

## **PEDAGOGICAL CONTENT KNOWLEDGE OF ENTREPRENEURSHIP EDUCATION TECHNICAL VOCATIONAL EDUCATION AND TRAINING COLLEGE LECTURERS': DO THEY HAVE SUFFICIENT KNOWLEDGE OF CONTENT AND STUDENTS?**

**Molefi Motsoeneng**

Central University of Technology, Free State (SOUTH AFRICA), Scholarship of Teaching and Learning (SoTL), [smotsoen@cut.ac.za](mailto:smotsoen@cut.ac.za)

### **Abstract**

The study's focus is to explore pedagogical content knowledge of entrepreneurship education, technical vocational education, and training lecturers in the context of their knowledge of content and students. The lecturers' knowledge of the students' conceptions and misconceptions on the entrepreneurship education, as well as the teacher's ability to cope with the students' difficulty, mistake, and misconception, is defined as knowledge of content and students. Central to these tasks is knowledge of common student conceptions and misconceptions about EE content and teaching that sufficiently deals with them. Participatory action research was operationalized to collect data through meetings, class observation, and discussion. The study discovered that entrepreneurship education TVET lecturers struggle to make it more practical. The lecturers experience the problem of having to find the best strategy to deal with students' misconceptions and mistakes. During class visits, it was revealed that lecturers themselves are unable to recognise students' mistakes. due to a lack of conceptual knowledge of entrepreneurial education. Most of the lecturers are not competent to generate effective teaching strategies due to their limited knowledge of content and students. The study's findings indicate that lecturers' inability to analyse the causes of students' difficulty, error, and misconception is to blame. Lecturers typically overcome students' difficulty, mistake, and misconception by re-explaining the procedure of question completion, which the students do not understand. The papers argue there is a need for a framework to capacitate the lecturers to teach EE effectively.

**Keywords:** Pedagogical Content Knowledge, entrepreneurship education, knowledge content and students and misconceptions

### **INTRODUCTION**

The study's focus is to explore pedagogical content knowledge (PCK) of entrepreneurship education (EE), technical vocational education, and training lecturers (TVET) in the context of their knowledge of content and students (KCS). TVET college lecturers are central to the students' learning of entrepreneurship education (EE). Therefore, a lecturer must be competent in content knowledge (CK), PCK, and KCS of entrepreneurship and have a distinct ability to teach students to understand. PCK is a type of knowledge that includes the ways of representation that are required to understand the subject: the best examples, analogies, illustrations, and explanations that represent the concepts in the best manner (Şahin, Gökkurt & Soyulu, 2016). The KCS is related to students' thinking, knowing, and how they learn and understand the content (Nurcholif Diah Sri Lestari, Dwi Juniati & Suwarsono, 2019). The lecturer is expected to understand the students' prior knowledge, possible mistakes they will make, and errors they will commit while learning, as well as the underlying reasons for those factors (Şahin, Gökkurt, & Soyulu, 2016). The lecturers should know how to teach a particular EE concept to students, how to represent a particular EE idea, how to respond to students' questions, and what curriculum materials and tasks to use to engage students in a new topic (Kılıç,2011). Instructional strategies are another important knowledge for a lecturer to possess (Şahin

et al.,2016).

It is important that the lecturers possess an appropriate level of PCK since the knowledge has an impact on students' learning. A high level of KCS is important for lecturers because it allows them to expand their teaching beyond a single theory and even assess students' prior learning and misconceptions. enable the lecturer to develop a suitable strategy and use multiple ways of presenting the concepts to produce meaningful learning (Kathirveloo, Puteh & Matematik, 2014).

Recent teacher knowledge research suggests that when choosing instructional content, curriculum, and methodology, lecturers may consider a lot more than students' prior knowledge (McCaughtry & Rovegno, 2003; Rosiek, 2003; McCaughtry, 2004). Additionally, that area of knowledge includes a grasp of what factors, including ideas and assumptions, students of all ages and backgrounds bring to the learning of those most commonly taught topics and courses, making the learning of certain topics easy or difficult (Lee & Luft, 2008).

In addition, the lecturers' ability to assist in understanding and responding adequately to students' common preconceptions, misconceptions, and difficulties about the topic of entrepreneurship is limited (Sadler & Sonnert, 2016). Developing a variety of methods of teaching for effective EE pedagogy includes the ability to test the students' understanding and respond in a correct manner to their difficulties regarding content (Kanjee & Mthembu, 2015:146). Contrary to that, TVET College lecturers lack understanding of students' characteristics when creating a conducive environment for learning and planning their lessons to address the needs of their students (Kiliç, 2011). Thus, they are unable to identify their students' difficulties.

Lannin Webb, Chval, Arbaugh, Hicks, Taylor and Burton (2013) argue that KCS is key to the improvement of PCK, In addition to the enhancement of teaching and student learning (Hill & Chin, 2018). As an example, Johnson and Larsen (2012) examined the lecturer's attempts to listen to the students in order to discover and comprehend the students' EE issues in the classroom and designed exercises and questions to increase student understanding (Ahn, Kulm, & Wu, 2004).

## **PROFESSIONAL LEARNING COMMUNITIES**

The countries with excellent teaching of EE have been credited with establishing functional professional learning communities (PLCs). PLCs can be used to support and improve teacher knowledge and skills, resulting in increased teacher efficacy in meeting students' needs (Dogana, Pringleb, & Mesa, 2016). Teachers learn from PLCs and each other, and they come to see for themselves this community of teachers who focus on the implementation of new ideas and practices tailored to their individual strengths and capacities. The familiar phrase "my students" genuinely becomes "our students" (Mundschenk & Fuchs, 2016:55).

Lecturers are ostensibly enhancing their own teaching methods by actively participating in their own and their colleagues' professional development through PLC involvement, which may ultimately lead to an increase in student learning (van Meeuwen, Huijboom, Rusman, Vermeulen & Imants, 2020). Dogan, Pringle and Mesa (2015) discovered that involvement in PLCs boosted teachers' disciplinary as well as pedagogical topic knowledge. They conducted a review of empirical studies evaluating the effects of professional learning communities (PLCs) on science teachers' knowledge and practice (Dogan et al., 2015).

Due to the favourable effects that teachers' PLCs and PCKs have on both instruction and learning (Mu, Liang, Lu, & Huang, 2018), The discussion of curriculum creation and lesson planning among entrepreneurship lecturers in their districts would be an advantage. Student achievement is anticipated to significantly increase when PLCs are deployed (Battersby & Verdi, 2015).

## **METHODOLOGY**

### **PARTICIPATORY ACTION RESEARCH**

PAR was chosen because it maximises the involvement of participants and researchers (Buckley, Hartigan, Coffey, Cornally, O'Loughlin & Lehane, 2002). The PAR approach regards the team members as the core researchers in the study (Motsoeneng & Sithole, 2022), thus contributing to knowledge as equal partners with the researcher (Motsoeneng, 2022). The difficulties with transition that the practicum brought led to the selection of a PAR design (Chang et al., 2017). PAR is defined as "a strategy utilized by practitioners for improving practice as part of the process of change" (Waterman & Koshy, 2010: 9).

To provide a learning environment that links theory and practice with action and reflection, PAR offers a collaborative, participatory process (Liang, Wu, Hung, Wang & Peng, 2019). The core tenet of PAR is that it

should recognise and observe human behaviour as it occurs rather than beginning the investigation of human action with an abstract research question (Glassman & Erdem, 2014), where community members work with the academics to identify problems, develop solutions, and bring about change (Barrington et al. 2019). Participants in research are considered collaborators rather than objects or subjects from the PAR perspective.

To understand what happens in the network of human relationships that either pulls it toward or away from intended goals, researchers collaborate with members of the community. The community members use this data to create a new, more effective plan of action (Glassman & Erdem, 2014). The PAR process started with the formation of a local steering committee made up of important stakeholders and a platform (working group) of professionals to oversee the design and implementation process.

## **FINDINGS AND DISCUSSION**

### **LECTURERS' LIMITED KNOWLEDGE OF CONTENT AND STUDENTS**

A competent lecturer must anticipate what students are thinking and what they find confusing (Nilsson & Karlsson, 2018). This also includes the students' mistakes, "understanding of the content, developmental sequences, and computational strategies" (Rice & Kitchel, 2016:87). This makes it important that the lecturer chooses examples that are interesting and motivating. Similarly, when selecting an appropriate task, one must anticipate potential errors as well as the task's ease or difficulty. These can be achieved by addressing the gaps through effective teaching strategies, assessment of students, probing the students' understanding, and assisting students with difficult topics. These must enable a lecture to address the gaps by using effective teaching strategies in class, assessing students' understanding, and addressing their difficulties (Kıç, 2012). Furthermore, the lecture must respond by incorporating methods to deal with students' difficulties in understanding the subject matter and deal with misconceptions successfully.

The students' prior knowledge has an effect on adding additional knowledge. The lecturer's responsibility is to assess the students' prior knowledge before to the introduction of a new topic. Failure to recognise it may impede students' ability to learn new content in some cases. A deep knowledge of PCK is key to teaching EE skills. The DoE policy documents outline that "this will enable the lecturer to use strategies that allow students to interact freely and meaningfully and to extend knowledge of entrepreneurial skills" (DoE, 2003:5). According to DoE (2003:9), lecturers need to demonstrate not only PCK but also an understanding of the EE curriculum. It is expected of the EE lecturer to be a lifelong learner in the teaching of EE, someone who is competent in their area of expertise (DoE, 2003:3).

This is how Mr Vilakazi presented the topic of an idea versus a business opportunity:

*Mr Vilakazi: Starting a new venture can be a difficult thing to do, having to raise capital, rent a space and even acquiring stock.*

*Dineo: But if you have a brilliant idea that can be achieved easily.*

*Mr Vilakazi: Not all ideas have the potential to become good ventures.*

*Mohau: What do you mean Sir, because a unique and innovative idea has the potential to capture the market?*

*Pule: Because we were taught that all big corporations started small with an excellent idea of an owner.*

*Mr Vilakazi: The lesson has to start, enough with dialogue.*

The lecturer displays an inability to properly understand the students' difficulties. Thus, they are unable to challenge the students cognitively with limited clarity on students' misconceptions about business ideas. Thus, is unable to sway the argument in a direction that will assist students in finding their own solutions. The lecturer did not look for people who were having trouble understanding the concept. Instead of observing to determine specific challenges in learning the concept, they were successful in recognising concepts that all students in general did not understand. This could be hampered by the teaching approach. The lecturers tried to probe the students' understanding; the questions were designed to challenge the students' understanding. The questions were cognitively at a lower level, ranging from understanding to mastery of the topic. But also, not limited to range of various techniques used by a lecturer to assess students. Furthermore, the lecturer ability to identify students' misconceptions, and employ teaching strategies to connect their prior learning with the current knowledge. More importantly the teaching methods employed to deal effectively with students' misconceptions.

This inhibits the lecturer from adequately addressing the students' difficulties, forcing them to resort to rote learning. To reveal the students' prior knowledge, the lecturer should have given an exercise. This allows them to determine prior knowledge and connect it with new knowledge. The lack of CK and PK by the lecturer is evident when he is unable to use different strategies to explain the concept clearly. The students' prior knowledge was entirely ignored in the lesson's presentation. The lecture did not test the students' prior knowledge before the lesson presentation, which has the potential to negatively affect their learning.

The lecturer is acting contrary to the principles advocated by CER, which encourage freedom to engage and to try to understand what is being taught in class, thus violating the students' right to freedom of learning. Because the lecturers were victims of an education system that did not recognise the freedom of students to express themselves in class, they are repeating the same mistakes continuously. This proved that the lecturer has limited KCS, as the students commit the same mistakes as the lecturer.

The lecturer does not adequately prepare for the class. This results in the lecturer's inability to understand and know students' misconceptions on certain topics. They do not assess the students' understanding or adequately address their problems with content. They come to class ill-prepared, and because of this, they are unable to deal with the students' misconceptions. The students' prior knowledge is not considered when introducing new topics in class.

## **THE SUFFICIENT KNOWLEDGE OF CONTENT AND STUDENTS**

A competent lecturer with rich PCK can go beyond not only understanding the subject content but also restructuring it and presenting it in a form appropriate for the students' diverse interests and abilities, based on their preconceptions and difficulties encountered (Shing, Saat & Loke, 2015). The lecturers with deep PCK are better at deciphering student errors and handling misunderstandings and can deal with them effectively (Motsoeneng, 2022). This requires thorough preparation, which ultimately produces a detailed anticipation of students' responses to certain concepts. Furthermore, it provides an opportunity for a detailed discussion of potential areas of difficulty for students, as well as anticipating students' questions and responses to the task. The lecturers need to spend a significant amount of time to anticipate students' responses. These include discussing possible areas that are difficult for students and predicting the students' questions and responses that may arise from the task.

In one of the classes taught by Ms Mlangeni:

*Ms Mlangeni: One has to be very careful of not mixing an idea with an opportunity as many people treats their ideas as opportunities. The best idea has no value if there is no opportunity or market for it.*

*Mbali: Does the absence of filling stations around the College presents opportunity?*

*Ms Mlangeni: Only if fulfilling the core requirement of an opportunity which is timely, attractive, durable, and anchored in a product, service, or business that creates or adds value for its buyer and end user.*

The lecturer had successfully identified the source of the students' difficulties. In her lesson, she successfully dealt with the repetition of these difficulties and mistakes. There is a thin line between an idea and an opportunity, which leads more often to a misconception. By engaging students, they both reach a unanimous understanding of the difference between the two constructs. The lesson was prepared specifically to address the students' errors and difficulties with EE. As a result, I was able to anticipate the root of the students' problem. The lecturer showed sound subject knowledge in the fact that she emphasises the need for an opportunity to be evaluated to meet a certain threshold to be regarded as one.

Engagement between the students and the lecturer is advocated by CER as a prerequisite for those trying to find a solution to their problem. In addition, the students are treated as human beings, not like objects in a laboratory. Engagement is also encouraged when a lecturer uses social constructivist learning theory in his classroom. The entire team can be afforded an ideal opportunity to construct their knowledge (Amineh & Asl, 2015). The team must deal with the notion that the lecturer is the knowledgeable one in the class. The success of the implementation of social constructivist learning theory happens in a classroom that must be conducive to learning and teaching (Kundi & Nawaz, 2010).

## **CONDITIONS NECESSARY TO ENHANCE THE KNOWLEDGE OF CONTENT AND STUDENTS**

The lecturer who possesses deep KCS can anticipate student errors and misconceptions at the beginning stage of the lesson (Qian & Lehman, 2017:5). Thus, she has an edge over her colleagues. The condition necessary to make this possible has to do with students' understanding and reasoning, as well as their

enjoyment of the class.

In one of the classes taught by Ms Mlangeni, this is what transpired:

*Ms Mlangeni: There is a thin line between an opportunity in the market with and great idea.*

*Mbali: How do you find out Sir that is an idea not an opportunity?*

*Ms Mlangeni: Let's deal with the four principles of an opportunity.*

From the above, the lecturer has deftly anticipated the student's preconceptions, misconceptions, and difficulties. If students show poor levels of understanding; their knowledge needs to be enhanced (Supatmi, Setiawan, & Rahmawati, 2019). She was well prepared for them, which gave her the edge to deal with problems efficiently as they arose. The rich knowledge she possessed of students' understanding of preconceptions, misconceptions, and difficulties on a topic made it easier for her to explain the students' difficulties with ease. The lecturer's knowledge of students gave her the edge to explain difficult concepts encountered by students.

## CONCLUSION

In conclusion, it was shown earlier that KCS is key to making the content more understandable to students. The lecturer's KCS made it possible. The broad knowledge of the subject and the ability to integrate the content played an important role in the KCS.

## REFERENCE LIST

- An, S., Kulm, G., & Wu, Z. 2004. The pedagogical content knowledge of middle school mathematics teachers in China and the U.S. *Journal of Mathematics Teacher Education*, 7, 145-172. <https://doi.org/10.1023/B:JMTE.0000021943.35739.1c>
- Amineh, R. J., & Asl, H. D. 2015. Review of Constructivism and Social Constructivism. *Journal of Social Sciences, Literature, and Languages*, 1, 9-16.
- Barrington, D. J., Sridharan, S., Saunders, S. G., Souter, R. T., Bartram, J., Shields, K.F., Meo, S., Kearton, A., & Hughes, R K. 2016. Improving community health through marketing exchanges: A participatory action research study on water, sanitation, and hygiene in three Melanesian countries. *Social Science & Medicine*, 171, 84-93. <https://doi.org/10.1016/j.socscimed.2016.11.003>
- Battersby, S. L. & Verdi, B. 2015. The culture of professional learning communities and connections to improve teacher efficacy and support student learning. *Arts Education and Policy Review*. 1:2-29. <https://doi.org/10.1080/10632913.2015.970096>
- Buckley, C., Hartigan, I., Coffey, A., Cornally, N., O'Loughlin, C., & Lehane, E. (2022). Evaluating the use of participatory action research to implement evidence-based guidance on dementia palliative care in long-term care settings: A creative hermeneutic analysis. *International Journal of Older People Nurs.* 1-11. DOI: 10.1111/opn.12460
- Chang, C.P., Leeb, T.T. & Mills, M.E. 2017. Clinical nurse preceptors' perception of e-portfolio use for undergraduate students. *J Prof Nurs*, 33(4), 276-281. [tps://doi.org/10.1016/j.profnurs.2016.11.001](https://doi.org/10.1016/j.profnurs.2016.11.001)
- Dall, D. L., Thames, M. H., & Phelps, G. 2008. Content Knowledge for Teaching What Makes It Special? *Journal of Teacher Education*, 59(5), 389-407.
- Department of Education 2003. *National Curriculum Statement Grades 10-12 (General). Mathematics*. Pretoria: Government Printer.
- Dogan, S., Pringle, R. & Mesa, J. 2015. The impacts of professional learning communities on science teachers' knowledge, practice and student learning: A review. *Professional Development in Education*, 42, 569-588
- Dogana, S., Pringle, R. & Mesa, J. 2016. The impacts of professional learning communities on science teachers' knowledge, practice and student learning: a review. *Professional Development in Education*, 42(4), 569-588, <http://dx.doi.org/10.1080/19415257.2015.1065899>
- Glassman, M. & Erdem, G. 2014. Participatory action research and its meanings: Vivencia, Praxis,

- Conscientization. *Adult Education Quarterly*, 64(3) 206–221. DOI: 10.1177/0741713614523667.
- Hill, H. C., & Chin, M. (2018). Connections between teachers' knowledge of students, instruction, and achievement outcomes. *American Educational Research Journal*, 55(5), 1076–1112. <https://doi.org/10.3102/0002831218769614>
- Kanjee, A., & Mthembu, J.(2015). Assessment literacy of foundation phase teachers: An exploratory study. *SAJCE*. 5(1), 142-168. ISSN 2223-7682.
- Kathirveloo, P., Puteh, M., & Matematik, F. S. (2014). Effective teaching: pedagogical content knowledge. *Proceeding of International Joint Seminar Garut. Indonesia*.
- Kılıç, H.2011. Preservice secondary mathematics teachers' knowledge of students. *Turkish Online Journal of Qualitative Inquiry*, 2(2):17-35-37
- Liang, H.F., Wu, K.M., Hung, C.C., Wang, Y.H., & Peng, N.H.(2019). Resilience enhancement among student nurses during clinical practices: A participatory action research study. *Nurse Educ Today*. 75:22-27. doi: 10.1016/j.nedt.2019.01.004.
- Lannin, J.K., Webb, M., Chval, K., Arbaugh, F., Hicks, S., Taylor, C., & Burton, R. (2013). The development of beginning mathematics teachers' pedagogical content knowledge. *Journal of Mathematics Teacher Education*, 16(6), 403–426. <https://doi.org/doi:10.1007/s10857-013-9244-5>
- Lee, E. & Julie A. Luft, J.A.(2008) Experienced secondary science teachers' representation of pedagogical content knowledge. *International Journal of Science Education*, 30:10, 1343-1363. DOI: 10.1080/09500690802187058
- Lestari, N.D.S., Juniati, DE., St. Suwarsono. (2019).The role of prospective mathematics teachers' knowledge of content and students in integrating mathematical literacy. *The New Educational Review*. 57(3):151-160. DOI: 10.15804/tner.2019.57.3.12.
- Liang, H.F., Wud, K., Hunga, C., Ying-Hsiang Wange , Niang-Huei Peng Resilience enhancement among student nurses during clinical practices: A participatory action research study. *Nurse Education Today* 75 (2019) 22–27.
- McCaughtry, N., & Rovegno, I. (2003). Development of pedagogical content knowledge: Moving from blaming students to predicting skillfulness, recognizing motor development, and understanding emotion. *Journal of Teaching in Physical Education*, 22(4), 38-50.
- McCaughtry, N. (2004). The emotional dimensions of a teacher's pedagogical content knowledge: Influences on content, curriculum and pedagogy. *Journal of Teaching in Physical Education*, 23, 30-47.
- Motsoeneng, M., & Sithole, N.V.(2022). An Intervention strategy to enhance technical vocational education and training entrepreneurship education lecturers' knowledge of content and teaching. *Eureka:Social and Humanities*, 6:48-57. <https://doi.org/10.21303/2504-5571.2022.002501>
- Motsoeneng, M.(2022).The effects of teacher education on technical vocational education and training college lecturers. *International Conference on Education and New Developments (END 2022)*. 364-366.
- Mu, G.M., Liang, W., Lu, L. & Huang, D.(2018). Building pedagogical content knowledge within professional learning communities: an approach to counteracting regional education inequality. *Teaching and Teacher Education*, 73:23-24. <https://doi.org/10.1016/j.tate.2018.03.006>
- Nawaz, A., & Kundi, G.M. (2010). Demographic Implications for the User-Perceptions of E-Learning in Higher Education Institutions of N-W.F.P, Pakistan. *Electronic Journal of Information Systems in Developing Countries*, 41(1), 1-17. <https://doi.org/10.1002/j.1681-4835.2010.tb00294.x>
- Nilsson, P., & Karlsson, G. (2018). Capturing student teachers' pedagogical content knowledge (PCK) using CoRes and digital technology. *International Journal of Science Education*, 41, 419-447.
- Qian, Y., & Lehman, J. (2017). Students' Misconceptions and Other Difficulties in Introductory Programming: A Literature Review. *ACM Transactions on Computing Education Volume*, 18(1): 1–24.<https://doi.org/10.1145/3077618>
- Rice, A. H., & Kitchel, T. (2016). Influence of knowledge of content and students on beginning agriculture teachers' approaches to teaching content. *Journal of Agricultural Education*, 57(4), 86-100.

<https://doi.org/10.5032/jae.2016.04086>

- Rosiek, J. (2003). Emotional scaffolding: An exploration of teacher knowledge at the intersection of student emotion and the subject matter. *Journal of Teacher Education*, 54, 399-412.
- Sadler, P. M.; Sonnert, G. (2016). Understanding misconceptions: teaching and learning in middle school physical science. *American Educator*, 40(1),26-32.
- Şahin, Ö., Gökkurt, B., & Soylu, Y. (2016). Examining prospective mathematics teachers' pedagogical content knowledge on fractions in terms of students' mistakes, *International Journal of Mathematical Education in Science and Technology*, 47(4), 531-551, DOI: 10.1080/0020739X.2015.1092178
- Supatmi, S., Setiawan, A., & Rahmawati, Y. (2019). Students' misconceptions of acid-base titration assessments using a two - tier multiple-choice diagnostic test. *African Journal of Chemical Education*, 9(1), 18-37.
- van Meeuwen, P., Huijboom, F., Rusman, E., Vermeulen, M. & Imants, J. (2020) Towards a comprehensive and dynamic conceptual framework to research and enact professional learning communities in the context of secondary education, *European Journal of Teacher Education*, 43:3, 405-427, DOI: 10.1080/02619768.2019.1693993
- Waterman, H., & Koshy, E. K. V. W. H. (2010). *Action research for health care*. (1 ed.) Sage Publications Ltd.