INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 14, Issue 9, (2024) E-ISSN: 2222-6990

Challenges in TVET Education in Higher Learning Institutions

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To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v14-i9/22304 DOI:10.6007/IJARBSS/v14-i9/22304

Published Date: 14 September 2024

Abstract

Technical and Vocational Education and Training (TVET) in Higher Learning Institutions (HLIs) is essential for developing a skilled workforce that meets the evolving demands of modern industries, particularly in Malaysia. Despite the government's concerted efforts to enhance TVET, significant challenges persist that hinder the employability of graduates. These challenges include skill mismatches between the education provided and industry needs, negative societal perceptions of TVET, inadequate practical training, and insufficient focus on essential soft skills such as communication and critical thinking. This study employs a quantitative research design, utilizing a stratified random sampling method to distribute surveys among TVET students at Universiti Teknologi MARA (UiTM). The data was analyzed using descriptive statistics to identify key challenges affecting TVET programs. The findings reveal a significant disconnect between curriculum content and industry expectations, inadequate collaboration between academia and industry, and a lack of emphasis on soft skills development within the curriculum. Based on these findings, the study proposes further research into the implementation of personalized learning pathways, continuous competency-based assessments, and strengthened industry partnerships as potential solutions. These measures aim to align TVET education more closely with labor market demands, thereby improving graduate employability and contributing to Malaysia's economic growth and development.

Keywords*:* TVET Education, Higher Learning Institutions (HLI), Challenges, Skill Mismatch, Industry Collaboration.

Introduction

Technical and Vocational Education and Training (TVET) in Higher Learning Institutions (HLI) is essential for producing a skilled workforce that meets modern industry demands. In Malaysia, institutions like Universiti Teknologi MARA (UiTM) aim to bridge the gap between education and employment. Despite significant efforts by the Malaysian government, including the Economic Transformation Program (ETP), the sector still faces numerous

challenges such as skill mismatches, negative perceptions of TVET programs, and inadequacies in practical training.

Efforts by the Malaysian Ministry of Higher Education (MOHE) to enhance TVET program quality and relevance are ongoing (Aqli, Hasan & Sucita, 2019). However, issues like insufficient industry collaboration in curriculum design, outdated educational frameworks, and a lack of standardized oversight persist (Lee, 2020). Furthermore, there is a growing need for soft skills such as communication, critical thinking, and adaptability, which unfortunately are often overlooked in the curricula (Abd Majid, Sharil & Kamaruzaman, 2023).

Challenges in teaching and learning within TVET HLIs are pronounced. Educators face limited resources and outdated equipment, hampering their ability to provide industry-relevant training. There is also a shortage of qualified instructors proficient in both theoretical knowledge and practical skills, further widening the gap between education and industry requirements. Traditional teaching methods that rely heavily on rote learning fail to engage students effectively, leading to a lack of motivation and lower retention rates (Yusop, Rasul & Yasin, 2024).

Competency-based education (CBE) programs, essential in TVET education, often fall short in providing the comprehensive skill sets necessary for graduates to transition smoothly into the workforce. The role of personalized learning pathways and continuous assessment in CBE is crucial for enhancing employability skills. This paper examines these challenges and proposes solutions to enhance TVET programs in Malaysia, aligning them more closely with labor market demands.

Literature Review

The literature review explores primary challenges in TVET HLI education, focusing on curriculum relevance, industry engagement, and the development of technical and soft skills among graduates. It also examines the negative perception of TVET programs and the inadequacies in practical training, highlighting the need for a comprehensive approach to improve these areas.

Challenges in TVET HLI Education, Especially in Teaching and Learning

TVET in HLI faces several significant challenges that impact the effectiveness and perception of its programs. These challenges are multifaceted, involving curriculum relevance, industry engagement, and the development of both technical and soft skills among graduates. One of the primary challenges in TVET HLI education is the mismatch between the skills taught in the classroom and the actual needs of the industry. This gap often results in graduates who are not fully prepared for the demands of the labor market. The lack of industry involvement in the design and delivery of TVET programs exacerbates this issue, leading to a curriculum that does not fully align with current industry standards and expectations (Harun, Rahim & Muhamed, 2023).

Another significant challenge is the negative perception of TVET programs. TVET is often viewed as a less desirable educational pathway compared to traditional academic routes. This stigma can discourage students from enrolling in TVET programs, thereby limiting the pool of

skilled graduates entering the workforce. In terms of teaching and learning, several areas need improvement. The quality of practical training is often inadequate, with insufficient opportunities for students to gain hands-on experience. Despite the emphasis on competency-based education (CBE) programs as a key component of TVET education, many CBE programs fail to provide the comprehensive skill sets necessary for graduates to transition smoothly into the workforce. This is partly due to inadequate support and personalized learning pathways, which are crucial for helping students apply theoretical knowledge in practical settings(Abd Majid, Sharil & Kamaruzaman, 2023).

Moreover, the development of soft skills like communication, teamwork, and critical thinking is often neglected in TVET curricula. While employers are increasingly seeking these skills, many TVET programs remain predominantly focused on technical competencies, overlooking the essential role of soft skills in overall employability (Noor, 2023). Additionally, TVET is vital for acquiring the core competencies required by the job market. It is a program that not only provides technical skills but also highlights sector-specific competencies. Essentially, TVET includes education, training, and skill development across various employment, production, and service industries, as well as promoting lifelong learning (Ismail, Chik & Hemdi, 2021).

The Malaysian government's initiatives, such as the Economic Transformation Program (ETP), aim to bolster the TVET sector by promoting student engagement and improving the quality of education. However, challenges such as limited access to CBE opportunities, outdated educational frameworks, and lack of standardized oversight continue to hinder progress. To address these challenges, it is essential to enhance industry collaboration in curriculum design, update educational frameworks to reflect current industry needs, and improve the quality and accessibility of practical training. Additionally, integrating soft skills development into the TVET curriculum and providing robust mentorship during CBE programs can significantly enhance the employability of TVET graduates. By comprehensively examining these challenges and proposing actionable solutions, this study aims to improve the effectiveness and perception of TVET programs in Malaysia, ensuring they better align with the evolving demands of the labor market.

Competency-Based Education (CBE) for TVET

CBE is an educational approach that focuses on equipping students with specific skills and competencies required for their professional fields. Unlike traditional education models that emphasize time spent in class and completion of coursework, CBE is outcome-based and ensures that students would progress only when they have demonstrated mastery of the required skills (Combéfis, 2023). In the context of TVET, CBE is particularly advantageous as it aligns closely with industry needs, ensuring that graduates possess the practical and technical skills necessary for employment. Advantages of CBE in teaching and learning include personalized learning pathways that cater to individual student needs, continuous assessment that provides ongoing feedback and support, and a strong emphasis on real-world applications and hands-on experience. This approach not only enhances student engagement and motivation but also ensures that graduates are better prepared to meet the demands of the labor market, thereby improving their employability and career readiness (Hassan & Hassan, 2024).

Theoretical Framework for Teaching and Learning in TVET

Kolb's Experiential Learning Theory (ELT) is highly relevant to TVET in Higher Learning Institutions (HLI) in Malaysia. This theory emphasizes the importance of experience in the learning process, proposing that knowledge is created through the transformation of experience. Given the practical nature of TVET, Kolb's theory provides a suitable framework for enhancing the learning experience of students in this sector (Xue, Chen, Miao & Liu, 2021). Kolb's Experiential Learning Theory outlines a four-stage cycle: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. In the context of Malaysian TVET HLI, this cycle can be effectively integrated into the curriculum to enhance both technical and soft skills among students (Sanjabi & Montazer, 2020).

Concrete Experience

In Malaysian TVET institutions, students engage in Concrete Experience through hands-on training and competency-based education (CBE) programs. This stage is crucial as it allows students to directly interact with the tools, machinery, and tasks relevant to their field of study. For example, a student in a mechanical engineering program might work with actual machinery during their practical sessions, gaining firsthand experience in operating and maintaining equipment Hassan & Wai, 2019).

Reflective Observation

After participating in practical activities, students should be encouraged to reflect on their experiences. In the Malaysian context, this could involve discussions or reflective journals where students analyze what they did, what challenges they faced, and how they overcame them. This reflection helps solidify the learning experience and allows students to consider how they can apply their knowledge more effectively in future situations (Kamaruzaman & Zainol, 2012).

Abstract Conceptualization

During this stage, students in Malaysian TVET programs can develop theories or models based on their reflections. Educators can facilitate this by linking practical experiences to theoretical concepts, helping students understand the underlying principles behind their practical work. For instance, a student who has worked on electrical circuits can abstract their practical knowledge into broader concepts of electrical engineering.

Active Experimentation

Finally, students apply their newfound understanding in new situations. In Malaysia, this might involve project-based assignments or further practical sessions where students can experiment with different approaches to solving problems. This active application ensures that students not only understand the theory but can also adapt and apply it in various contexts.

Implementing Kolb's Experiential Learning Theory in Malaysian TVET institutions requires a commitment to providing high-quality practical training and opportunities for students to engage in real-world tasks. It also necessitates a robust system of mentorship and feedback, helping students navigate the complexities of their chosen fields and fostering a deeper understanding of their experiences. By incorporating this theory, Malaysian TVET programs

can enhance their alignment with industry needs, thereby improving the employability of their graduates and meeting the evolving demands of the labor market (Lam & Hassan, 2018).

Research Methodology

The study employed a survey to gather data from students enrolled in TVET programs at UiTM. A stratified random sampling technique ensures a representative sample across various demographics, including age, gender, and CGPA scores. The survey assessed key areas such as communication skills, technology skills, adaptability, self-efficacy, and leadership skills.

Population and Sample

The study population consisted of students enrolled in TVET programs at UiTM. To ensure a representative sample across various demographics, including age, gender, and CGPA scores, a stratified random sampling technique was employed. The target sample size is 191 students, aiming to capture a diverse range of experiences and perspectives. The demographic criteria for respondents are detailed in Tables 1, 2, and 3, which outline the distribution by age, gender, and completion of internships or work placements, respectively.

Data Collection Method

A survey was employed as the primary data collection method to obtain a comprehensive understanding of the TVET education landscape at UiTM. The survey was designed to gather insights from students regarding their educational experiences, focusing on their views on the relevance and quality of their training, the adequacy of practical experiences, and the development of both technical and soft skills. This approach provided a detailed picture of the students' perceptions, highlighting areas of strength and identifying aspects that may need improvement.

The survey assessed several key areas to provide a comprehensive understanding of the students' experiences in the TVET programs. These key areas included communication skills, focusing on students' confidence in their ability to communicate effectively. Additionally, the survey evaluated technology skills, particularly students' competence in using technology and their readiness for Industry 4.0. Adaptability skills were also assessed, measuring students' ability to solve problems, adapt to new situations, and work under pressure. Furthermore, the surveys examined self-efficacy skills, encompassing organizational skills, punctuality, and a willingness to learn. Lastly, leadership skills were evaluated, focusing on students' ability to lead, delegate tasks, and maintain healthy relationships. These areas were covered comprehensively in the survey, and the findings are detailed in Table 4, which provides valuable insights into the current state of TVET programs at UiTM. The data collected helps understand how well these programs meet students' needs and prepare them for future employment.

The detailed findings from the surveys, including the challenges faced by lecturers and students in teaching and learning GE skills are summarized in Tables 4 ,5, and 6. These tables highlight the primary obstacles, such as limited curriculum time, lack of resources, insufficient industry connections, and student disengagement. The analysis of these challenges is crucial for informing potential enhancements to align education more closely with industry demands and improve overall training effectiveness.

Data Analysis

This section presents a detailed analysis of the data collected to understand the challenges in TVET education at UiTM. The aim is to identify specific areas where students experience difficulties and assess the overall effectiveness of TVET programs in addressing these challenges. The data analysis focused on several key areas critical to TVET education: communication skills, technology skills, adaptability skills, self-efficacy, leadership skills, in-class activities, real-world incorporation, out-of-class experiences, industry partnerships, and the specific challenges faced by lecturers in teaching employability skills.

By examining the mean scores from survey responses, the analysis provides insights into how well TVET programs are performing in these areas and highlights where improvements are needed. The findings from this analysis will help in formulating actionable solutions to enhance the effectiveness and perception of TVET education, ensuring that it aligns more closely with the evolving demands of the labor market. In the following sections, we present the mean scores for each category and discuss the implications of these findings in the context of TVET education challenges at UiTM.

The first section presented in the data analysis focuses on the demographic characteristics of the study population, specifically age, gender, and CGPA scores among students at UiTM. The objective is to provide a clear understanding of the respondents' background, which is essential for interpreting the findings related to the challenges in TVET education within Higher Learning Institutions (HLIs). The demographic data is summarized in Tables 1, 2, and 3.

Table 1
Distribution by age

		Frequency	Percent
Valid	21 – 23	95	56.2
	24 and above	74	43.8
	Total	169	100.0

Based on Table 1, the age distribution reveals that most respondents (56.2%) are between 21 and 23 years old, while the remaining 43.8% are 24 years and above. This indicates a diverse age range among the students participating in the study. Additionally, Table 2 shows that a higher percentage of respondents are female (60.9%) compared to male (39.1%), suggesting that female students are more represented in the sample. Finally, Table 3 indicates that most respondents have a CGPA above 3.50 (65.7%), followed by those with a CGPA between 3.00 and 3.49 (30.8%). Only a small fraction of the respondents has a CGPA below 3.00, reflecting a generally high academic performance among the students surveyed.

Table 2
Distribution by gender

		Frequency	Percent
Valid	Male	66	39.1
	Female	103	60.9
	Total	169	100.0

Table 2 shows that a higher percentage of respondents are female (60.9%) compared to male (39.1%), indicating that female students are more represented in the sample.

Table 3
Distribution by CGPA scores

		Frequency	Percent
Valid	< 2.50	3	1.8
	2.51 – 2.99	3	1.8
	3.00 – 3.49	52	30.8
	> 3.50	111	65.7
	Total	169	100.0

Based on Table 3, the CGPA distribution reveals that most respondents (65.7%) have a CGPA above 3.50, followed by 30.8% of respondents with a CGPA between 3.00 and 3.49. Only a small fraction of the respondents has a CGPA below 3.00. This indicates a generally high level of academic performance among the students surveyed.

In the context of Technical and Vocational Education and Training (TVET), the development of Graduate Employability (GE) skills is paramount. These skills, which include communication, teamwork, critical thinking, and problem-solving, are essential for students to excel in the workforce. However, integrating these skills into TVET curricula presents several significant challenges. Recognizing and addressing these challenges is crucial for enhancing the quality and effectiveness of TVET programs, thereby ensuring that graduates are well-equipped for employment. Graduate Employability skills are not just about technical prowess but also about preparing students to navigate complex work environments, adapt to changing job demands, and collaborate effectively with others. Despite their importance, the incorporation of these skills into TVET education is often fraught with difficulties. These difficulties can stem from a variety of factors, including curriculum design, resource availability, lecturer preparedness, and student engagement.

To gain a deeper understanding of these issues, a comprehensive survey was conducted among TVET students to capture their perceptions of the challenges faced by their lecturers in teaching GE skills. The survey results, summarized in Table 4, provide valuable insights into the specific obstacles that educators encounter. These insights are invaluable for policymakers, curriculum developers, and educators who aim to improve the delivery of GE skills in TVET programs. By examining the data in Table 4, stakeholders can identify the most pressing issues and develop strategies to address them, ultimately enhancing the employability of TVET graduates and better aligning educational outcomes with industry needs.

Table 4
Biggest challenges faced by lecturers in teaching GE skills in TVET programs as perceived by students

		Limited time within the curriculum to focus on employability skills	Lack of resources and materials for teaching employability skills	Insufficient training or professional development for lecturers in this area	Difficulty in integrating practical, hands-on activities into the curriculum	Limited industry connections or partnerships for real-world exposure	Student disengagement or lack of motivation towards employability skills
N	Valid	65	17	15	6	43	23
	Percent (%)	38.5	10.1	8.9	3.6	25.4	13.6

Table 4 presents the most significant challenge identified by 38% of respondents is the limited time within the curriculum to focus on employability skills. Conversely, only 3.6% of respondents perceive difficulty in integrating practical, hands-on activities into the curriculum as the least challenging aspect for lecturers.

Table 5 below, presents the challenges faced by students in learning GE skills within the TVET programs at UiTM. The data reflects students' perceptions of their lecturers' effectiveness in teaching these skills and highlights various obstacles encountered in the process. The table provides mean scores and standard deviations for different items, illustrating the students' level of agreement with statements about their learning experiences and the challenges their lecturers face. This analysis is crucial for identifying areas where improvements can be made to enhance the overall quality and relevance of TVET education at UiTM.

Table 5
Challenges faced in learning GE skills

	N	Mean	Std. Deviation
I believe my lecturers are well-equipped in teaching graduate employability skills in my TVET program.	169	5.27	.935
I feel that lecturers encounter difficulties in aligning course content with the evolving needs and expectations of the job market.	169	5.18	1.111
I believe lecturers face challenges in keeping up to date with industry trends and practices to adequately teach employability skills	169	5.24	.916
I feel that lecturers encounter resistance or lack of support from academic departments or administration in implementing strategies to teach employability skills.	169	5.22	1.032
Valid N (listwise)	169		
Scale 1-7			

The analysis of Table 5 highlights the challenges perceived by students in learning GE skills, while Table 6 offers a deeper understanding of these challenges and their implications. This comprehensive view underscores the need for regular curriculum updates, ongoing professional development for lecturers, and stronger institutional support. By addressing these significant challenges, UiTM can enhance the relevance and effectiveness of its TVET programs, better preparing students for the job market.

Salient Findings

The salient findings from the survey conducted among TVET students at Universiti Teknologi MARA (UiTM) reveal several significant challenges impacting the effectiveness and perception of the TVET programs. One of the primary challenges identified is the alignment of course content with job market needs. Students perceive a substantial gap between what is taught in the classroom and the actual requirements of the job market, as evidenced by a mean score of 5.18 (SD=1.111). This misalignment suggests that while efforts are made to ensure the curriculum is relevant, they are not fully effective, potentially affecting the employability of graduates.

Another significant challenge highlighted by the survey is the difficulty lecturers face in keeping up with industry trends. The mean score for this challenge is 5.24 (SD=0.916), indicating that although some lecturers are aware of industry developments, there is considerable room for improvement. The variability in students' perceptions suggests that not all lecturers are equally current with industry practices, which can reduce the relevance of the education provided and impact students' preparedness for modern workplaces. Additionally, there is a perceived lack of support from academic departments, which hinders the effective teaching of employability skills. This challenge received a mean score of 5.22 (SD=1.032), highlighting the institutional barriers that lecturers face in implementing strategies to teach these essential skills. The inconsistency in support across different

departments can impede the adoption of innovative teaching methods and necessary curriculum improvements.

These findings underscore the critical need for regular curriculum updates, ongoing professional development for lecturers, and stronger institutional support. Addressing these issues is essential for enhancing the overall quality and relevance of TVET programs at UiTM, ensuring they meet industry needs and improve the employability of their graduates.

Discussions and Conclusion

The study highlights several critical challenges facing TVET education at UiTM, which are essential to address for enhancing the effectiveness and relevance of these programs. Key issues identified include the alignment of course content with job market needs, keeping up with industry trends, and obtaining sufficient support from academic departments. At this point of the discussion, Kolb's Experiential Learning theory could be referred in determining the way forward in improvising the current practices that face the identified challenges. As suggested earlier, Kolb's Experiential Learning Theory (ELT) is highly relevant to TVET in Higher Learning Institutions (HLI) in Malaysia as it emphasizes the importance of experience in the learning process. Given the practical nature of TVET, Kolb's theory provides a suitable framework for enhancing the learning experience of students in this sector (Xue, Chen, Miao & Liu, 2021).

First, there is a significant gap between the skills taught in TVET programs and the actual requirements of the job market. As stated in the literature, fulfilling the demand of the job market or the industry is one of the main purposes of any TVRT program (Noor, 2023). This misalignment, as perceived by students, suggests that while some efforts are made to ensure the curriculum is relevant, these efforts are not fully effective. Addressing this gap is crucial to improving the employability of graduates and ensuring that they are well-prepared to meet the demands of modern industries (Abd Majid et al, 2023).

Second, lecturers face challenges in staying updated with industry trends and practices. Although some lecturers are aware of current industry developments, there is considerable room for improvement as exposure to the industry is paramount in training future TVET graduates (Hasan & Hasan, 2024). Providing ongoing professional development and training opportunities for lecturers is vital to ensure they can deliver up-to-date and relevant education that aligns with industry needs (Sanjabi & Montazer, 2020).

Third, there is a perceived lack of support from academic departments, which hinders the effective teaching of employability skills. The variability in support across different departments can impede the implementation of innovative teaching methods and necessary curriculum improvements. Strengthening institutional support and fostering a culture of collaboration and innovation within academic departments are essential steps towards overcoming this challenge (Harun et al, 2023).

To address these issues, the study recommends regular curriculum updates, continuous professional development for lecturers, and stronger institutional support. By implementing these recommendations, UiTM can enhance the overall quality and relevance of its TVET

programs, better preparing students for the job market and improving their employability. In conclusion, tackling the identified challenges will require concerted efforts from all stakeholders, including educators, industry partners, and academic administrators. By working together, they can create a more dynamic and responsive TVET education system that meets the evolving needs of the labor market and supports the development of a skilled and adaptable workforce.

Co-Author Contributions

Author 1 was responsible for the overall write-up of this paper, Author 2 and 4 contributed in terms of the final discussions and language editing and Author 3 administered the survey and wrote the Literature Review.

Acknowledgements

The authors would like to extend their gratitude to Universiti Teknologi MARA Cawangan Selangor for the funding of this research under the Dana UCS (ref: 600-UITMSEL(PI.5/4)(118/2022). A special thanks also to the participating TVET program and all the 169 respondents who successfully completed the online questionnaire.

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