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Analysis of Developing a Model of Academically Cultured Excellence Competency among TVET Educators

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Abstract - This study aims to develop a model of academic competence relationship with excellent culture for skills TVET educators at technical universities. This research focuses on instructors who face challenges such as lack of interest, teaching practices that do not reflect actual practice, limited communication during teaching, and low motivation in implementing the learning process. The research methodology uses a mixed method with Sequential Explanatory Design, involving TVET instructors as respondents, 9 experts for the pilot study, and 12 experts for the actual study. Data analysis is conducted using SPSS, Modified Delphi Technique, Nominal Group Technique (NGT) approach, and Interpretive Structural Modeling (ISM) technique. The results of the study show that all elements in technical, pedagogical, and personnel competencies have been agreed upon by the expert panel, and this academic model with excellent culture is believed to be a reference by technical universities to identify the needs of excellent instructors and adapt an excellent work culture atmosphere through the learning process. Although this model is specifically for TVET instructors, the elements contained are open-ended and can be used as a guide not only for TVET instructors, but also instructors at other public higher education institutions.

Keywords: Culture-Based Academic Competence, TVET educator, Competency

1. Introduction

The role of lecturers is one of the most important factors in conveying knowledge and skills to students. The competences possessed by lecturers in terms of knowledge, technical skills and work culture are very critical because they will affect the quality of teaching delivery possessed by TVET instructors. Experts have discussed, in interviews, the competencies required in TVET to unearth student talent and their impact on the quality of excellence among lecturers. In this regard, it is very appropriate for the parties involved, such as the ministry, educational institutions, and teaching staff, to work together to identify the root cause of the issue in greater depth and, subsequently, produce graduates who are competent in accordance with the latest industry job standards. Variations in TVET instructors' work experience result in varying levels of technical and pedagogical competence, which, in turn, affect the quality of teaching in technical universities (Zhou, 2023). Research also shows that a lack of consistent pedagogical training contributes to weaknesses in teaching delivery, especially for lecturers with long industry experience but poor pedagogical skills (Cliffton, Awang & Mansor, 2024).

In addition, the lack of teachers' competence in technical, communication, and pedagogical knowledge, as well as in teaching techniques, has affected the effectiveness of the teaching and learning process (Alias et al., 2022; Othman et al., 2022). This situation poses significant challenges to achieving the goals of TVET education, including producing a highly skilled, competent, and competitive workforce and ensuring the successful transformation of technical education institutions in Malaysia. Therefore, issues related to TVET teachers' competence require serious attention to improve the quality of vocational education and training at the university level. Some teachers who teach in the field of skills lack positive attitudes and personal competencies (Che Kob et al., 2018). Vocational teachers do not appreciate their jobs and often feel stressed when they take on other tasks while teaching (Sappa, 2015). In addition, there are teachers who are not interested, do not incorporate practical practices during teaching, lack communication during teaching, and have low motivation to implement the learning process (Puustinen et al., 2018). This culture will prevent the teaching and learning process from being

implemented optimally. According to Diao, Han, Zhou, and Wang (2023), the development of professional competence of TVET educators should include a comprehensive understanding of technical knowledge, the use of the latest equipment and technology, and the ability to adapt the curriculum to industry needs. This approach allows teachers to not only convey theory, but also engage students in practical training that is essential to building industry-based skills. Thus, technical competence not only serves as a knowledge base, but also strengthens the effectiveness of pedagogy and personnel interaction in TVET classrooms.

2. Research Methodology

This study used a mixed-methods approach, with the Sequential Explanatory Design, in which quantitative data collection and analysis are conducted first, followed by qualitative data collection and analysis to explain or extend the quantitative findings. According to Creswell and Hirose (2019), this design begins with quantitative research, followed by data analysis, and then by qualitative research to gain a deeper understanding. Although quantitative and qualitative analyses are conducted separately, both are combined when interpreting the data (Ghazali & Sufean, 2018). Qualitative methods are needed to answer the "why, "" what, and "how" questions that arise from the previous quantitative findings (Tariq & Woodman, 2013). Thus, this mixed-methods approach allows for a more comprehensive understanding by combining quantitative and qualitative findings (Creswell, 2014).

In this study, the procedure began with the use of the Modified Delphi Technique (MDT) to develop indicators through a questionnaire instrument classified according to the main components of the study, namely technical, pedagogical, personnel, and academic competencies, with excellent culture. The instrument was then presented to a 12-member expert panel. In the second round, the experts evaluated and rated their level of agreement with the elements presented, and provided suggestions and comments to improve the instrument. The completed questionnaires were analyzed, and in the third round, the experts received back a revised version of the questionnaire based on the feedback from the second round. After data collection and analysis using the Modified Delphi Technique were completed, the study continued with the Nominal Group Technique (NGT) and Interpretive Structural Modelling (ISM). Data from the Modified Delphi were used in face-to-face workshop sessions with experts to develop the model. Through the NGT, discussions and evaluations were conducted to assess the suitability of the model's components and elements. After reaching an agreement with the expert panel, the final questionnaire, containing all elements, was returned to them.

The final findings from the NGT were used in the ISM with the help of Concept Star software, which produced a directed graph (diagraph) to visualise the relationships between elements after expert voting. Taking the panel's views into account, the researcher, as a facilitator, presented the final model to all experts. The reliability test used Cronbach's Alpha formula. The reliability test yielded a coefficient of 0.98, indicating the instrument is reliable. The purpose of the questionnaire is to assess the digital capabilities of productive teachers in school learning. A literature review was conducted to identify indicators of digital education competency within the Australian Qualifications Framework to inform the instrument development. The questionnaire results are used to draft the digital education competency standards. The table 1 shows the results of validity instrument.

Table 1 *Instrument Validity Results*

Variable	Main Component	Indicator	Number of Items before validity test	Number of Items after validity test
Academically Cultured Excellence Competency among TVET Educators	Technical Competency	Knowledge	10	9
		Skills	11	9
	Pedagogical Competency	Understanding	5	5
		Transformation	8	8
		Action	5	5
		Assessment	6	6

		Reflection	3	3
	Personal Competency	Teaching Efficacy	6	6
		Teaching Creativity	10	10
		Oral Communication	15	10
		Work Ethics	8	8
		Inner Motivation	10	10
		Emotional Intelligence	14	13
	Academically Cultured Excellence	Authority	8	6
		Integrity	9	8
		Professionalism	7	7
	Total		**134**	**130**

The qualitative approach involved Focus Group Discussions (FGDs). FGD was attended by 12 experts in the Vocational and education field. This effort is aimed at designing an Academically Cultured Excellence Competency among TVET Educators for vocational education teachers, along with its stages. The FGD was facilitated by a moderator and involved contributions from various stakeholders. TVET experts provided theoretical perspectives on global frameworks for teacher digital competencies, training institution representatives discussed their experience in designing and evaluating professional development programs, while other experts shared practical insights on high institution TVET challenges such as infrastructure constraints, student readiness, and individual barriers to maintain their skills and knowledge in Teaching and Learning TVET. The analysis of data from the focus group discussions (FGDs) indicated a substantial gap between the existing model of competency and Excellent skills of vocational school teachers and the demands of contemporary learning. This gap highlights the need for clear, progressive, and adaptable digital competency standards that can accommodate diverse field contexts. These findings informed the development of a digital competency standard model for vocational educators, aligned with the Australian Qualifications Framework (AQF).

3. Study Findings And Discussion

This aligns with findings by Cattaneo et al. (2022), who reported similar digital gaps among vocational educators in Europe. This study involved 210 respondents with various categories determined by the researcher. The respondent categories include sex (man or woman), age (<25, 26-30, 31-35, 36-40, >40), education degree (Diploma, Bachelor, Master, Doctor), teaching duration in years (0-5, 6-10, 11-15, 16-20, >20), and field of expertise (Technology and Engineering, Energy and Mining, Information and Communication Technology, Agribusiness and Agrobiotechnology, Maritime, Business and Management, Tourism, Arts, and Creative Industries). Detailed information on the respondents involved in the study is presented in Table 2.

Table 2 *Demography results*

Demography	Category	Frequency	Percentage (%)
Gender	Male	6	50
	Female	6	50
Ethnicity	Malay	12	100
	Indian	-	-

	Chinese	-	-
Highest Academic Qualification	PhD	11	91.67
	Master's Degree	1	8.33
	Bachelor's Degree	-	-
	Diploma	-	-
Type of Employment	Government	12	100
	Private	-	-
Field of Expertise	Hospitality	3	25
	Electrical/Electronics	4	33.33
	TVET Education	1	8.33
	Building Construction	1	8.33
	Mechanical Engineering	2	16.67
	Sensor, Instrumentation, Optical Fiber	1	8.33
Institution	UTHM	3	25
	UMPSA	9	75

3.1. Technical skills

Technical skills refer to TVET educators' ability to demonstrate practical competencies and apply domain-specific knowledge in real-world settings. These skills involve hands-on expertise, including the operation of tools, machinery, and equipment in line with industry practices. Mastery of technical skills ensures that educators can deliver authentic, industry-relevant instruction to students (Rauner & Maclean, 2019). Furthermore, technical skills encompass the ability to perform tasks such as troubleshooting, installing systems, and performing maintenance procedures. These competencies are essential in enabling educators to guide students in solving practical problems systematically and effectively, reflecting actual workplace demands (UNESCO-UNEVOC, 2020). In addition, technical skills include the ability to integrate theoretical knowledge into practical applications. Educators must bridge the gap between conceptual understanding and hands-on performance to ensure that students can transfer learning into real-life situations (OECD, 2021). Technical skills also involve demonstrating procedures during practical teaching sessions. Effective demonstration enhances student comprehension and allows learners to observe correct techniques, thereby improving skill acquisition and reducing errors during practice (Grosch, 2017). Finally, technical skills help ensure that teaching practices remain aligned with current industry standards. Continuous updating of technical competencies is necessary for educators to remain relevant and to produce graduates who are work-ready and competent (World Bank, 2021).

3.2. Pedagogical Skills

Pedagogical skills refer to educators' ability to plan, implement, and evaluate teaching and learning processes effectively. These skills involve understanding curriculum requirements and aligning teaching strategies with learning outcomes to ensure meaningful student engagement (Shulman, 1987). Pedagogical skills also include transforming subject matter into forms that are understandable and accessible to students. This involves selecting appropriate teaching methods, designing instructional materials, and adapting content based on students' needs and abilities (Koehler & Mishra, 2009). Moreover, pedagogical skills encompass the implementation of teaching strategies that promote active learning, such as group discussions, problem-based learning, and hands-on activities. These approaches enhance student participation and foster deeper understanding of the subject matter (OECD, 2020). Assessment and evaluation are also integral components of pedagogical skills. Educators must design

appropriate assessment tools and evaluate students' performance to ensure that learning objectives are achieved effectively (CEDEFOP, 2020). Pedagogical skills involve reflective practices, where educators continuously evaluate and improve their teaching approaches. Reflection allows educators to identify strengths and weaknesses in their instructional methods and make necessary improvements (UNESCO, 2021).

3.3. Personnel skills

Personnel skills also encompass emotional intelligence, which enables educators to manage their emotions and respond appropriately to students' needs. Emotional awareness and regulation are crucial in maintaining a conducive learning environment (Boyatzis, 2008). In addition, personnel skills include strong work ethics, such as responsibility, discipline, and commitment to professional duties. These qualities ensure that educators perform their roles with integrity and accountability (OECD, 2021). Personnel skills further involve creativity in teaching, where educators employ innovative approaches and integrate technology to enhance learning experiences. Creative teaching practices help stimulate students' interest and engagement in the learning process (UNESCO, 2022). Lastly, intrinsic motivation plays a significant role in sustaining educators' passion and dedication towards teaching. Motivated educators are more likely to pursue continuous improvement and contribute positively to students' development (World Bank, 2020).

3.4. Excellent Academic Culture

An academically cultured environment of excellence among TVET educators is fundamentally shaped by the integration of technical, pedagogical, and personnel skills. Technical skills ensure educators possess industry-relevant expertise and can deliver practical instruction aligned with current workplace standards, thereby enhancing the authenticity of learning experiences. Pedagogical skills enable educators to transform technical knowledge into meaningful, structured learning processes through effective instructional design, implementation, and evaluation, including continuous reflective practice. Meanwhile, personnel skills such as emotional intelligence, intrinsic motivation, communication, and work ethics play a crucial role in sustaining a positive learning environment and fostering professional behaviour among educators. The synergy of these three competencies contributes to the development of a holistic academic culture characterised by integrity, professionalism, and credibility, which are essential elements in achieving excellence in TVET education. This integrated competency approach not only supports student learning outcomes but also strengthens institutional quality and responsiveness to industry demands (OECD, 2021; UNESCO, 2022; CEDEFOP, 2020; World Bank, 2021; European Commission, 2020).Overall, these findings align with the principles of human capital theory (Becker, 1993; Selane & Odeku, 2024), which posits that investment in education and training enhances employability and productivity. They also echo previous empirical research (Y. Jing et al., 2022; Mendoza et al., 2025), affirming that well-developed technical and vocational skills serve as key drivers for successful labour market integration.

Figure 1 shows that the *Excellent Academic Culture Competency Model* demonstrates that the development of excellent academic culture among TVET educators is not limited to technical expertise alone, but rather depends on the integration of technical competency, pedagogy, professionalism, personnel competency, and academic integrity. Based on the figure, technical competency is the foundational element, as educators must possess strong knowledge and practical skills in operating tools, explaining procedures, troubleshooting problems, and conducting effective teaching activities. This aligns with recent studies that emphasise that mastery of content knowledge and technical skills is a critical determinant of effective TVET teaching and student employability outcomes. Furthermore, vocational educators with strong technical competencies are better able to integrate theory with industry practices, thereby enhancing authentic learning experiences for students (Mohd Noor et al., 2024; Chotijah et al., 2025).

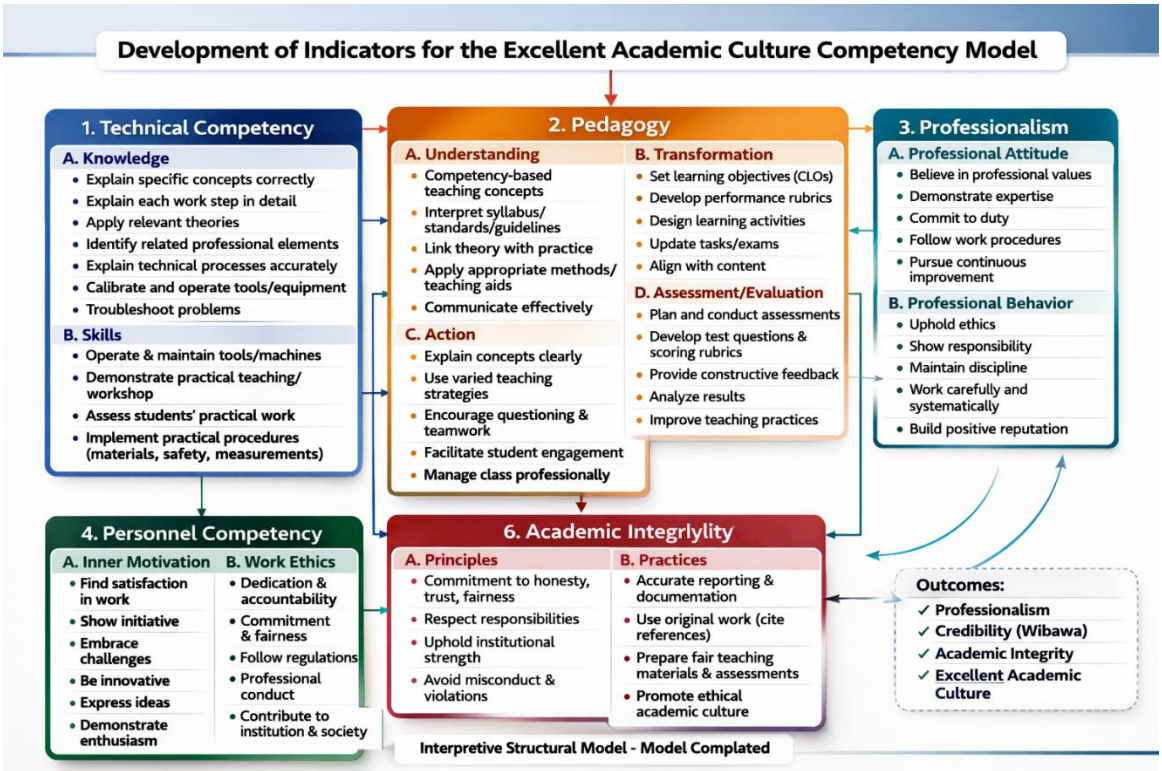
In addition, the pedagogy component of the model highlights the importance of competency-based teaching approaches that involve understanding, transformation, action, and assessment. The model suggests that educators should not only understand curriculum standards and CLO alignment but also transform knowledge into meaningful learning activities through diverse teaching strategies, classroom engagement, and constructive assessment practices. This finding supports contemporary TVET literature, which argues that pedagogical competency has become increasingly important in the era of digital and industry transformation, especially with the integration of technology and AI-assisted learning environments. Effective pedagogical competency enables educators to facilitate higher-order thinking, collaborative learning, and practical problem-solving skills among students (Goh & Hamid,

2026; Mohd Noor et al., 2024).

The professionalism and personnel competency dimensions further strengthen the model by emphasizing work ethics, commitment, accountability, innovation, and positive attitudes among educators. The figure illustrates that professionalism is not merely reflected in expertise but also in ethical conduct, discipline, and continuous improvement. Simultaneously, personnel competency, such as motivation, initiative, and enthusiasm, contributes to educators' willingness to adapt to institutional and industrial changes. Previous studies have highlighted those professional values and self-development are essential for ensuring sustainable TVET quality, particularly in preparing educators to respond to evolving workforce demands and educational reforms (ChaaCha, 2024; Philogene et al., 2024).

Finally, the inclusion of academic integrity as a core component reflects the growing need for ethical academic practices within higher education institutions. The model demonstrates that honesty, trust, fairness, accurate reporting, originality of work, and ethical assessment practices are fundamental in establishing credibility and sustaining an excellent academic culture. Academic integrity is increasingly significant in the current digital era, where educators face challenges related to plagiarism, AI-generated content, and the ethical misuse of technology. Therefore, integrating academic integrity within competency development ensures that educators not only achieve professional excellence but also maintain institutional trustworthiness and credibility (Gill et al., 2023; Goh & Hamid, 2026)

Figure 1 Excellent Academic Culture Competency Model



4. Conclusion

The Academic Competency Model Embedded in a Culture of Excellence among TVET educators presents a comprehensive and systematically validated framework derived through the Delphi method, reflecting expert consensus across multiple iterative rounds. The model integrates four principal domains—Technical Competency, Pedagogical Competency, Personal Competency, and Academic Culture of Excellence—which operate as interrelated constructs in shaping effective academic practices.

Pedagogical Competency emerges as the central domain, encompassing five key dimensions: understanding,

transformation, action, assessment, and evaluation. This structure is consistent with established educational frameworks such as Bloom's Taxonomy, which emphasizes the progression from cognitive understanding to higher-order application and evaluation (Anderson & Krathwohl, 2001). Additionally, the model aligns with Pedagogical Content Knowledge, which highlights the integration of subject matter knowledge and pedagogical practice as essential for effective teaching (Shulman, 1986; 1987). The inclusion of evaluation further strengthens the model by incorporating reflective practices and continuous improvement, which are critical in competency-based education.

Technical Competency provides the foundational domain, ensuring mastery of subject-specific knowledge and practical skills, which are particularly crucial in TVET contexts where industry alignment and hands-on expertise are emphasized (UNESCO-UNEVOC, 2013; OECD, 2010). Meanwhile, Personal Competency contributes essential affective and behavioral attributes, including emotional intelligence, motivation, communication, creativity, and work ethics. These attributes are consistent with the affective domain of learning and are widely recognized as key drivers of teaching effectiveness and professional development (Goleman, 1995; Boyatzis, 2008). At the outcome level, the Academic Culture of Excellence—comprising integrity, professionalism, and credibility—represents the internalization of ethical values and professional standards within academic practice. This aligns with the concept of academic integrity as a foundational element of institutional quality and scholarly responsibility (Bretag, 2016; Macfarlane et al., 2014). The integration of these elements reflects a holistic approach to excellence, where competence is not only measured by knowledge and skills but also by ethical conduct and professional identity.

In conclusion, the model contributes both theoretically and practically by offering a multidimensional framework for understanding and developing academic competency among TVET educators. It provides a valuable reference for policymakers, curriculum developers, and higher education institutions in designing competency-based training, enhancing teaching quality, and fostering a sustainable culture of academic excellence.

The next implication is for the TVET education system in Malaysia. Although the Excellent Cultural Academic Competency Model is specific to TVET instructors, the elements contained in this model are open in nature. The resulting model can be a reference and guideline not only for TVET instructors but also can be used by instructors in other higher education institutions. In fact, students can also apply the elements resulting from this study to prepare themselves before venturing into the field of education and also the field of skills. By understanding the basic concepts required for excellent cultural academic competence, the assistance of instructors through teaching and learning strategies can shift students' minds toward producing holistic, entrepreneurial, and balanced TVET graduates.

Rapid changes in the industry and technological sophistication today have affected TVET education. Work processes and teaching and learning methods also move in line with the current technological speed, driven by humans, processes, and technology, to a higher level. Therefore, TVET institutions in Malaysia have taken the initiative to improve the education system by implementing elements of academic competence within an excellent culture that is more science- and technology-based, aligning with the needs of Industry 4.0. In continuation, the findings of this study can inform improvements to the Strategic Plan for Polytechnics and Community Colleges (2018-2025) towards achieving the main strategic thrust: producing holistic human capital.

Therefore, through the model developed, TVET institutions, especially technical universities in Malaysia, and teaching staff should examine and identify the personal competencies needed to achieve excellence in the profession. Training and activities foster academic excellence while improving their respective competencies and expertise for the future of TVET in Malaysia. Therefore, the management, especially in the Higher Education Policy Division, needs to strengthen programs that improve the competence of teaching staff by implementing elements of academic competence with an excellent culture. Therefore, the model produced through the agreement of the expert panel is, in principle, very relevant to be given attention together in the development of academic competence with excellent culture. This is because the competency elements developed are very thorough and focused, making it easy to measure the level of excellence of TVET instructors.

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