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AN INTERVENTION STRATEGY TO ENHANCE TECHNICAL VOCATIONAL EDUCATION AND TRAINING ENTREPRENEURSHIP EDUCATION LECTURERS' KNOWLEDGE OF CONTENT AND TEACHING

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Abstract

The aim of this paper is to design an intervention strategy to enhance Technical Vocational Education and Training (TVET) entrepreneurship education (EE) lecturers' knowledge of content and teaching. The objective of the study involved unpacking the literature regarding Pedagogical Content Knowledge or knowledge of content and teaching (KCT). The study adopted a critical emancipatory research (CER) paradigm, in which the criteria for quality were determined by advancing an agenda for equity, social justice, freedom, peace, and hope. A participatory action research (PAR) approach was chosen as an appropriate methodology because it provides for collaborative research, in which all participants contribute to the design of the framework. Regarding this study, it thus necessitated teamwork involving the teaching of entrepreneurship, which consisted of the lecturers, a parent representative, a head of department, two students, and a local entrepreneur. The data was generated and collected by means of discussions/formal meetings with team members. The data was analysed using van Djik critical discourse analysis (CDA). The findings reveal that Technical Vocational Education and Training college lecturers possessed poor knowledge of content and teaching. Therefore, there is a need for proactive intervention to improve the teaching of entrepreneurship.

Keywords. TVET, EE Lecturers' KCT, CER, PAR, CDA and Social Constructivism

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1. Introduction

The aim of this paper is to design an intervention strategy to enhance Technical Vocational Education and Training (TVET) entrepreneurship education (EE) lecturers' knowledge of content and teaching (KCT). KCT is defined as "the knowledge that combines knowledge in teaching and entrepreneurship" [1]. Thus, lecturers' comprehension is necessary to demonstrate concepts and ideas, as well as their knowledge about ways of presenting special concepts and principles in order to facilitate learning [2]. KCT is therefore another strategy to reformulate text learning material (books and notes) to be understood in the language of students [3], 2018. Furthermore, an understanding is required of the nature of students and the process of how learning unfolds in class, content to be taught, differentiated pedagogy, and curricula [4]. The lecturers' skill in identifying students' mistakes and their approach to deal with them can determine the adequateness of the pedagogical content knowledge (PCK) [2].

1. 1. Literature review

The section analyses the challenge confronting the EE lecturers daily in the profession.

Lecturers' limited knowledge of content and teaching

Deep knowledge of CK and PCK is an integral part of teaching quality [5–7]. However, research studies on TVET College lecturers EE knowledge reveals that many lecturers possess a limited knowledge of EE in key content areas, such as window of opportunity [8, 9], and appropriate teacher knowledge of KCT. Subject Matter Knowledge (SMK) has a major influence on lecturers'

overall teaching and how students learning unfolds in class [10]. To comprehend what a student understands and what is difficult for them to absorb, it is necessary to give a lecture and be aware of the learning process. Then, a repertory of efficient methods for teaching a specific subject must be built, measuring students' comprehension and correcting their challenges [10].

The lecturer must properly appreciate SMK to fully comprehend the historical roots of the concepts that students must acquire, as well as the structure of the curriculum that allows students to construct a cohesive understanding [11, 12]. This includes challenges that specific SMK may present to students, including how students may represent their understanding in nonstandard ways, identifying what knowledge representations are valuable, and asking questions or providing explanations that can assist students develop in their understanding, and so on [13].

Intervention through the Lesson Study approach

The Lesson Study (LS) model, popular in many countries around the world, is one method to enhance PCK of lecturers. For example, the Turkish system applying LS to pre-service teachers is a critical step toward obtaining qualified teaching personnel [14]. It is believed, that teaching the lesson study model to prospective teachers in department of education faculties, as well as the constant practice of this model, would provide important professional contributions to the teachers.

The LS approach has been considered an approach to teacher development for the past two decades [15]. Lesson study places teachers at the centre of the professional activity, with their interests and a desire to better understand student learning based on their own teaching experiences [16]. LS is *jugyou* in Japanese (meaning instruction or lessons) and *kenkyuu* (research or study). LS is a form of in-service training, in which teachers collaborate to reflect on their challenges in refining their instruction to improve student learning [17]. Amongst other benefits, LS has been proved to make the teachers more aware of students' thinking processes and to enhance student learning.

"Lesson Study focuses on student learning and expects that teachers will specifically develop their PCK" [18]. Different types of knowledge (e.g., knowledge of content, curricula, and student learning) come together and interact with one another during the lesson study cycle (**Fig. 1**). An ideal context is created, in which teachers can integrate these types of knowledge and so make content accessible to their students. Often, in traditional professional development, these different types of knowledge are learned separately (e. g., attending a lecture on maths content and reading a book on classroom management).

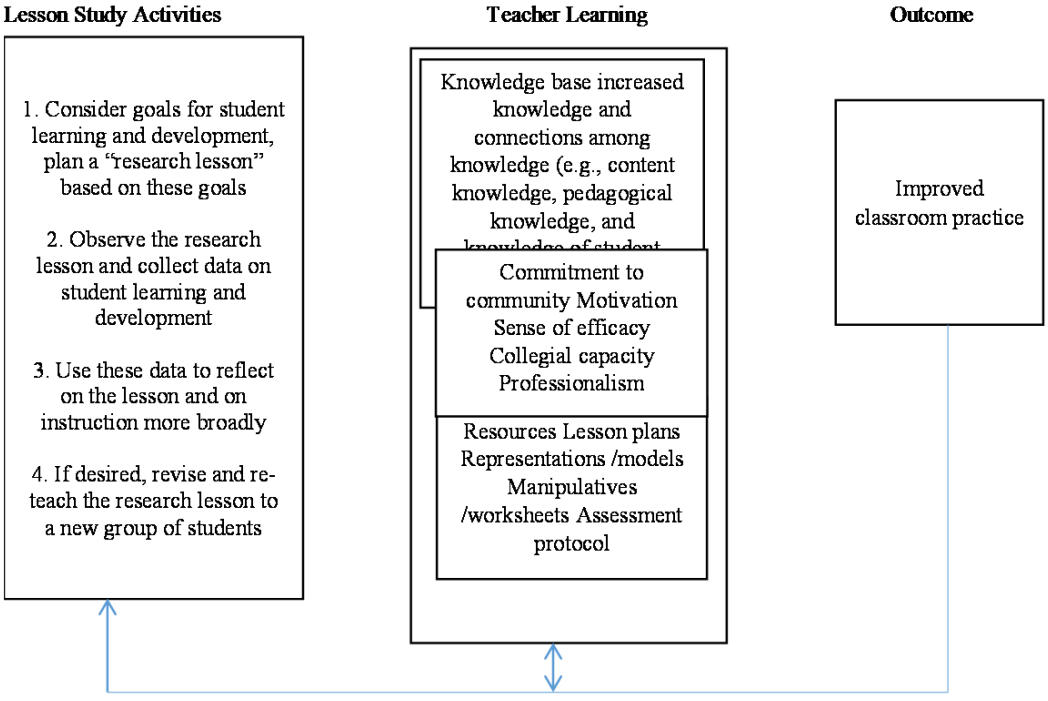

Fig. 1. Lesson study activities, teacher learning, and outcomes [19].

1. 2. Theoretical framework

The study adopts critical emancipatory research (CER) as the theoretical framework to guide it. The choice of CER as the theoretical framework is informed by CER as a theory, which advocates freedom, peace, equity, freedom and hope [9]. In CER, there is a fine line between the researchers and the research participants [20]. The respondents are treated with respect and not like objects, as in a natural science laboratory [21]. The participants are elevated to the level of co-researchers, since they work together to provide solutions to the problem affecting them [20]. This paradigm advocates the liberation of the TVET college lecturers from situations of domination, powerlessness and inequalities and empowers them through an intervention to improve their KCT [21]; thus, empowering the marginalised in the study. The TVET College lecturers amplified their voice to contribute to the transformation of teaching EE. For instance, it is argued, that critical research involves the co-creation of the research agenda by the researcher and researched participants [22].

Conceptual framework: social constructivism

The social constructivism theory of Vygotsky was chosen as an appropriate conceptual framework. Social constructivists, such as Vygotsky, view knowledge as a social construction, in which students interact with a lecturer in a classroom environment [8]. The interactions of students are most effective when they engage with their knowledgeable peers or lecturers. The interaction becomes more beneficial because they can acquire knowledge from competent peers and lecturers, learn it directly through primary experience by doing and living, and internalize it [23]. A social constructivist classroom environment allows students to interact to create their own reality [8]. Social constructivism's focus has moved from an emphasis on behavioural and skills attainment to the transformation of the individual learner's thinking and reflection processes [24].

This theory also emphasizes critical thinking, communication, and creativity in learners, as well as the development of social ideals. The social constructivism is beneficial to the development of students' critical thinking skills. The EE should prepare to be able to identify opportunities, critically thinking as a basic requirement for a successful entrepreneur. The students, exposed in a social contrived environment, have confidence, and can articulate their thinking strongly.

Aim of research was to design an intervention strategy to enhance technical vocational education and training entrepreneurship education lecturers' knowledge of content and teaching.

2. Materials and Methods

In designing intervention strategies for improved EE teaching, the study used a stakeholder led PAR approach or bottom-up approach for team members' involvement. The PAR approach is political, and differs from the positivist research, which advocates the researcher as neutral – it involves the researchers as participants along with the marginalized communities [25]. The PAR approach to research aims at putting those who are affected at the centre in order to co-produce knowledge for action that improves the overall teaching of EE for the benefit of students and lecturers, and other interested parties [26]. The PAR approach elevates the researcher team members as the core-researchers [8]. Its philosophical nature stimulates inclusivity and the democratic principle to assist the lecturers to have more say on how to change their situation [27].

The coordinating team included the lecturers and researcher. The role of the coordinating team was to further establish a fully functional team of all interested individuals who participated in developing a framework to empower the lecturers regarding KCT. The lived experiences and knowledge of TVET College lecturers were acknowledged, which created a social change effect by adopting a research approach that prioritized community voices, TVET College lecturers, and community engagement in research [28]. It enabled them to find sustainable solutions to their problem, with the strong belief that solutions, decided by people, affected by the problem, have greater potential of being implemented. The top-down approach of solving problems is not democratic and people often resist it, unlike the bottom-up approach, adopted in the study.

Data Analysis

CDA is motivated by the desire to understand social issues [29]. In addition to that, it is concerned with language, power and ideology, since language communicates ideology and encodes

power [30]. "The CDA is based on text, discursive practice and social practice that is the ideological effects and hegemonic processes, in which discourse is a feature" [31]. One of the characteristics of CDA, according to [32], is that it clarifies how language is used to reinforce, replicate, or challenge existing power relations between individuals and institutions. The textual or linguistic, discursive, and social or cultural levels are all addressed by CDA. CDA offers a type of illumination against the oppressive manipulation of language and supports a way of resisting injustice and inequalities.

The study demonstrated the power of the language in manifesting dominance and inequality. Its primary concern was to show how discourse reflects power and asserts it. The study of CDA does not only study acceptable power enactment, but also analyses "illegitimate exercise of power abuse or dominance" [33]. The power "is being exercised primarily in the interest of the powerful and against the interest of the less powerful" [33]

3. Results and Discussion

The section presents the findings and the discussion of thereof.

Analysis of solutions, suggested for the challenge identified

The focus of the paper was to design intervention strategies to enable lecturers to teach EE effectively. The objective of the study was organised around the data, generated in formal meetings, informal discussions and workshops.

Limited knowledge of content and teaching

If students' views on a topic are not taken into consideration, teachers' expertise can be a source of difficulty in teaching and learning. The study's findings supported the assertion generally found in the literature that a good understanding of the subject alone is insufficient for effective teaching [34]. In order to accomplish effective teaching of EE, lecturers needed to be able to identify their learners' difficulties. The lecturers who had insufficient KCT tended to transfer their misconceptions to their students, while more knowledgeable colleagues, by contrast, had the ability to successfully draw students' prior knowledge and concentrate on the lesson in hand [35]. Lecturers should strive to make the subject content clearly understandable for their learners. This would be achieved by the lecturers who have a deep understanding of the underlying principles of the discipline they teach [36]. One of the most well-established research findings was that lecturers' knowledge of students' reasoning is an essential component for student learning [37].

[38] suggested that a quality teacher is someone who has mastered the subject he or she teaches, as well as how to teach it; understands how learners learn and knows how to address challenges or problems, experienced by the learners; and is able to use effective teaching methods for all learners, including those with special needs. The lack of CK and PCK is discussed in the policy document by the [39], which argues that lecturers' content knowledge and pedagogical practices are poor because the universities' training has not equipped them sufficiently to teach EE. This inadequate training prevents teachers from achieving the expected education outcomes [39]. The [40] asserts that, without appropriate training at tertiary level, lecturers will carry forward the poor teaching practices they brought from school to their own teaching.

Poor KCT among lecturers was evident in the lesson, presented by Mr Motaung, which was centred on the concept of the window of opportunity. Mr Motaung began the lesson as follows:

Mr Motaung: The diagram represents the window of opportunity. It explains in detail when to take the opportunity of the opening in the market.

Teboho: When is an appropriate time to enter the market, Sir?

Mr Motaung: When the market is ready to launch a new product, the window of opportunity will eventually open up. Looking at picture it will be point A where the market starts opening.

Teboho: Sir, what drives the market to open at A not anywhere?

Mr Motaung: Maybe the number of years.

Fig. 2: Nieuwenhuizen, C., & Nieman, G.2018. *Entrepreneurship - A South African Perspective*.4th Edition .(page 110)

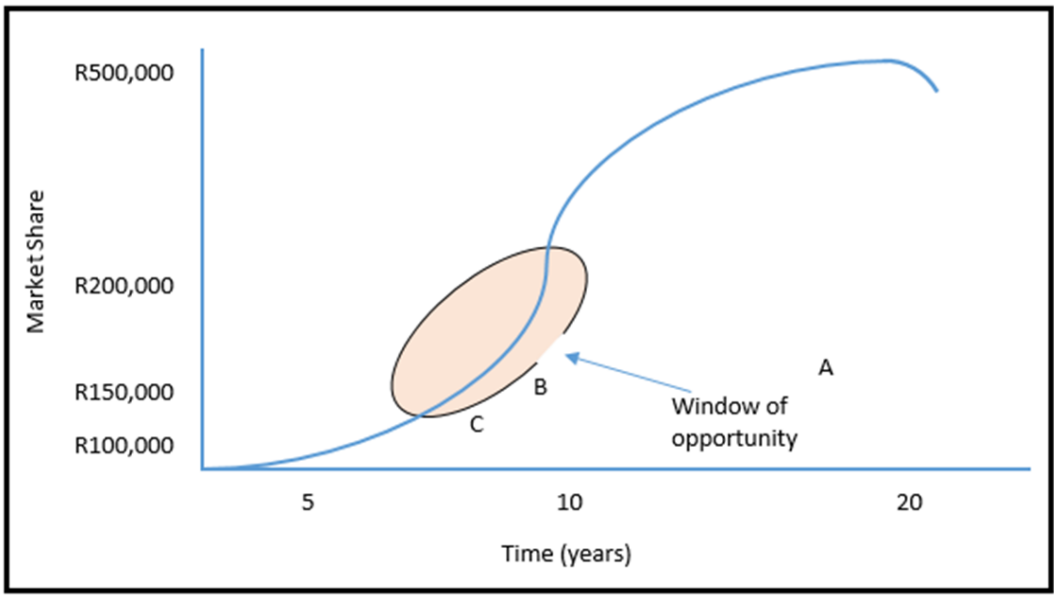

Fig. 2. Opportunity recognition

The lecturer's preparation was very poor. This can be the result of poor CK and PCK. Insufficient CK can affect the KCT. The inability to explain the concept to the students and continued transference of a subject misconception to students' derails teaching and learning. The explanation was incorrect. During the lesson, the lecturer failed to assess the students' prior knowledge on the topic in order to find out what the students already knew. This poses a danger to students who are unable to connect the new knowledge with their prior knowledge of the topic taught. The lecturer who assesses prior knowledge from the start of lesson will easily identify students who are struggling and address their problems.

By identifying important EE concepts, associated with the window of opportunity, before he continued with an explanation, the lecturer also failed to generate a conducive environment, in which to engage with students and in which students could learn from one another. Such an environment would have created a platform for engagement. This would have also assisted "the lecturer to evaluate students' prior knowledge, and to identify and clarify any shortcomings and knowledge gaps" [42]. As the lesson progressed, you could detect that the students were totally lost. A question, asked by Disebo during class, confirmed that the students did not follow the lesson.

Disebo: Why a sudden opening when it was a closed widow all along?

The lesson presentation lacked innovative ways of encouraging students to seek deeper understanding. The lesson was too abstract and failed to engage students in order to fully understand EE concepts and constructs. The lecturer did not incorporate the principle of social constructivism, which places more emphasises on encouraging the students to create their own meaning from text, rather than the lecturer fostering the interpretation of the meaning upon them. In his lesson, the lecturer did not establish the students' prior knowledge by means of a probing exercise at the beginning of the lesson. The lecturer lacked active participation –the students sat passively when the lecturer was presenting the lesson.

The lesson was lecturer directed throughout the class. The power of the lecturer over his students impacted negatively on teaching and learning. Conceivably, this was because the lecturer appeared to have their intended discursive practices all worked out before they entered the classroom. Lecturer dominance over students can thus pose serious problems. This power can restrict students from freely interacting with the lecturer and among themselves. The lecturer is thus placing a limitation on students' time to interact and positively contribute by requiring them only to ask a question and expecting a correct answer. The power in the classroom rests with the lecturers, for they are the ones who determine the time allocation for the topics to be taught.

This demonstrates the lecturer's limitations on CK, which affect the delivery of a quality lesson. Furthermore, the lack of lecturers' CK influences their ability to exercise control over students who are disruptive in class because of the problems they have encountered with the content. Students' behaviour is ignored in the obsession with teaching, which is regardless of the students' problems.

Sufficient knowledge of content and teaching

Inadequate or fragmented prior knowledge is also an important issue to consider. If there is a mismatch between the instructors' expectations of student knowledge and the students' actual knowledge base, learning may be hampered from the start of the studies [43]. Prior knowledge assessments may be successfully used to inform theory and improve educational practice [44]. According to [45], lecturers should consider "their students' prior knowledge in the content when planning and teaching their lessons". The students' misconceptions have a negative influence on their learning. "Responding to students' errors is carrying out formative assessment, which relies on the lecturer's deep knowledge of content, and requires the lecturer's professional judgement on how to respond to students' needs when teaching that content". The lecturer will likewise "choose the arrangement and pace the learning in a way delicate to the contrasting needs of both the subject and the students" [42].

The lesson, presented by Mr Motaung after the team's intervention, improved tremendously. The use of probing of the students' prior knowledge guided the overall success of the lesson presentation, which unfolded as follows:

Mr Motaung: When do you say the window has opened up in the market?

Dibuseng: When the new entrants can enter the market.

Mr Motaung: But Dibuseng you have not yet given us a definite answer. Teboho what do you think.

Teboho: It's when new ideas are starting to germinate.

Mr Motaung: It is when a market has saturated, new players can imitate the original products and new players are able to penetrate the existing market.

The formative assessment, conducted by the lecturer at the beginning of the lesson, assisted in revealing the students' misconceptions. By means of formative assessment, the lesson was modified to respond to the students' misconception [46]. The ability of the lecturer to address the students' misconception made the lesson successful. The lecturer demonstrated understanding of EE and also understanding of what students know and, in that way, assisted in structuring his lesson accordingly.

Engagement between the lecturer and students resulted in empowered students. Accordingly, their confidence of EE skills also improved. The lecturer allowed the students ample time for discussion in order to arrive at the solution to the problem. The PCK directed them to appropriately use teaching strategies, such as scaffolding, modelling and coaching [47]), in such a way that students' competencies on EE skills were not suppressed.

Conditions necessary to enhance the knowledge of content and teaching

The conditions for successful implementation of the framework involve lecturers who have immersed themselves in KCT. Furthermore, lecturers have to incorporate prior learning in their lessons – the knowledge of "what makes those ideas difficult or simple to learn, knowledge of students' misconceptions, knowledge of students' prior knowledge or cognitive…knowledge" [48].

Mr Motaung's class on window of opportunity further revealed the following:

Mr Motaung: The graph assisted us to assess the right time to enter the market.

Sellwane: Wouldn't it be late Sir.

Mr Motaung's initial response to Teboho was as follows:

Mr Motaung: It is when a market has saturated,

new players can imitate the original products and new players are able to penetrate the existing market.

The student's misconception on the topic of the window of opportunity was successfully addressed. The lecturer, in addressing the difficulty, took the student's prior knowledge into account. Linking to his previous lesson in order to respond to the student's difficulty made the lesson

a success. KCT contributed positively to the knowledge of teaching. Probing of the students showed that the lecturer fully understood the topic and was thus able to meet the objective of the lesson – clearing up the misconceptions and difficulties the student had with the window of opportunity, made the concept become clear.

Threats towards content knowledge and teaching

Poor KCT from lecturers threatens their ability to teach effectively. A lecturer who is unable to effectively identify students' problems with content is in danger of delivering incorrect content and employing ineffective teaching methods. Such a situation then produces students who are not competent in the content of EE.

This is what transpired in the class, taught by Mr Motaung:

Teboho: Sir, during the different phases of life cycle does the window of opportunity open up at each stage?

Mr Motaung: Imagine if an inventor copies your invention. What would happen?

This is contrary to good teaching. Instead of presenting the lesson, the lecturer asked students a question. Such an action, which so lacks CK and PCK, prevents effective teaching from taking place. The onus is on the lecturer to use strategies to uncover the students' needs. The challenge is to be able to use assessment effectively to uncover what students do not know, which is then expanded to identify what was misconceived.

Evidence that the strategy to teach EE has yielded good results

Through the intervention of the team, the lecturers were able to develop their KCT. The challenges they experienced were thoroughly discussed and addressed. In addition, the strategies of KCT, conducive conditions for an emerging framework, and the factors that threatened the successful formulation of the framework for EE TVET were discussed. In this section indicators of success will be discussed; that is, light will be shed on the successes of the emerging framework to teach EE.

Content knowledge and teaching

The KCS was demonstrated when the lecturer successfully used the students' prior knowledge when planning and teaching his lesson. By performing the formative assessment in the beginning of the lesson, the lecturer successfully determined the students' misconceptions. The students' misconceptions were able to be addressed when the lecturer insisted on probing the student for an answer. This method attempted to assist the students in uncovering the answer by themselves, with the assistance of the lecturer.

Student centered approach

The lecturer involved the students in his lesson. Active responsibility for learning, proactive management of the learning experience, independent knowledge production and teachers as facilitators are all characteristics of a student-centered approach [49]. The students were engaged in the classroom, were able to work together in groups and participate fully in class. The group activities demonstrate a quality of learning, employed in by the intervention strategy. The strategy links well with the flexible learning, experiential learning, and self-directed learning [50].

Research limitations. This is a qualitative study, the findings cannot be generalised for all TVET college in the country. The intervention strategy is appropriate for only the TVET College under investigation. Hence, future research should look at more TVET colleges in the country having similar problem. The prospect of the future research. Thus, future studies need to explore the prospect of the intervention strategy to all colleges with an objective to design a strategy that can be used to solve EE teaching at TVET colleges.

5. Conclusion

The intervention strategy was successful after lecturers recognised the valuable input of all stakeholders in the overall teaching of EE. The lack of KCS from the lecturer perspective was addressed more successfully with help from knowledgeable colleagues who were members of a team. The team members' skills and experience assisted with sustainable solutions for the lecturers' lack of KCT. Furthermore, the results of the study do show that a swift from a teacher-centered teaching method to more inclusive student-centered teaching approach if implemented in EE teaching and

learning has the potential of transforming the teaching EE. However, implementing the strategy requires a more flexible teaching method. Thus, try to reduce the distance between a lecturer and student through learning need analysis.

Conflict of interest

The authors declare that there is no conflict of interest in relation to this paper, as well as the published research results, including the financial aspects of conducting the research, obtaining and using its results, as well as any non-financial personal relationships.

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