

Approaches to Developing Instructional Delivery Competencies for Construction Trade Teachers as Dual Professionals: A Conceptual Paper

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ABSTRACT

Context: Developing instructional delivery competencies among construction trade teachers is crucial for effective instruction and fostering students' achievement. The quality of instruction is a function of sound teacher development programmes as they enhance instructional delivery competencies among teachers. Such programmes provide a platform for teachers to develop expertise in different aspects of the teaching and construction professions. Equally important are the approaches that are employed to develop the competencies of teachers of construction trades. Therefore, this paper aimed to examine the competency development approaches applied in training construction trade teachers.

Approach: The study adopted the Integrated Model of Competency Development to develop a typology of instructional delivery competency development approaches for construction trade teachers. The study used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses to guide the literature search and selection of papers for analysis. A comprehensive search strategy using Boolean search strings was employed to identify relevant studies from Scopus and Web of Science databases. Based on inclusion and exclusion criteria, twenty papers were selected for analysis. The study examined the literature on approaches used to develop the competencies of construction trade teachers as dual professionals.

Findings: Studies that focused on construction trade teachers' instructional delivery competencies recognised the dual professional identity of construction trade teachers, thereby underlining the teachers derive their identity and authority from both the teaching and construction expertise. Further, the study established that varied approaches have been used to develop instructional competencies of construction trade teachers. The paper highlighted the importance of initial teacher education and continuous professional development programmes in developing instructional delivery competencies of construction trade teachers. However, the studies recognised/focused on structured approaches to competency development while neglecting the unstructured approaches.

Conclusion: The study proposes a conceptual framework for competency development that would contribute to professional development and growth of construction trade teachers as dual professionals by offering a context-specific pathway for developing competencies in teaching and the construction fields. Thus, the choice of approaches to the development of instructional delivery competencies should align with the kind of competencies that professional development programmes intend to develop. while some approaches are more suitable for specific types of competencies, using varied methods of competency development ensures holistic development of instructional delivery competencies among the construction trade teachers.

Keywords: Professional development, Formal training, Initial training, on the job learning

INTRODUCTION

Construction trade teachers make a significant contribution to the development of a workforce for the

construction industry. The quality of the contribution, as reflected in the quality of graduates, is a culmination of competency development processes that teachers undergo. Thus, the quality of Vocational Education and Training (VET) teachers, including vocational construction teachers, emanating from the competencies they accumulate over time, plays an important role in developing the construction industry workforce (Huang &

Xu, 2024; Zhou, 2023). However, studies have revealed variations in competencies of construction trade teachers and the VET system at large, resulting from the concept of construction trade teachers as dual professionals who demand placing value across both the construction field and teaching expertise. Currently, most construction trade teachers lean more towards one profession due to the nature of their training (Atkins & Tummons, 2020). Thus, a system for recognising the duality of construction trade teachers in terms of unifying competency development approaches is absent (Zhou, 2023). This has resulted in varying emphasis on areas of expertise, hence teachers of the same trade having varying competencies. This, in turn, has affected graduates' readiness for the industry as there are mismatches between graduates' competencies and those required by the industry. Therefore, this paper proposed a unified competency development approach for construction trade teachers by answering the following research questions: 1) What are the competencies that define the professional identity of construction trade teachers? 2) What competency development approaches are commonly used within the VET system? 3) How best should VET systems develop and support competency development among construction trade teachers?

Dual Professionalism of Construction Trade Teachers

Dual professionalism refers to a situation where an individual must possess and practice two distinctive professional fields simultaneously (Zhou, 2023). The duality entails that the individual is qualified and demonstrates expertise in both professions. Therefore, dual professionals must have a combination of competencies from each profession to fulfil each profession's roles and responsibilities (Song, 2024; Zhou, 2023). Construction trade teachers and Vocational Education and Training teachers as dual professionals need multiple skill sets falling within the skilled construction expert and effective educator. As a result, they must demonstrate comprehensive proficiency in construction trades as well as pedagogy (Gamble & Hewlett, 2022). Further, the duality of the construction trade teacher profession means that they will constantly apply knowledge and skills from both the construction and teaching fields to effectively prepare students for careers in construction. In addition, dual-qualified teachers effectively contribute to designing curricula that are relevant to industry needs, ensuring that students are industry-ready upon graduation (Song, 2024).

Yang et al. (2022) observed that there is professional identity tension whenever an individual has multiple roles to play. While his study focused on teacher and researcher roles, it points out an important aspect where initial training fails to integrate the teacher role into the identity of novice academics. This observation is also true for VET teacher education systems that prioritise the occupational profession, with the teaching profession playing second fiddle. In another study, Eslamdoost et al. (2020) indicated the existence of personal beliefs and external expectations about the professional identity of teachers.

Competency Development of Dual Professionals

Competency development is important for individual and organisational growth and success. On the side of the individual, competency development equips individuals with the knowledge and skills required for them to excel in the workplace. On the other hand, competency development helps organisations understand their workforce's capabilities and identify areas for improvement. Meanwhile, construction trade teachers need to develop their knowledge and skills in the construction trades as well as teaching expertise (Song, 2024; Zhou, 2023). Thus, while staying updated with construction knowledge and standards through different professional development activities, construction trade teachers should also be involved in activities for improved pedagogical practices.

Studies have shown the existence of different systems of teacher preparation dictated by prevailing context. A study by Zhou (2023) revealed that there are variations in terms of initial teacher training requirements for TVET teachers as dual professionals. While one system demands that TVET teachers possess an initial teaching qualification, another recognises on-the-job training as a means of developing their pedagogical

competencies. In essence, Zhou (2023) reported that the latter has no initial teacher training programme for TVET teachers, and one only gets trained upon being employed as a teacher in vocational schools, while for the former, an individual must demonstrate proficiency in the vocational field to be accepted for the TVET teaching qualification. Similarly, another study by Shengxian (2020) observed that industrial experience is essential for VET educators. In both scenarios, this represents a sequential approach to TVET teacher training where one first attains a trade qualification before the teaching qualification. Song (2024) opined that lack of comprehensive TVET teacher training affects the effectiveness of teaching, while developing well-prepared teachers helps prepare VET students for future jobs. In addition to undergoing training in occupational and teaching competencies, teachers should also demonstrate relevant industrial experience. Diao et al. (2023) and Zhou (2023) observed the need for TEVET teachers to remain current with technical expertise and industrial standards. The studies hailed existing partnerships between TVET institutions and the industry to update teachers' industrial expertise. The challenge at hand is to develop Construction trade teachers to have teaching qualifications and higher trade qualifications with significant industrial experience for effective training of students.

The Integrated Model of Competency Development

This study is grounded in the integrated model of competency development that was by De Vos et al. (2011). The model demonstrates that competence development is a result of training through formal courses, on-the-job learning, and career management systems within an organisation. Formal trainings are structured and follows a predefined process from planning to evaluation of the effectiveness of the training. They usually take place in organised learning environments with well-defined learning outcomes. They usually give the teachers knowledge and skills to teach effectively. On the other hand, on-the-job training refers to the learning that takes place while one is working. This form of learning is informal with no laid-down structures. It is usually used to update one's knowledge and skills while carrying out routine tasks. A third aspect of competency development in the model is the career management system that ensures defined career progression within the organisation. Padillo et al. (2021) identified teachers' qualifications and professional development activities as intervening factors of effective instruction by teachers. Therefore, teacher education, teacher professional development, professional learning, and teacher reflective practices are interrelated approaches to development of instructional delivery competencies among teachers.

METHODOLOGY AND METHODS

Research Design

The study used Jaakkola (2020)'s proposed approach to typology paper by differentiating concepts of dual professionalism of construction trade teachers and concepts of competency development among teachers. The paper combines different concepts from the literature to develop an understanding of the development of instructional delivery competencies among construction trade teachers. According to Jaakkola (2020), the approach will offer a multidimensional view of what constitutes instructional delivery competencies and the approaches and how the competencies may be developed. Firstly, the study identified studies by existing variations in competencies possessed by vocational construction teachers due to varying approaches applied to develop such competencies (Atkins & Tummons, 2020; Yang et al., 2022). The study then used the Integrated Model of Competency Development to develop a typology of how instructional delivery competencies of construction trade teachers may be developed to address the question of variations in competencies possessed by construction trade teachers.

Literature Search

The study analyses and synthesises issues in instructional delivery competencies in construction vocational education using a systematic literature review. The study was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. The study employed a comprehensive search strategy to identify relevant studies from Scopus and Web of Science databases. The following are the search strings:

WoS

("instructional delivery" OR "teaching practices" OR "teaching strategies" OR "pedagogical practices") AND ("competenc*" OR "skills" OR "capabilities" OR "proficienc*" OR "knowledge") AND ("construction trade" OR "construction educati" OR "construction training" OR "vocational educati*" OR "technical educati*" OR "trades educati*" OR "civil engineering educati*" OR "construction vocati* educati*" OR "building vocati* educat*" OR "building engineering educat*") (All Fields) and English (Languages) and 2024 or 2023 or 2022 or 2021 or 2020 (Publication Years) and Article (Document Types)

Scopus

TITLE-ABS-KEY (("instructional delivery" OR "teaching practices" OR "teaching strategies" OR "pedagogical practices") AND ("competenc*" OR "skills" OR "capabilities" OR "proficienc*" OR "knowledge") AND ("construction trade" OR "construction educati" OR "construction training" OR "vocational educati*" OR "technical educati*" OR "trades educati*" OR "civil engineering educati*" OR "construction vocati* educati*" OR "building vocati* educat*" OR "building engineering educat*")) AND PUBYEAR > 2019 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j"))

Literature Screen and Selection

Table 1 presents the inclusion and exclusion criteria that guided the selection of paper.

Table 1: Inclusion and exclusion criteria

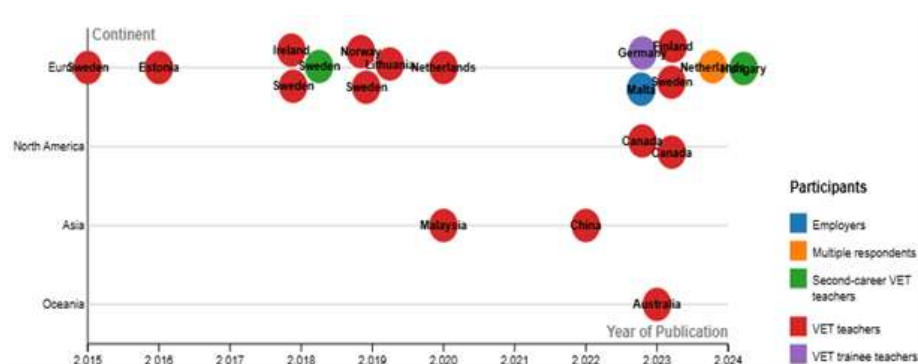
Criteria	Inclusion	Exclusion
Language	English	Non-English
Document Type	Article	Book, Book Chapter, Conference Paper, Conference, Review Paper
Source Type	Journal	Conference proceeding, book, book series
Year	2020-2024	<2020

RESULTS AND DISCUSSION

This study reviewed twenty papers extracted from three data bases namely Web of Science, Scopus, and SpringerLink using the following Boolean search string: ("Dual profession" OR "dual professionalism" OR "dual professional" OR "professional identity" OR "Dual identity" OR "teacher identity" OR "professional teacher identity") AND ("VET teachers" OR "Vocational Education teachers" OR "TVET teacher" OR "technical teacher" OR "TVET lecturers"). The search yielded one hundred and twenty-four papers with Web of Science, Scopus, and SpringerLink having seventeen, twenty-four and ninety-three respectively.

Figure 1 shows some traits of the papers that were identified.

Figure 1: Descriptive data for the selected papers



The inclusion criteria included relevant journal articles presented in English and published between 2015 and 2024 that related to competency development approaches used in the professional development of teachers of construction programmes. Thirty-one papers were identified for the study. However, twenty papers were accessible and available for the study. Fifteen papers were from Europe, two from North America, two from Asia, and one from Oceania. In terms of participants, seventeen studies involved VET teachers, two of which included second-career teachers, and one involved trainee teachers. The other two studies employed employers and multiple participants.

Competencies Defining Dual Identity of Construction Trade Teachers

The study explored the duality of construction trade teachers' identities. The reviewed papers show that teachers and employers of construction trade graduates acknowledged the dual identity of VET educators, including construction trade teachers, and their contribution to the training of construction trade students. The findings are presented in Table 2.

Table 2: Reflection of the Duality of Construction Trade Teachers

Professional area	Competency components	Author(s)
Occupational expertise	Vocational knowledge; Curriculum and subject matter; Demonstrated industrial experience; Currency with industrial knowledge, practices, and standards	Andersson et al. (2018), Antera (2023), Bükki and Fehérvári (2024a), Gagnon and Dubeau (2023), Said (2023), Sirk et al. (2016), and Vloet et al. (2020)
Instructional expertise	ability to deliver instruction; pedagogical knowledge; behaviour and classroom management; student assessment and evaluation; administration and school management; interpersonal skills; curriculum design and development; evaluating and developing own teaching; handling students with special needs; and assessment and evaluation of students	Andersson et al. (2018), Antera (2023), Bükki and Fehérvári (2024a), Gagnon and Dubeau (2023), Said (2023), Sirk et al. (2016), and Vloet et al. (2020)

Seven of the reviewed papers indicated that teachers should have both occupational expertise and instructional abilities. Results in Table 1 reveal that construction trade teachers have a double identity, denoting that they belong to two professional fields. Therefore, construction trade teachers must possess competencies related to teaching and construction professions. This is in line with studies by Njenga (2022) and Zhou (2023), which found results supporting the duality of the VET and construction trade teachers' professional identity. Specifically, the study by Njenga (2022) found that VET teachers' professional competencies fall into three main categories of subject content knowledge, general pedagogical knowledge and pedagogical content knowledge. These categories relate to teachers' instructional and occupational expertise. On the other hand, Zhou (2023) conducted a comparative study of the professional requirements of construction teachers and VET at large in Australia and China. While recognising the duality of VET teachers' profession that China and Australia recognise. However, the studies revealed some contrasting findings for teachers who perceived themselves more as skilled workers than teachers. While some studies argued that teachers with a stronger orientation towards occupational identity sought to upgrade occupational competencies, other studies observed that such teachers tended to seek professional development in the teaching profession. Where the professional development of VET teachers is not well coordinated, competency gaps have been identified. Some studies argued that having pedagogical gaps is more tolerable than having content gaps. This study observed the contention about the question of the source of authority of VET teachers. VET teachers who derive their authority from occupational expertise are teacher-centred, viewing themselves as the primary source of information, with no skills to scaffold and coach students where necessary. Such teachers rarely provide

support to students outside the teaching time, as the students are left to deal with the information provided. On the other hand, VET teachers who view themselves as instructional designers are concerned with how students learn and therefore ensure that they are part of the whole process of students' learning, providing them with the necessary experiences to develop.

One study, though, presented a peculiar scenario of out-of-field teachers within VET system. The study provides a unique question about the professional identity of out-of-field teachers. How do teachers with no expert knowledge in the field they are teaching ensure that right competencies have been developed in students? A study by Fogelgarn et al. (2024) posited that using out-of-field teachers robs students of quality education and devalues the status of VET. The study highlighted the importance of VET teachers having expertise in the subject they teach and a teaching qualification. Out-of-field teachers miss both teaching expertise and occupational knowledge of the subject they teach. This reflects in the quality of graduates they produce and the enormous effort they put into teaching. Such teachers relied on self-studying to upgrade occupational expertise. However, it is hard for them to stay current with industrial practices through work placements as they do not have the requisite qualifications.

Approaches to Competency Development for Construction Trade Teachers

The paper identified seventeen approaches that can be used to develop and enhance competencies for construction trades teachers. The approaches are presented in Table 3.

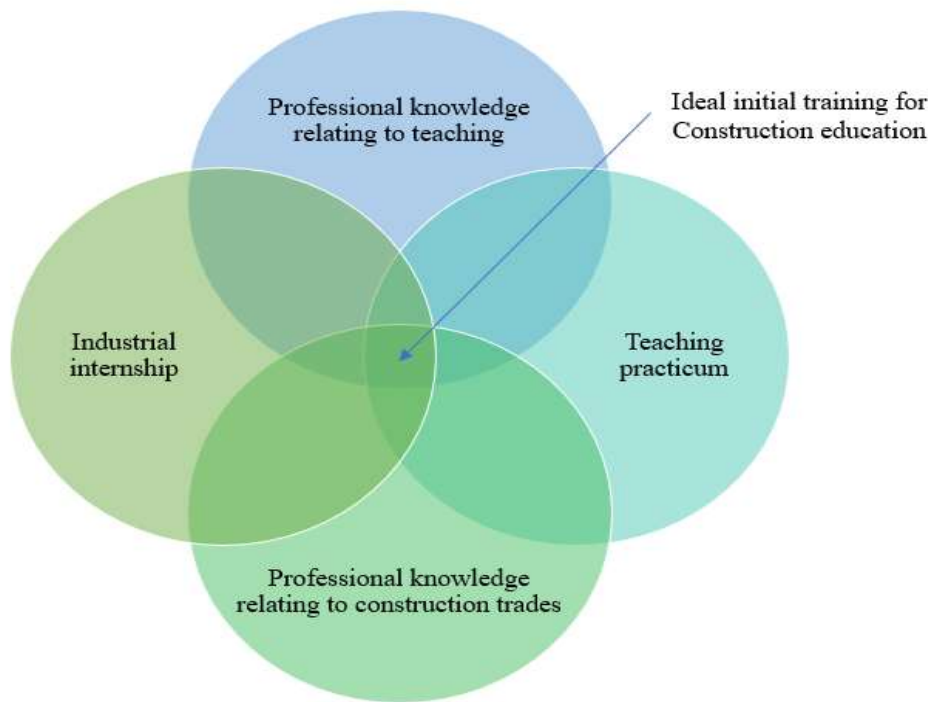
Table 3: Competency development approaches applicable for construction trade teachers

Theme	Subthemes	Authors
Approaches to competency development	Initial professional courses; networking, collaboration and mutual discussion; communities of practice and knowledge sharing; reflective practices; observations of experienced experts; work-based learning, utilising feedback; attending conferences and workshops; mentoring and coaching	Anderson and Kopsen (2015), Andersson et al. (2018), Andersson and Köpsén (2018), Andersson and Köpsén (2019), Antera (2023), Canrinus et al. (2019), de Paor (2018), Gedvilienė et al. (2019), Hoekstra (2023), Gagnon and Dubeau (2023), Runhaar et al. (2024), Kolho et al. (2023), Nakar and Du Plessis (2023), Said (2023), Weiß et al. (2023), Zulnaidi et al. (2020), (Vloet et al., 2020), and Zhang et al. (2022).

Initial Training

The review identified teacher education and training programmes as one of the major approaches to competency development for construction trade teachers. Teacher education and training serve as a comprehensive approach to developing instructional delivery competencies by combining theoretical knowledge and practical training in various aspects of instructional delivery. Buabeng et al. (2020) and Tatto (2021) suggested that teacher education programmes should have three general intersecting areas of general knowledge to improve the quality of instruction. Firstly, teacher education programmes should have content on the knowledge of learners and how they learn and develop within a social context. Secondly, the programmes should have content on the subject matter and curriculum goals in light of the social purpose of education. Thirdly, teacher education programmes should have content leading to the understanding of teaching in the light of content and learners to be taught, supported by productive learning environments. Thus, the studies identified knowledge of representations of the subject matter, understanding of students' conceptions of the subject, and the learning and teaching implications that are associated with the specific subject matter as key elements of teacher education programmes. **Figure 2** represents the proposed domains of initial professional training of construction trade teachers as dual professionals and the ideal training approaches to develop them to their full potential.

Figure 2: Domains of initial professional training for construction trade teachers



Challenges come into play when teachers of construction trades align more with one profession, commonly being the occupational field. Such teachers have been thrown into the classroom without any teaching preparation. A study by Philogene et al. (2024) in Rwanda faulted the VET system for sending teachers into institutions without initial teaching qualifications. The study observed that such teachers struggle to deliver, and the quality of graduates is compromised. In addition, work-integrated learning has been neglected in some cases, leaving the teachers with theoretical knowledge which they cannot translate into practice. Shengxian (2020) and Van der Bijl (2021) underscored the importance of work-integrated learning within initial teacher education and training as a professional development approach that involves learning in the real work context. This will help structure industrial exposure for construction trade teachers to improve their occupational knowledge and practice. The findings emphasise that construction trade teachers should undergo comprehensive training that incorporates competencies for both the teaching fields and construction trades, coupled with placement both in the industry and educational institutions, for them to effectively deliver instruction. While avoiding being prescriptive on the certification process of construction trade teachers as dual professionals, the study has shown that a qualified construction trade teacher must have professional competencies in teaching and occupation, and undergo internship for the two professions. Thus, a sequential training system with initial professional training in one field followed by the other or a concurrent system where initial professional training in both teaching and occupational fields is provided simultaneously, may apply.

Networking and Collaboration

The review also identified networking and collaboration as common approaches to competence development for VET teachers. A review by Demir (2021) established that teacher social capital influenced teacher professional learning, which in turn affected students' achievement. Another study by Khasawneh et al. (2023) observed that there is a growing recognition of the importance of collaboration among teachers in the education sector to improve instructional quality and student achievement. Teacher collaboration is found to foster the exchange of innovative instructional strategies and approaches among teachers. Teachers undertake collaborative planning sessions, explore new instructional techniques, leverage emerging technologies, and adapt curriculum materials to better align with students' interests and learning styles. This is similar to another study by Mesuwini et al. (2021) who found that teachers gain expertise through networking and teamwork. Another study by Colognesi et al. (2020) revealed that novice teachers prefer receiving support through

informal means that include networking and collaboration with close colleagues. Thus, through networking and collaboration, teachers share teaching materials and how they best teach students.

Communities of Practice and Knowledge Sharing

This study found communities of practice applicability to developing competencies of teachers in both occupational and teaching professions. A study by Fauskanger et al. (2022) reported that teachers who were involved in lesson studies for professional development developed awareness of the need to create a conducive and effective learning environment in Mathematics to foster student engagement and promote active learning. Through communities of practice, teachers share knowledge and experiences and observe and learn from one another, thereby improving their instructional delivery practice. The findings are also in line with another study by Mesuwini et al. (2021) found that sharing of experiences and ideas improves teachers' knowledge and practical experiences. This study, therefore, suggests that construction trade teachers may draw from such practices to enhance their instructional delivery competencies.

Reflective Practices

This study found that teacher reflective practices play an important role in developing competencies of teachers in both occupational and teaching professions. Teacher reflective practices help teachers evaluate their own practice. Through teacher reflection, teachers are able to analyse and adapt instructional practices. A study by Tran and Pasura (2023) argued that teacher reflective practices within a particular context help teachers to develop self-awareness and new knowledge. Another study by Imran et al. (2022) contended that reflective practices enable teachers to analyse their teaching, employ research methodologies, and develop their competencies in instruction to enhance students' learning. Safari et al. (2020) argued that reflective practices challenge teacher to evaluate their unquestioned assumptions about effective instruction and encourage them to examine themselves and their practice in the interest of continuous improvement. The most important aspect of teacher reflective practices as an approach to competency development among teachers is their ability to use the reflection to reposition their thinking, knowledge, and actions about a given concept to improve instruction.

Learning by observation

The study also revealed that teachers can improve their competencies by observing and imitating peers whom they hold with high regard in a particular area. Schunk and DiBenedetto (2020) argued that social modelling informs learning when individuals emulate the behaviours, attitudes, and values demonstrated by those in their social circle, thereby contributing to the acquisition of norms and practices. Thus, through observations, teachers will collect information from their surroundings, including the actions and behaviours of others, which serves as a source of learning. Another study by Orland-Barak and Wang (2021) argued that observation helps teachers to engage in honest retrospection, sensemaking, and reflective dialogue as a means to improve instructional practices. Further, Nadeem et al. (2020) opined that learning by observation of the experienced teachers is an effective approach to fostering and developing positive attitude among teachers. This implies that teachers should be accorded the opportunity to observe lessons of other teachers as part of the learning process before taking on a new challenge of teaching a new level or course content.

Work-based learning

This study found that teachers may develop and improve competencies through work-based learning. The results are similar to those of Mesuwini et al. (2021) who argued that the component of work-based learning in TVET teacher training programmes results in authentic learning in the real work environment. Another study by Suyitno et al. (2022) posited that work-based learning for vocational teachers entails teachers learn from both the classroom and the industry. Further, Stephen and Festus (2022) observed that work-based learning improves employability skills, including soft skills, technical and vocational skills through collaborations between the industry and TVET institutions. Thus, teachers will not only gain occupational knowledge but also improve a touch of current industrial standards and improve their practice. This is very essential as it enhances teachers' instructional abilities. Work-based learning for TVET teachers helps bridge expert knowledge and industrial practice. Lee (2022) opined that work-based learning is founded on teachers' ability to reflect on

work experiences and apply them to future work. Work-based learning addresses the challenge of lack of industrial experiences for vocational teachers. Stephen and Festus (2022) observed that work-based learning requires the redesigning of traditional school systems to align with work-based learning activities.

Instructional feedback

The study also found that instructional feedback plays a critical role in improving the competency of teachers. It is imperative to recognise that feedback serves as a powerful tool not only for evaluating performance but also for fostering professional growth and development. Lipnevich and Panadero (2021) postulated that feedback is meant to provide learning opportunities to individuals concerned. Another study by Thiel et al. (2023) argued that instructional feedback helps teachers to refine instructional approaches in an attempt to adapt to the diverse needs of students and continued efforts to achieve excellence. Thus, instructional feedback is a collaborative effort that supports professional growth and enhances students' learning experiences. This implies that feedback should transcend mere evaluation and provide individuals with actionable information that stimulates cognitive processes and facilitates competency development. Sadler expanded Ramaprasad's conception of feedback by introducing self-monitoring as an important element that informs performance gaps (Lipnevich & Panadero, 2021). It views feedback as externally solicited from peers, students or instructional materials, whereas self-monitoring is derived from internal processes that individuals engage in for their learning. Self-monitoring entails an individual's active monitoring and evaluation of their actions, strategies and outcomes through self-assessments, reflection and regulation. Self-monitoring is characterised by metacognitive processes such as setting goals, monitoring progress, evaluating strategies, and making adjustments based on performance feedback.

Conferences and workshops

The study also found that teacher participation in conferences and workshops help them improve their instructional competencies. Teachers tend to learn from information sessions and trainings provided at the conferences (Spilker et al., 2020). This is achieved through key note addresses, preconference workshops, information sessions, and the conference proceedings. Further, during conferences, teachers meet experts within their field and share current practices within a trade. Spilker et al. (2020) argued that conferences provide opportunities for learning interactions and knowledge building. Teachers gain important insights of both the teaching and occupational professions. Further, teacher participants in conferences got feedback on their presentations. Spilker et al. (2020) posit that conferences also facilitate shared reflections that foster teacher learning. Workshops are one of the common and preferred approaches that are used for continuous professional development. A study by Ndlovu et al. (2021) argued that workshops that focus on theoretical perspectives are not effective means of professional development. They argued that workshops are usually short and not sufficiently informative. Therefore, it is important to design workshops in a way that they address contextual issues. One major challenge raised by Ndlovu et al. (2021) is that choice of content for workshops is left with facilitators and therefore content does not match teachers expectations. While conference presentations may be intimidating for new entrants into the teaching profession, it is important to encourage teachers to participate in the conferences. Rimmer and Floyd (2020) argued that conferences provide for community belonging for teachers and fosters teachers' professional identity. Conferences provide teachers a platform where they express themselves, enhancing their self-efficacy and expert status.

Mentoring and coaching

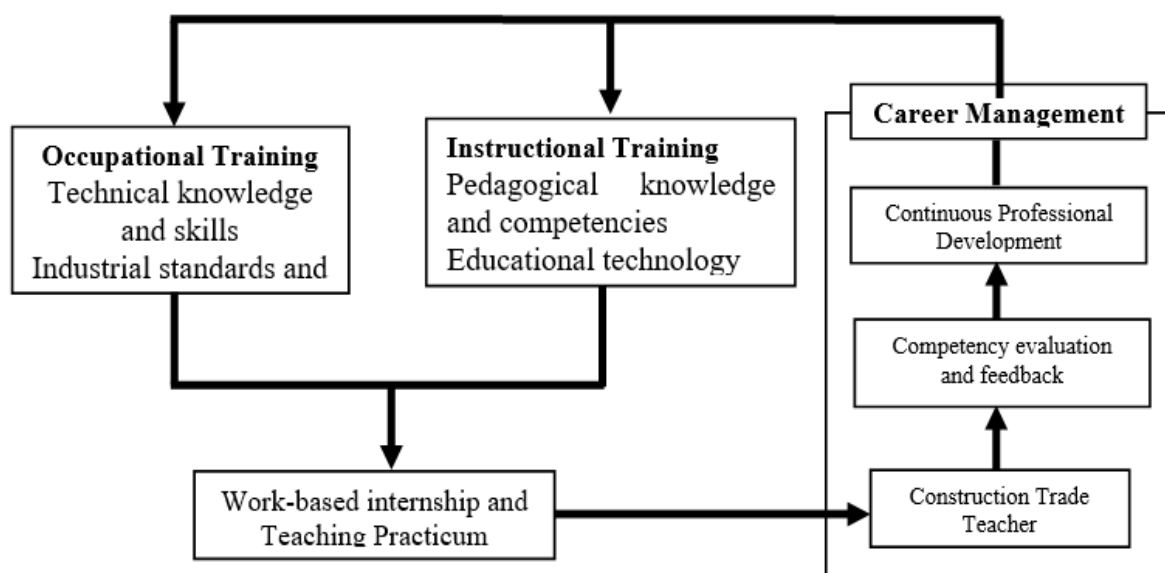
The study found that mentoring is another approach to the professional development of novice teachers. Mentoring is a professional development approach that is important to novice teachers in their early stages of their teaching profession. The mentors act as the professional reference point for teachers who are new to the system. Mentoring serves as a way to support teachers as they get acquainted with the world of work. This helps to raise teachers' self-efficacy and improves their instructional practices. The study observed that the challenge with current practices of mentoring is that they take place informally, resulting in heavy workload for the mentors. Further, this casual approach to mentoring may result in those requiring mentorship receiving limited mentoring. In addition, the teachers requiring mentoring may view it as unimportant and time-wasting activity where mentoring is done informally. Another study by Orland-Barak and Wang (2021) observed that

one challenge with mentoring is the use of untrained mentors. Another study by Kearney (2023) highlighted challenges relating to lack of policy-driven guidelines and school systems to guide the implementation of teacher induction programmes. Thus, it is important that institutions should have systems in place that ensure the effective implementation of mentorship programmes. Further, mentor teachers should be adequately prepared to help them acquire appropriate knowledge and strategies for effective improvement of instructional strategies. It is therefore essential that training institutions should formalise mentorship programmes to make them effective. Structuring mentoring activities in the training institution's day-to-day activities will help understand and conceptualise the nature of support that teachers require.

Unified Model for Developing Construction Trade Teachers' Competencies

The study proposes a unified model of competency development for construction trade teachers. The model argues that construction trade teachers must undergo formal training in both professions and attain industrial experience to be considered qualified teachers. Further, the model recommends that authorities should have in place a well-defined career management system that defines entry and progression requirements and forms of professional development available. **Figure 3** shows the unified model of competence development of construction trade teachers as dual professionals.

Figure 3: The proposed Unified Model



Formal training

Often, institutions and governments utilise easy ways of developing the competencies and qualifications of VET teachers. They tend to simplify the pathways of academic studies to deal with teacher-sourcing challenges. There is need for formal teacher training for construction trade teachers for its potential to spur opportunities and interest in CPD in Vocational areas. A study by Njenga (2023) acknowledged the importance of CPDs in enhancing teachers' competencies. Comprehensive initial education should provide teachers with both occupational and pedagogical competencies that inform didactic processes. Early development of teachers' professional identity is essential to enhancing teachers' commitment to teaching. While teacher education programs provide teachers with knowledge and skills for teaching, they help define the identity of teachers. Considering the complexity of VET teacher tasks due to vocational and labour market changes makes initial teacher preparation of VET teachers a difficult task, yet surmountable. Therefore, there must be coordination in aligning induction programmes to ensure the success of the programme. Unqualified teachers have a low rating in teaching professional aspects, which are the learning outcomes of teacher training. In essence, the study argues that some competencies are better addressed during teacher training. When developed in less systematic ways, teachers demonstrate deficiencies in these competencies. Strong identification with the teaching profession results in higher teacher trainees' intention to stay in teaching.

This is similar to a study by Van der Bijl (2021) who proposed that there is need for research on the placement of TVET teachers during work-integrated learning. The study revealed the need for a comprehensive curriculum for TVET teacher placement in work environments to enhance their skills. A study by Njenga (2022) revealed a prominent challenge among VET teachers: They view themselves as more subject experts than teachers. It was found that the teachers did not express the need for professional development in instructional delivery despite acknowledging that they had deficiencies in this aspect. Similarly, a study by Colognesi et al. (2020) found that most teachers fail to improve their competencies during their initial years in practice because formal programmes to support novice teachers are not grounded in the problems the teachers face. In essence, formal trainings after the initial training need to be modelled around the differences in content and skills between initial education and the level of proficiency required by the job.

On-the-job learning

The model provides a context for integrating competency development as part of the teaching and learning process for successful adoption of instructional changes. It recognises the role of workplace learning in developing teachers' instructional competencies. It calls for embedding competency development with the teacher's routine work. Professional learning should be embedded in the workplace practices. Philogene et al. (2024) argued that TVET teachers should work towards improving their expertise to remain abreast with the changing working environment and demands. This emphasises the demands for systematic ongoing professional development programmes that address sustainability issues within the fast-changing industry. A study Colognesi et al. (2020) revealed that informal learning is a significant contributor to improving teachers' competencies. It is envisaged that on-the-job learning is essential for addressing problems or practices which can be rectified or improved through learning by doing.

Construction trade teachers need to keep abreast with developments in trade and teaching profession. The critical element for professional development of construction trade teachers is the ability of individual teachers and the training institutions to remain connected and keep on developing within the trade as well as the teaching profession. In essence, training institutions should create learning opportunities in both the occupational and teaching professions and construction trade teachers should seize every opportunity to develop in both aspects (Hoekstra (2023).

Career management

The reviewed studies revealed that proper planning for teacher professional development is crucial for ensuring its effectiveness and maximizing its impact. A study by Sancar et al. (2021) revealed that the development of teacher competencies is affected by fragmented approaches to competency development. This study reiterates the need for institutional structures and systems that facilitate professional learning among VET teachers. Further, Philogene et al. (2024) argued that VET institutions are embroiled in ineffective professional development activities that depend on project resources, resulting in generalized programmes that fail to address particular needs of teachers. This is in line with career management practices to set procedures and job progression. Career management of the dual profession of construction trade teachers focuses on providing a system that promotes continuous growth of competencies. While not prescribing the activities within career management, the model provides a sequence for continuous professional development of the teachers. The nature of the activities and within which profession are determined through assessment and evaluation of competencies that the teachers possess and the material time. VET institutions should support professional development activities that support competency development, both in the teaching profession and occupational expertise for balanced duality for effective instruction of the vocational competencies. According to Hum et al. (2024), career management in academic institutions is related to defining academic career life from job entry to retirement, highlighting recruitment requirements, professional development paths, performance evaluations, and benefits. Another study by Runhaar et al. (2019) added that teachers contribute to career management by seeking supervisory support, networking, or searching for opportunities. Ndegwa et al. (2016) argued that career management is an in-house approach for talent management within an organisation. Philogene et al. (2024) argued that TVET teachers should work towards improving their expertise to remain abreast with the changing working environment and demands. This emphasises the demands for systematic ongoing professional development programmes that address sustainability issues

within the fast-changing industry. Another study by Negash et al. (2024) found that TVET systems are challenged by lack of institutional organisation and coordination of professional development activities which results in random implementation of CPDs, making them less effective. Therefore, competency management is important as it helps define professional development needs based on organisational requirements. Further, competency management helps organise professional development activities that address the needs of individual teachers.

CONCLUSION

The study has found variations in approaches to competency development of construction trade teachers that have resulted in varying competency levels in the different professions. This has greatly affected the professionalization of construction trade teachers regarding their dual identity. Therefore, the challenges of professional development of construction trades teachers should be addressed with utter urgency. The question of which area of expertise is superior to the other for construction trade teachers should never arise, as both are equally important. Employing second-career teachers with no pedagogical training results in the use of ineffective instructional approaches and affects students' learning outcomes (Bükki & Fehérvári, 2024b). In essence, construction trade teachers derive their authority from both professions. It must be noted that effective teaching and learning processes go beyond transferring knowledge from the more knowledgeable other to helping students create their own knowledge and understanding. Therefore, formal teacher education and in-service training should be well-defined and focus on both professions. While they have the technical knowledge and skills, they should also possess competencies on how best they help students develop their competencies. Therefore, a unified approach to developing the competencies of teachers has been proposed. The model will play a crucial role in guiding the competency development of construction trade teachers as dual professionals. The model emphasises the need for formal training for occupational trades and teaching expertise. Further, the study highlighted the role of VET institutions in ensuring seamless professional development for both professions by putting in place well-defined career management systems. The study highlighted that VET teachers meet challenges relating to both professions. Therefore, competency development should target professional development activities that address both professions.

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