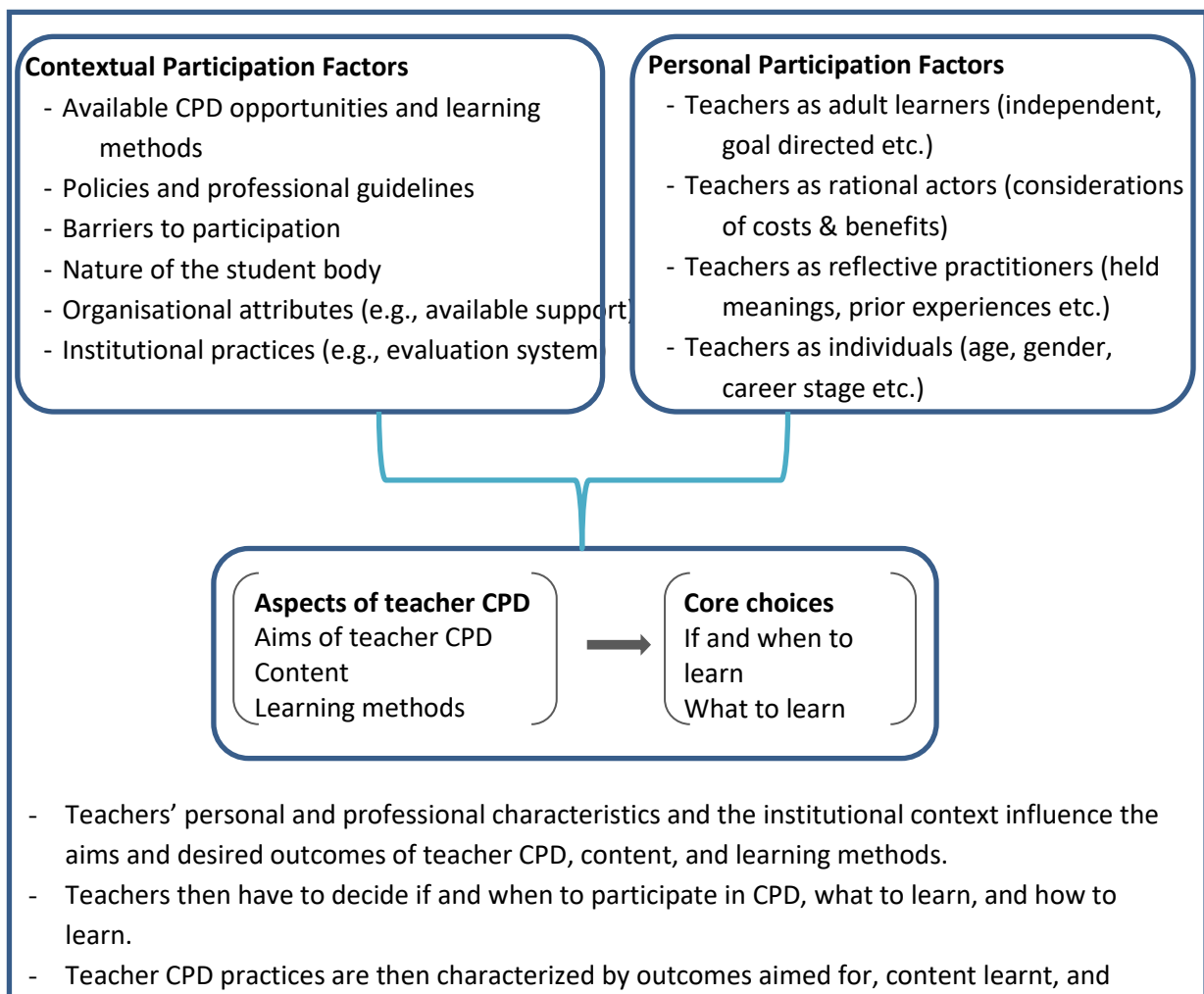


Figure 1: Theoretical framework on teacher's participation in CPD

3 Context of the study

While context may be looked at from different perspectives, the study looked at context in terms of the setting or location of the phenomenon under study. In line with the preliminary assumption on the influence of different factors, it was taken that within a given setting or location, and due to the unique characteristics of that setting, factors of interest vary (i.e., they may be present or absent or may take on particular values) and therefore influence the phenomenon under study leading to outcomes that are specific to that setting. Two locations of interest were identified: TVET as part of the wider system of education and the geographic location of the study.

3.1 TVET

As a form of education, TVET displays great diversity. To make sense of the diversity and to identify its essence, a review of different definitions and conceptions of TVET, led to the conclusion that the essence of TVET is the learning and mastering of socially desirable techniques, -that is, the learning and mastering of specialized approaches of doing useful things. Because the techniques are based on scientific principles and their competent application requires a broad understanding of both general and scientific principles, the learning, mastering and competent application of the techniques necessarily involves the learning of both general and scientific knowledge and the development of technical skills and practical competencies (Njenga, 2020). This conceptualization of TVET highlights the purposes, knowledge base and learning methods that characterize TVET.

To better explain TVET and distinguish it from other forms of education, I borrowed from Moodie (2008) and Cedefop (2017) and argued that TVET is distinguished from general education by its *epistemological aspects* (i.e., a bias for technical and practical/tacit knowledge that is supported by scientific knowledge), its *pedagogical aspects* (i.e., a requirement for experiential and practical learning), its *teleological aspects* (i.e., TVET may be taken as occupational preparation leading to formal certifications or as continuing and life-long learning focusing on improved task performance and career progression) and *TVET's social-economic nature* (i.e., a focus on practical arts and its occupational-vocational bias) (Njenga, 2020).

In consideration of these characteristics and in contrast to those of general education, it was concluded that the purposes, knowledge base, and pedagogical approaches of

TVET show important differences when compared with those of general education. These differences impact on the professional characteristics of TVET teachers and consequently on their recruitment and professional development. Thus, as facilitators of the learning of the general knowledge, scientific principles, and technical and work-related competencies that form the foundation of TVET (Gamble, 2013), TVET teachers were found to be *dual professionals* who must possess professional competencies in their technical fields as well as professional competencies in teaching (Andersson & Köpsén, 2015; Avis & Orr, 2014; Tran & Le, 2018). This dual professional identity was found to influence the aims, content and learning methods of TVET teacher CPD, while presenting unique challenges.

For example, while research on TVET teacher CPD documents learning activities similar to those used by general education teachers, TVET teachers have also been found to use additional learning methods. These additional methods support TVET teachers to remain up-to-date with modern and emerging work-practices and include industry-based learning activities (i.e., learning activities situated in industry, including working part-time job or work placements in industry). Use of industry-based learning activities is emphasised because it supports the development of work-life competencies that cannot be developed within the school (Andersson & Köpsén, 2015, 2018; Zhou et al., 2021).

Apart from influencing the content and learning methods associated with teacher CPD, TVET as a unique context for teacher CPD introduces unique challenges. For example, by working inside a classroom, TVET teachers are outside the network of relations within which technical knowledge is developed and circulated. TVET teachers therefore face challenges in developing and keeping their professional competencies up to date. Moreover, given the nature of their subject content knowledge, as well as its rapid pace of change, TVET teachers face challenges in accessing pedagogical content knowledge relevant to their subject areas. In addition to these challenges, TVET teachers are also constrained of time and resources to facilitate their CPD. Others challenges relate to the lack of a positive view of TVET teachers as well as failure to appreciate the complexity of TVET teaching (Broad, 2016; Hoekstra et al., 2018).

These challenges were found to be particularly acute within developing country contexts within Sub-Saharan Africa (Grijpstra & Papier, 2015; Rawkins, 2018). The

frequent occurrence of these challenges in developing countries was attributed to deficiencies in capital (financial, technical knowhow, and institutional frameworks) leading to limited CPD opportunities for TVET teachers.

3.2 Education and TVET in Kenya

From this point, the more concrete context of the study was identified: education and TVET in Kenya. The current state of education in Kenya was highlighted, together with a look at how TVET teachers in Kenya are prepared, the challenges they face in accessing CPD, and the resulting need for policy-based solutions to these challenges. It was noted that while the majority of TVET teachers in Kenya have received teacher training, many TVET teachers in Kenya lack adequate skills, exposure to industry, and experience with modern technology (Sifuna, 2020). Further, while the government and donor agencies sometimes provide short in-service training programs, systematic and large-scale provision of TVET teacher CPD lacks in Kenya. TVET teachers are therefore largely responsible for their own professional development, and some teachers pro-actively self-finance their CPD with the hope of better placement, (Bett, 2016; Lowe & Prout, 2018; UNESCO-UNEVOC, 2018). However, the exact nature of existing CPD practices remains unclear. In particular, it remains unclear what content TVET teachers learn in their CPD, the effectiveness of their CPD practices and the outcomes of their CPD practices in terms of teaching practices. It was further noted that improving CPD programs to respond to the needs of TVET teachers and developing policies that can stimulate and sustain effective TVET teacher CPD has been hampered by the lack of data and research into the CPD practices of TVET teachers in Kenya. This study therefore sought to investigate the CPD practices of TVET teachers in Kenya.

4 Methodology

From a *Critical Realist perspective*, the study viewed reality as being too complex for one research approach to effectively provide sufficient knowledge. Further, an analysis of *qualitative* and *quantitative* research approaches showed that the approaches lack significant epistemic and ontological differences between them. Instead, the two approaches complement each other rather than crash. It was thus tenable to combine and use the two approaches concurrently to yield a detailed description and explanation

of the TVET teacher CPD practices in Kenya (Njenga, 2022a). Accordingly, the study adopted a research design involving the *concurrent use of a questionnaire survey and semi-structured interviews*.

4.1 Design of the study

Specifically, the combination of the *quantitative* (questionnaire survey) and *qualitative* (semi-structured interview) approaches sought to ensure that the study both profiled the CPD practices of Kenyan TVET teachers and at the same time, identify the apparent and hidden reasons why teachers adopt those practices. The questionnaire survey was used to obtain a broad view of current TVET teacher CPD practices in Kenya and to statistically relate the practices to the factors influencing teacher CPD practices including teacher characteristics. The interviews were used to get detailed descriptions of the practices and to explore how various factors interact to influence the CPD practices teachers adopt. The two methods thus complimented each other while corroborating their respective findings. Concurrent and iterative analysis of the data, involving statistical analysis of the survey data and thematic analysis of the interview data, led to a unified set of findings. On the basis of the findings and from literature, the study then identified and suggested policies to stimulate and guide effective TVET teacher CPD in Kenya.

The reviewed literature showed that the CPD practices of vocational teachers mirror those of general education teachers but with certain variations. Accordingly, rather than duplicate past efforts and develop an entirely new instrument that would have been largely similar to existing instruments, the questionnaire items were adopted from those used in TALIS 2013 and TALIS 2018 to explore the CPD practices of teachers (OECD, 2014, 2018). Moreover, this was in line with past studies that adopted the TALIS items to examine and compare the CPD practices of vocational teachers in nine countries in Western Balkans and Turkey (Stanley, 2021) and Hungary (Bükki, 2022). This was also in line with the approach used by similar studies in the past, e.g. Andersson & Köpsén (2018). To account for the variations in TVET teacher CPD practices, some items specific to TVET teachers and the general objectives of the study were added. This included a section on the use and preferences for Lecturer Industrial Attachment and questions on policy recommendations by the teachers. All the questionnaire items in the questionnaire used a Likert-type scale.

After preparing the data collection instruments based on the objectives of the study as discussed above, an expert was invited to assess their face validity. Thereafter, the instruments were piloted in three technical training institutions in the study location. The main aim of the pilot study was to improve the data collection instruments. Respondents in the pilot study were therefore encouraged to give their views of the data collection instruments. Several respondents pointed to items they felt were ambiguous which were then reworded for clarity. The pilot survey also revealed that several items that requested respondents to provide written answers were not responded to. These items were consequently dropped from the questionnaire. The pilot interviews were similarly useful in guiding the further development of the interview schedule. Some of the interview questions was re-formatted and grouped to explore similar themes. Since the respondents were found to respond effectively to the data collection instruments without experiencing respondent fatigue, the length of the instruments was deemed appropriate for the study.

4.2 Data collection and study participants

Data collection for the study commenced after obtaining ethical approval from the Ethical Committee of Faculty of Education and Psychology at Eötvös Loránd University and research licensing from Kenya's National Council for Science and Technology. Data was collected from TVET teachers drawn from six Technical and Vocational Colleges (TVCs) in Kenya's Nairobi Metropolitan area. A TVC was selected by convenience from each of the six counties that make up the Metropolitan Area. Survey participants were selected by random sampling at the institute level. Random sampling was deemed appropriate since there was no reason to assume that teachers are not homogenous in the institutes. Moreover, data to develop a more detailed sampling plan was not available. Interview participants were selected purposively to ensure a wide distribution of participant characteristics (age, gender, and work-experience).

From the issued questionnaires, 178 questionnaires were returned, of which 170 were validly filled for analysis. By gender, 32 per cent of the respondents were female while 68 per cent were male. Majority of the teachers had a Bachelor's degree (57%) and a majority were in the Middle Career Stage (37%), having worked for between six and twenty years.

Table 1 provides a general description of the survey respondents.

Table 1: *General description of the quantitative sample*

Teacher Profile		Sample (N =170)
Teaching area	STEM	122 (72.4%)
	Non-STEM	47 (27.6%)
Gender	Male	116 (68%)
	Female	54(32%)
Age	Below 30	45 (26.5%)
	31-40	60 (35.3%)
	41-50	40 (23.5%)
	51+	25 (14.7%)
Career stage and teaching experience (years worked as a teacher)	New (0-2 years)	33 (19%)
	Junior (3-5 years)	40 (23%)
	Middle CS (6-20 years)	63 (37%)
	Late CS (20+ years)	34 (20%)
Initial Teacher Education (ITE)	ITE before employment	112 (66%)
	ITE after employment	24 (14%)
	No ITE	34 (20%)
Prior work experience	Yes	127 (74%)
	No	43 (26%)
Educational qualifications	Diploma	28 (16.5%)
	Bachelor's degree	98 (57.6%)
	Graduate (2nd or 3rd degree)	44 (25.9%)
Level of students taught	Mainly Diploma level students	37 (22%)
	Both Craft and Diploma students	133 (78%)
Teaching responsibility	Without a non-teaching responsibility	50 (30%)
	Non-administrative	75 (44 %)
	Administrative	45 (26%)

For the interviews, a male and female teacher were selected from each TVC and in total sixteen teachers participated in the interviews (Male = 9, Female = 7). With respect to educational qualifications, one of the participants had a Higher National Diploma, while three had a Bachelor's degree. Five of the participants had enrolled for a Master's

degree while six had already obtained their Master's degree. One teacher had a PhD degree. Three of the interview participants were Early Career Stage teachers who had worked for less than five years, nine were Middle Career Stage teachers who had worked for between eleven and twenty years. The rest were Late Career Stage teachers who had worked for more than twenty years. Further, six of the participants had worked elsewhere before they joined teaching and eleven of the participants held administrative and non-administrative responsibilities. Administrative responsibilities included being a principal, deputy principal, or head of an academic department, while non-administrative responsibilities included responsibility for student guidance and counselling and sports.

Based on the preliminary assumptions and the theoretical framework, analysis of the collected data focused on identifying the aims, content, and learning methods that characterize TVET teacher CPD in Kenya. The analysis also focused on identifying how different personal and contextual factors influence TVET teacher CPD practices in Kenya. Below is a summary of the main findings of the study.

5 Findings

5.1 Conceptions of teaching and TVET teacher CPD in Kenya

The *first research question* explored how TVET teachers in Kenya conceive of teaching and teacher CPD and how those conceptions influence their CPD practices. While some participants described teaching as an occupation, others described teaching in loftier terms and described it as a calling and service to humanity. Despite the divergence in the description of what it means to be a teacher, a recurrent theme was the view that teaching is a purposeful activity that seeks to produce independent and dependable individuals. Achieving this aim is seen as involving two main activities: Training and Character Development. As trainers, TVET teachers instruct and impart knowledge to students with the aim of developing useful competences in students. As character developers, teachers seek to help their students develop desirable values and ethics. TVET teachers are thus instructors, role models, guides, and counsellors. Additional roles include supporting the generation of new knowledge and solving societal problems.

This view of TVET teaching as a complex of roles that centres on instructing, presenting information and supporting students' character development mirrors the finding by Köpsén (2014) that VET teachers view their work as involving more than just teaching. Instead, working as a VET teacher involves fostering students to become fully engaged students, preparing students for a working life, and offering guidance into responsible adulthood. Similarly, Tyler & Dymock (2021) found that in constructing their vocational identity, vocational teachers saw themselves as professionals with a responsibility to facilitate learning while Tran & Le (2018b) found that VET teachers view themselves as mediators and facilitators.

From their view of TVET teaching as a complex of roles that centres on instructing, and presenting information, participants identified mastery of content and good teaching skills as essential competencies for TVET teachers. Other competencies are identifying and responding to student needs, classroom management skills, planning and documenting teaching activities, and evaluating learning. Life skills such as learning to learn and therefore being able to keep up to date and develop awareness of the educational and technological contexts, having an ethical attitude, and confidence were also identified as essential professional competencies. The competencies identified closely mirror those identified by Shulman (1986) and are a close restatements of Shulman's categories. It was therefore concluded that the competences described by TVET teachers in Kenya agree with existing theoretical frameworks.

The conceptions teaching and the competencies teachers should possess, were found to influence how TVET teacher CPD is conceptualized and practiced by TVET teachers in Kenya. The Continuing Professional Development of TVET teachers is largely conceptualized as, and practiced as, any activity that leads to improved delivery of knowledge and skills to students. These activities include information search, professional dialogue with colleagues and attending workshops and conferences. In line with the view of teaching as work or an occupation, professional development was also interpreted in terms of activities that enable career progress, hence the use of formal education leading to defensible certificates such as university degrees. For some teachers however, teacher CPD was a way out of the boredom and monotony of teaching. Teacher CPD was also viewed as a way to respond to and meet requirements from the government. In agreement with the theoretical framework, these conceptions

of teacher CPD as well as the general aims of teacher CPD were found to influence the content and the learning methods that characterize teacher CPD.

5.2 TVET teacher CPD practices in Kenya

The *second* and *third research questions* investigated TVET teacher CPD practices in Kenya (in terms of the content learnt and the learning methods used) and the personal and institutional factors that influence the practices.

5.2.1 Content

With respect to content, TVET teachers in Kenya frequently focus their professional learning on Subject Content Knowledge (SCK) with the aim of improving mastery of subject knowledge. Content aimed at developing General Pedagogical Knowledge (GPK) and Pedagogical Content Knowledge (PCK) is less frequently chosen. This finding agrees with findings from other studies focusing on the CPD practices of teachers. For example, in TALIS 2018, knowledge related to teachers' subject area was the most frequently covered content area (OECD, 2019).

The greater focus on SCK was attributed on the one hand to the beliefs about teaching and professional competency held by TVET teachers in Kenya, and on the other hand, to challenges in accessing PCK. Thus, in line with their view that good teachers should have strong mastery of content knowledge, the study participants justified their stronger focus on SCK by arguing that mastery of content knowledge is what matters the most for good teaching.

It is also likely that, similar to vocational teachers in other contexts, TVET teachers in Kenya lack access to relevant Pedagogical Content Knowledge (PCK). Past research has shown that vocational teachers focus less frequently on PCK simply because they face difficulties in accessing relevant PCK. It has been observed that owing to the highly technical nature of TVET content, vocational education teachers often lack access to materials focusing on teaching methods specific to their trades (Hoekstra et al., 2018; Lucas et al., 2012). Moreover, TVET teachers often lack systematic trajectories to ensure that they develop all their professional competencies (Gamble, 2013).

With respect to the factors influencing the choice of content, teachers who had received Initial Teacher Education (ITE) were found to be more likely to focus their CPD on pedagogical knowledge compared to teachers without ITE. This suggested that ITE has a positive effect in sensitizing teachers on the value and importance of pedagogical knowledge.

The choice of content and learning methods were also found to be strongly impacted by the institutional and policy context within which TVET teachers in Kenya work. One aspect of the institutional context found to influence TVET teacher CPD practices in Kenya relates to the student evaluation system. From the analysis of both the interview data and survey data, it was found that both the exit examinations and the curriculum underlying the examinations influence what and how teachers teach as well as the content teachers choose to focus their professional learning on. In particular, a significant majority of the surveyed teachers agreed that they teach content most likely to be examined. Teachers also agreed that they choose to learn content most likely to help their students pass in their examinations. This was in agreement with the findings by Somerset (2011) and Wasanga & Somerset (2013) that end of cycle examinations heavily impact teaching practices in Kenya

The choice of content was also found to depend on how helpful the content was perceived to be: teachers who identified a given content area as helpful and positively impacting on their practice were found to cover that content area more frequently. Thus, teachers choose content if it enables them to attain the competence they seek to develop. This is in line with adult education theory where adult learners learn with a specific problem in mind and consider a learning process as meaningful if it brings them closer to solving that problem (Rubenson, 2011; Tight, 2002). This finding supports the theoretical framework, i.e., teachers choose content that best supports their learning goals.

5.2.2 Learning methods

To investigate the choice of learning method, participants were asked to indicate how frequently they used different learning methods. Learning methods had been categorized into four categories i.e., formal, collaborative, self-paced, and practice based.

From the category of formal CPD activities, the most frequently used learning method was attending workshops and seminars, followed by short training courses and college and university courses respectively. In the collaborative learning methods category, mentoring and coaching was the most frequent method, and from the self-paced CPD category, reading on subject matter was the most popular followed by watching videos about subject matter. Teachers also frequently engage in discussions about teaching practices. Overall, the most frequently used learning methods were reading and watching videos about subject matter followed by attending workshops and short training courses.

Among the least frequently used learning methods were supervising other teachers and writing reflections about practice with more than half of the respondents indicating that they never engage in reflective writing about their practice and outcomes. In the self-paced category, watching videos about teaching methods ranked as the least popular, while in the formal CPD activities category, attending educational conferences was the least popular. Overall, the least frequently used learning methods were visiting other institutions, writing reflections and participation in teacher clubs.

These findings supported earlier findings on the learning methods used by vocational teachers. For example, Broad (2016) identified that formal CPD methods are relatively popular in the Further Education sector in the United Kingdom while Lecat et al. (2019) observed similar uses of informal learning methods. However, unlike Broad's study, the use of professional literature by TVET teachers in Kenya is restricted to text books with limited use of primary or secondary literature. The finding that TVET teachers in Kenya rarely engage in reflective practices corroborates earlier observations that reflective practices are not common in Kenya (Bunyi et al., 2013; Lowe & Prout, 2018; Macharia, 2020).

Related to the use of embedded learning methods was the finding that Lecturer Industrial Attachment (LIA) remains limited due to challenges and barriers such as lack of awareness about LIA, lack of a formal policy to guide LIA, practical challenges such as lack of time and financial facilitation, and lack of collaboration between training institutions and industrial firms.

With respect of mentorship as a collaborative learning method, TVET teachers were found to value mentorship and to appreciate the important role mentorship plays in supporting new and beginning teachers. However, structured and sustained mentorship for new and beginning teachers was found to be rare and this was attributed to how mentorship is conceptualized and therefore practiced. Mentorship is conceptualized as incidental and supportive dialogue, which limits its practice as a supportive and sustained relationship between a more experienced teacher and a new teacher. In addition, there lacks a formal framework to guide mentorship in the training institutions.

From an analysis of the use of the different learning methods, TVET teachers in Kenya were found to be selective and strategic in their choice of learning method. For example, teachers favour the use of formal academic training as part of their CPD, usually with the aim of qualifying for promotions and other forms of career progression. Some teachers, especially those in their Late Career Stage appear to use formal CPD to prepare for post-retirement life and to escape boredom and monotony. On the other hand, informal CPD activities such as dialogue with colleagues are often used by teachers to support the development of specific competencies and to improve teachers' abilities to execute their roles. Other collaborative and practice-based learning methods such as lesson observations are however less frequently used. This was attributed to career and professional guidelines that recognize only formal learning methods and therefore discourage informal learning practices. CPD activities such as mentoring, supervising other teachers, and school visits were found to form a unique category of CPD activities that is more frequently used by teachers with administrative responsibilities.

5.3 Effects and effectiveness of TVET teacher CPD in Kenya

The *fourth research question* focused on the outcomes and effectiveness of TVET teacher CPD practices in Kenya. With respect to outcomes, teachers were found to associate participation in CPD with improved confidence, improved teaching skills and improved student performance. In contrast, many respondents felt their CPD had not resulted in career progress, appointment to managerial positions, or respect from colleagues. With respect to the effects of teacher CPD on teaching practices, the most common effect identified was updating teaching content taught in class and providing

demonstrations in class. The least common effect was being able to collaborate with other teachers. Subject-content knowledge was found to be the content area teachers perceived as having the greatest impact on their teaching practices.

These findings agreed well with the finding that TVET teachers in Kenya view good teachers as those with good delivery skills and strong mastery of content. TVET teacher CPD in Kenya therefore tends to focus on subject content knowledge and consequently, the most frequently reported change in practice due to CPD relates to updating the content presented in class.

To assess how effective past CPD activities were, participants were asked to assess the extent to which the CPD activities they had participated in met the criteria for effectiveness identified by Desimone (2009). Survey participants assessed the extent to which their past CPD activities could be characterized as relevant, coherent, collaborative, active, and of sufficient duration. Majority of the teachers felt that their CPD activities had covered content that was relevant to their work and that the covered content was coherent and well organized. However, a significant percentage of the participants also found that their CPD activities were not of sufficient duration and that the activities were rarely collaborative, or were only collaborative in some activities. TVET teacher CPD practices in Kenya therefore do not fully meet the criteria for effectiveness.

Simple linear regression showed that an increase in the perceived effectiveness of past CPD activities was associated with an increase in the perceived impact of past CPD activities and that average effectiveness explained 33.1% of the variance in perceived impact ($R^2=.335$, $F(1,166) = 83.78$, $p < 0.001$). It was found that average effectiveness significantly predicted perceived impact ($\beta = .58$, $p < 0.001$), and that:

$$\textit{Perceived impact} = 1.41 + 0.6 \times \textit{Average Effectiveness}.$$

While sample means for outcomes and effectiveness showed that teachers perceived relatively strong impact from their CPD, analysis of the data using cluster analysis revealed a category of teachers who report relatively low impact from their CPD activities. Similarly, cluster analysis on the effectiveness of past CPD activities revealed a category of teachers who engage in CPD activities that rarely feature the attributes associated with effective CPD.

5.4 Motives, costs and challenges associated with TVET teacher CPD in Kenya

The *fifth research question* focused on the motives that guide TVET teacher CPD practices in Kenya, as well as the costs and challenges associated with TVET teacher CPD in Kenya.

5.4.1 Motives

Viewing motives as the reasons individuals give for engaging in learning (Richter et al., 2019), TVET teachers were found to have different motives or reasons for participating in CPD. A frequently mentioned aim of TVET teacher CPD in Kenya was improved teaching and better student performance. This aim is part of the more general aim which relates to improved task-performance competence. Another aim of teacher CPD identified was career progress and more generally, improved status and authority. A third motive relates to the search for relief from boredom and monotony, while the fourth aim relates to meeting requirements.

To further investigate teachers' motives for their CPD, the motives stated by the teachers were compared and related the CPD practices consistent with those motives and the profiles of teachers. This led to the identification of four orientations for teacher CPD, namely, CPD for task performance competence, CPD for status and authority, teacher CPD for rejuvenation and renewal, and teacher CPD as a requirement.

In teacher *CPD for task performance competence*, teachers engage in professional development when they seek to improve their competencies related to their different teaching and non-teaching tasks. Learning methods are often practice based and involve information search and dialogue with colleagues. The content learnt is specific to the task and the desired competence. In *teacher CPD for status and authority*, teachers are motivated by the desire to improve their status and income, and more generally to advance in their careers. Such CPD is strategically timed in response to identified opportunities and available financing. The learning methods generally take a more formal approach where a defensible proof of learning can be obtained. In *teacher CPD for rejuvenation and renewal*, teachers use CPD to add to their lives, to avoid boredom and to escape the monotony of teaching. Such CPD occurs when teachers feel the need to obtain such relief. Desired learning methods are those that take the teacher outside the school and the desired content is content that is novel. In *teacher CPD as a*

requirement, teacher CPD responds to directives and requirements coming from authorities such as the government. Here, the timing, content and learning methods follow the requirements set. Table 2 summarizes these findings with respect to the aims or reasons associated with each motive, the timing, learning methods, CPD content learnt, and the teachers most likely to adopt a given orientation.

Table 2: *Orientations for Teacher CPD*

Orientation for teacher CPD				
	CPD for task performance competence	CPD for status and authority	CPD for rejuvenation and renewal	CPD as a requirement
Motivation (Reason or aim for CPD)	Search for performance competence	Search for status and authority	Need for renewal, break from monotony and avoid boredom or burnout	Meet mandated staff development requirements
Timing (When)	When a problem is identified	Strategic timing in response to identified opportunity and financing	In response to need/availability of opportunity and financing	Timing dictated by the employer and financing
Learning Methods (How to learn)	Practice based and self-paced methods	Formal learning methods	Post-graduate courses, Industrial attachment for lectures	As stipulated by the requirement,
Content (What to learn)	Content specific to the problem, or desired competence	Content of the courses enrolled in	Challenging & novel content not usually encountered	Content set by requirement/program sponsor
Teacher Characteristics (Who)	All teachers Majority may be ECS teachers seeking competence	All teachers, ECS and MCS teachers are the majority	Majority are LCS teacher	Those required to attended

Factor analysis on the surveyed motives for teacher CPD further supported the above findings. In the first factor, improved teaching skills, improved subject knowledge, and better student performance aligned with the CPD for task performance competence. In the second factor, motives for career progress and career change aligned with CPD for status and authority. However, it was not possible to extract factors related to the other orientations. This is likely because the survey had not been designed to explore a larger set of motives. An expanded study to test the resulting model is therefore called for.

The study findings agreed well with literature. CPD for task performance competence agrees with the motive to improve teaching observed by Appova & Arbaugh (2018), Hildebrandt & Eom (2011) and Rzejak et al. (2014), while Pool et al. (2016) found that the career development goal was associated with postgraduate education. CPD for status and authority agrees with the use of CPD for validation, financial gain and career progress identified by Hildebrandt & Eom (2011) and Rzejak et al. (2014). The use of teacher CPD to get relief from routine has been noted elsewhere, for example, in Richter et al. (2019). In their study, Kowalczyk-Walędziak et al. (2017) found that one of the reasons teachers enrolled for PhD studies was to get relief from routine and to avoid falling into apathy. CPD as an act of compliance has also been observed before, for example, by Appova & Arbaugh (2018), Pool et al. (2016) and Rzejak et al. (2014).

5.4.2 Costs and challenges

To investigate the challenges and barriers to teacher CPD, participants were asked to indicate the extent to which various challenges limit their professional development. Majority of the respondents indicated that they were most strongly challenged by the costs associated with teacher CPD. These costs are mainly met by individual teachers through personal savings and loans. These challenges were mainly attributed to the overreliance on formal academic learning for CPD, and the lack of a clear policy to support teachers in their CPD. Other challenges identified are lack of time due to heavy teaching work-loads and lack of employer support. The least common challenge was feeling too old to participate in CPD. Factor analysis led to the identification of three distinct set of challenges. These are: lack of opportunity and access, (e.g., failing to find relevant CPD), systemic restrictions (e.g., hindrances due to costs, time etc), and personal difficulties (e.g., negative self-evaluation of ability). It was further found that the challenges are experienced more accurately depending on the characteristics of teachers. For example, Early Career Stage teachers were found to be more likely to experience systemic barriers while Late Career Stage teachers were found to be more likely to experience personal difficulties.

The challenges identified in the study closely resemble the challenges identified in literature, i.e., situational, institutional, and dispositional barriers (Ahl, 2006; Jarvis, 2004; Laal & Laal, 2012), and in studies specific to vocational teachers. In their study on participation in CPD by Swedish vocational teachers, Andersson & Köpsén (2015) identified similar challenges. In her study, Bükki (2022) found that the biggest barriers

to the professional learning of VET teachers in Hungary were the lack of time and a large workload due to a high number of teaching hours and a shortage of teachers.

The constraints were attributed to limitations in different forms of capital that characterize Kenya as a developing country. For example, failure to facilitate, support and reward TVET teacher CPD can be linked to limited financial capital, while lack of opportunities for LIA can be linked to limited physical capital in the form of industries and other workplaces that make use of advanced technology. Similarly, the lack of policies reflects a limited or under-developed framework of formal rules to facilitate TVET teacher CPD. Finally, the lack of a culture to adopt a broad set of learning method and focus on diverse content can be looked at as limited human capital in the form of technical knowhow on effective TVET teacher CPD practices. It is also noted that limitations in different forms of capital reinforce each other and lead to the persistence of the challenges. This calls for a multipronged approach to address the above challenges.

5.5 Policy recommendations on TVET teacher CPD

The *sixth and last research question* focused on identifying policies and institutional changes that can improve TVET teacher CPD in Kenya. To give voice to the participants, participants were also asked to make recommendations for improving TVET teacher CPD in Kenya. The most frequent recommendation was that TVET teacher CPD should be mandatory, scheduled and sponsored. Their desire for regular CPD, even if mandatory, was attributed to the fact that teachers recognize the critical role teacher CPD plays. On the other hand, their desire for sponsored CPD reflects the fact that costs associated with teacher CPD constitute the biggest challenge teachers face in their CPD. Other recommendations focused on rewards and incentives for teacher CPD, linking promotions and appointments to participation in CPD and time off to engage in professional development. To create time for participation in CPD, a review of the school calendar was called for. And to entrench TVET teacher CPD, developing and implementing policies on TVET teacher CPD was called for.

Using the clarity gained with respect to the core aspects of teacher CPD as well the clarity gained with respect to the challenges that limit the availability and effectiveness of TVET teacher CPD in Kenya, two sets of policy recommendations were made. The

recommendations focused on both the lack of a specific policy framework on teacher CPD and the wider institutional factors that hinder teacher CPD. These are summarized in Table 3.

Table 3: *Policy recommendations*

Aspect of teacher CPD to address	Policy on TVET Teacher CPD	Related policies
If and when to learn	Explicit policy on TVET teacher CPD Specific office to implement policy Tracking and reporting of learning Avail resources and time for CPD Incentives and rewards for learning Provide appropriate support	Create time for learning by reviewing the school calendar
What to learn	Statement of core competencies Online survey of needs, Support providers to respond to identified & felt learning needs	Curriculum review: - ITE curriculum - Student curriculum - Evaluation practices
How to learn	Broad statement of learning methods Recognize and reward diverse methods of learning	Expanded learning opportunities - Policy on teacher mentorship and induction - Policy on LIA & school-industry partnerships

The policy on TVET teacher CPD in Kenya should take the form of a single document that acts as a point of reference in guiding and supporting TVET teacher CPD in Kenya. The policy should outline the competencies that TVET teachers should seek to develop, the learning methods they should use, and provide support for and reward participation in CPD. Further, the policy should outline the minimum amount of time teachers should spend on their CPD annually and how such participation is tracked and reported. And to ensure that the policy is successfully implemented, the responsibility for enforcing it should be entrusted to a specific department. The policy should also be developed specifically for TVET teachers. Experience in different countries, for example in Serbia (Maksimovic, 2016), has shown that when CPD policies are not specific to TVET teachers, the policies fail to respond to the unique needs of TVET teachers (Stanley, 2021).

To ensure that the policy is successful, related policy changes are also needed. These include reviewing the Initial Teacher Education curriculum for TVET teachers and reviewing student evaluation practices to prevent the undue influences of the

examination practices. A reworking the school calendar is also recommended. The short school breaks may be combined into a longer break that allows for participation in teacher CPD without disrupting teaching activities. Other policies, such as a policy on teacher mentorship and a policy on Lecturer Industrial Attachment, should be developed to address the challenges identified with these embedded forms of teacher learning.

5.6 Limitations

The findings of the study should be interpreted while taking several limitations into account. One limitation relates to methods used to collect data. While due care was taken in the design and implementation of the study design, the data collection methods relied on the self-reports of past CPD activities. Self-reports may not be exhaustive. Moreover, from the survey, it is not possible to make conclusions with respect to the accumulation of effects or changes in practice over time. However, the collected data likely represent general patterns and thus provide a useful indication of the CPD activities TVET teachers engage in, the extent to which teachers find their CPD activities as effective and impactful, and the nature and influence of factors impacting on their CPD practices.

Another limitation relates to the scope to the study. The study focused on TVET teachers working in public Technical and Vocational Colleges, and while due care was taken to ensure representativeness, the study participants were drawn from one region of the country. These aspects may limit the generalizability of the findings to other types of TVET institutions or other regions of the country. The study also did not collect data from government officials responsible for TVET in Kenya or managers responsible for examinations at the Kenya National Examination Council. While it is unlikely that these limitations negatively impinge on the outcomes of the study, they nonetheless imply the need for future studies involving a wider set of TVET practitioners and utilizing broader set of research methods.

6 Conclusion

The aim of this study was to investigate TVET teacher CPD practices in Kenya and to use the insights gained from the investigation to identify policy proposals to improve TVET teacher CPD in Kenya. Guided by a theoretical framework based on the Adult

Learning Framework and the Rational Choice Theory, the study adopted a concurrent mixed methods approach involving a questionnaire survey and oral interviews targeting TVET teachers in six Technical and Vocational Colleges in Kenya's Nairobi Metropolitan Area.

The study findings supported the theoretical framework, wherein TVET teachers were found to have multiple aims for their CPD and to be strategic and selective in their choice of content and learning methods. Depending on what the context makes available, and as self-directed learners and rational actors, teachers selectively choose content and learning methods that enable them to attain their different learning goals. From an analysis of the profiles of the participating TVET teachers and their CPD practices, four TVET teacher CPD orientations were identified. These are teacher CPD for improved task-performance competence, teacher CPD for improved status and authority, teacher CPD for rejuvenation, and teacher CPD as a requirement. Underlying their CPD practices was their view of TVET teaching as a complex role that centres on instructing, presenting information and supporting students' character development. TVET teachers in Kenya identify mastery of content and good delivery skills as essential competencies for the role.

In line with the ontology guiding the study, one conclusion drawn from the above findings was that while "observable" actions characterize practices, the aims underlying the practices as well as the conceptions of what is being done and how it should be done are an integral part of the practices. Changing, or at least improving, practices must also involve an alteration of the underlying aims and conceptions that underly the practices. This led to the recommendation for a review of the curricula that TVET teachers go through during their training to help new teachers develop a broader conception of TVET teachers' professional competency and the avenues through which they may develop their professional competencies. Similarly, it was recommended that practicing TVET teachers get supported to critically examine their conceptions of professional competency and professional development, as well as get sensitized on the value of pedagogical content knowledge and the avenues available to them in developing subject specific teaching skills. Another avenue recommended for altering existing conceptions and aims of teacher CPD was to alter the set of rewards and incentives teachers face such that the incentives and rewards suggest and lead to aims

and conceptions that encourage more effective TVET teacher CPD practices. This may be achieved by reviewing the policies and professional guidelines that guide teachers, and in this particular case, by developing a policy framework on TVET teacher CPD.

Different personal and contextual factors were also found to influence the aims TVET teachers have for their CPD as well as their choices for content, learning methods and timing for CPD. Personal characteristics identified include if a teacher has received initial teacher education or not, non-teaching responsibility held, career stage, ability to pay the expenses associated with teacher CPD, and perceived helpfulness of various learning methods. Contextual factors that were found to influence TVET teacher CPD practices in Kenya include the general availability of learning methods, the availability of learning resources including time, existing policies and institutional practices including how particular practices are conceptualized, expected rewards, and the curriculum and student evaluation practices. Apart from influencing the CPD practices in Kenya, the evaluation system was also found to impact heavily on teaching practices.

TVET teacher CPD practices were thus found to be influenced by the characteristics of teachers and contextual factors, and in particular by institutional practices. This led to the recommendation to align CPD programs with the characteristics of teachers while encouraging institutional practices that support effective TVET teacher CPD practices. To ensure that the available CPD programmes align with the learning needs of teachers, regular monitoring and evaluation of CPD programmes and available learning opportunities for TVET teachers was recommended. In addition, and as part of improving the institutional practices, a comprehensive policy on TVET teacher CPD was recommended.

The study also found that TVET teacher CPD in Kenya experiences multiple constraints which limit the availability and effectiveness of TVET teacher CPD in Kenya. The constraints include the lack of an explicit policy framework to guide TVET teacher CPD, lack of financing and allocation of other resources including time for CPD, and institutional policies that recognize a limited set of learning methods. Teachers therefore use a limited set of learning methods, and in the absence of a clear policy to guide TVET teacher CPD, there lacks mechanisms for reporting and tracking participation in teacher CPD and systems to evaluate and improve the quality of TVET teacher CPD.

To address the challenges and constraints to effective TVET teacher CPD in Kenya, it was recommended that a unified policy on TVET teacher CPD be developed and implemented, and the policy be supported by changes in related policies. Accordingly, various recommendations to improve TVET teacher CPD in Kenya were identified and formulated as policy proposals.

The study therefore addresses an existing knowledge gap on TVET teacher CPD practices in Kenya while providing practical recommendation to improve the practices. While various limitations were identified, such as the limited scope of the study, these were not deemed fatal to the conclusions arrived at. However, future studies involving a wider set of TVET practitioners and utilizing a broader set of data collection methods are recommended. Future studies may also explore appropriate strategies of helping TVET teachers develop a critical awareness of their professional competency as well as the effects of such awareness on their continuing professional development practices.

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