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A Review of Students Self-Efficacy for Work-Based Learning (WBL) in Technical and Vocational Education and Training (TVET) Programmes

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Abstract

This systematic literature review discussed work-based learning (WBL) in Technical and Vocational Education and Training (TVET) programs. WBL is an educational strategy that integrates real-world work experiences with traditional classroom learning. These programmes aim to bridge the gap between academic learning at the institutions and the demands of the workplace in industry, helping students develop a deeper understanding of their chosen field and enhance their employability, which is directly applicable to their future careers. The focus of this study was on the self-efficacy of students in the WBL programme, which is a component of TVET education in Malaysia. This systematic literature review analysed 10 articles from Scopus, Google Scholar, and ScienceDirect. These findings demonstrate the importance of improving and further developing the WBL program to ensure that graduates from the TVET field have high marketability and employability. These findings reveal that there is a need for further research on students' self-efficacy for WBL programmes in Malaysia.

1. Introduction

In Malaysia, Technical and Vocational Education and Training (TVET) is carried out via educational programmes that have the objective of equipping students with practical skills, technical knowledge, and necessary competences to fulfil the requirements of the industry and labour market (Che. Hassan et al., 2020; Hassan et al., 2020; MoE, 2013). The implementation of TVET in Malaysia involves a partnership between TVET institutions, the Malaysian Ministry of Education (MoE), the Ministry of Human Resources, and the Skills Development Department (JPK). This collaboration aims to ensure that the curriculum offered by TVET institutions is in line with the requirements of industries and enhances the employability of graduates (Mat Jam & Puteh, 2023; Md Yusoff et al., 2020). Furthermore, the initiatives to enhance the reputation and appeal of Technical and Vocational Education and Training (TVET) in Malaysia, along with the focus on enhancing the digital skills, entrepreneurship, and soft skills of TVET students, contribute significantly to the advancement of vocational education and training in the country (Mohd Nawi & Mohd Anuar, 2023; Saari et al., 2021).

TVET in Malaysia has seen significant growth in recent years, with a heightened emphasis on addressing the country's economic and labour market requirements. The government's dedication to the widespread implementation of TVET and the enhancement of the quality of TVET programmes is demonstrated through the establishment of institutions such as technical schools and vocational training centres. Additionally, efforts are being made to enhance facilities and provide training for teachers in this field (Che Hassan et al., 2020). The 10th

Malaysia Plan to the 12th Malaysia Plan demonstrates the government's ongoing dedication to enhancing the technical and vocational education system in Malaysia. This is achieved through various initiatives, including expanding student opportunities, fostering collaboration with industry, and reforming the curriculum(Che Omar, 2020; Economic Planning Unit, 2010, 2016). The 12th Malaysia Plan, effective from 2021, focuses on the extensive overhaul of TVET to enhance its quality and competitiveness. It aims to integrate sustainability aspects and provide a cohesive curriculum that aligns with industry and global requirements (Economic Planning Unit, 2021). TVET in Malaysia has a significant impact on employment, economic development, and the acquisition of technical skills by people (Subri et al., 2022; Yunos, 2023).

The Work-Based Learning (WBL) approach in TVET in Malaysia is a proactive step to increase the relevance and quality of vocational education while emphasizing the integration of learning in the real context of the industry (Hashim et al., 2022). By integrating theory with practical application in the workplace, WBL provides students with the opportunity to gain valuable hands-on experience, shaping them into a skilled workforce ready to face the challenges of the industrial world (Mohamad et al., 2021). The implementation of WBL in TVET Malaysia shows the determination to align the curriculum with the real needs of the local industry (Ministry of Higher Education Malaysia [MOHE], 2020). Close cooperation between TVET institutions and industry is a key element to ensure the effectiveness of the WBL program. Research by Raihan (2014) shows that strong collaboration with industry can make a significant contribution to improving the quality of vocational education.

The well-structured WBL modules also focus on practical aspects relevant to industry needs. Competence in planning and organizing WBL modules is critical to ensure students get the maximum benefit from the workplace learning experience (Dogara et al., 2020). The importance of formal recognition of achievements in WBL is highlighted by Subri et al. (2022), who underlines that a clear and industry-recognized certification system increases students' competitiveness in the job market. This emphasizes the need to involve employers in the process of assessing and certifying student abilities. Supervision and mentoring in the workplace are key factors that play a role in ensuring the successful implementation of WBL. In a study by Mohabuth and Ahmad (2015), it is emphasized that a positive supervisor-student relationship and ongoing mentoring support have a positive impact on student development in the workplace. In addition, the development of soft skills through WBL also received attention in the context of Malaysian TVET. A study by Ali and Mahmod (2018) showed that workplace learning helps in the formation of skills such as collaboration, communication, and initiative.

1.1 TVET in Malaysia

Technical and Vocational Education and Training (TVET) in Malaysia refers to an educational framework or program designed for the development of practical skills, technical knowledge, and competencies required for various industries and jobs (Che Hassan et al., 2020; KPM, 2013; Muhamad Sanusi et al., 2019). TVET aims to equip students with practical training and industry-related skills to improve their marketability and meet the demands of the job market and offers programs at various levels of education, including secondary schools, vocational colleges, and training institutes covering various study programs such as engineering, automotive, information technology, hospitality, healthcare, and more. According to (Saari et al., 2021) four strategic aspects that can be used as a guideline to develop TVET students' skill sets are empowering digital skills, adept at using high-impact technology, having an entrepreneurial mindset, and also skilled workers who have soft skills as well as technical skills. TVET programs in Malaysia combine theoretical knowledge with practical training, often incorporating WBL opportunities such as apprenticeships or industrial training. TVET emphasizes practical training and industry-relevant skills to increase graduates' competitiveness and meet job market demands (Che Hassan et al., 2020; MoE, 2013).

The Malaysian government, through various ministries and agencies, is the main driving force in the formation development, and coordination of TVET initiatives. The Malaysian Ministry of Education (MoE), the Ministry of Human Resources and the Skills Development Department (JPK) are among the main entities involved in supervising and regulating the TVET program to meet the needs of the industry (Mat Jam & Puteh, 2022; Md Yusoff et al., 2020). To ensure the quality of education can produce graduates who are ready to work, TVET in Malaysia is designed in collaboration with industry partners (MOHE, 2020). Close links between TVET institutions and employers help align the curriculum with industry needs, ensuring graduates have the skills required by the job market (UNESCO-UNEVOC,2021). Industry partnerships and collaborations with institutions also facilitate internships and job placement opportunities for TVET students (Hashim et al.,2022). TVET in Malaysia has developed over the past few years and there is an increased emphasis on increasing the status and attractiveness of TVET in Malaysia in response to the changing needs of the country's economy and workforce (Yusoff & Abdullah,2021). The country has had a TVET education system for more than three decades. Malaysia is a developing country that is constantly improving its TVET system to meet the demands of the industry (MOHE,2020). The importance of TVET education as an additional and complementary component to normal education is increasingly widely acknowledged (Mohd Nawi & Mohd Anuar, 2023). The establishment of TVET institutions such as technical schools and vocational training centers in this country reflects the government's

commitment to widely introduce TVET to Malaysian youth to produce a skilled workforce. These schools provide technical education and training mainly in skills. Various efforts have been made to improve the quality of the TVET program by upgrading facilities and facilities, improving teacher training, and promoting lifelong learning that can have a positive impact on the country's economic growth (Che Hassan et al., 2020).

In addition, the Malaysian Education Development Plan (Higher Education) 2015-2025 outlines a strategic plan and initiatives to strengthen TVET in the country which aims to create a skilled workforce that can contribute to economic development and address skills gaps (Jaludin et al., 2020; KPM, 2015; Ngah et al., 2024). The National Craft Training and Certification Board (LLPPKK) was established in 1971 to facilitate the implementation of high quality TVET. In 1989, LLLPKK underwent reorganization and was named the National Vocational Training Council (MLVK) where its goals in terms of quality were maintained (Rasul et al., 2015; Saari et al., 2021; Economic Planning Unit, 1990). MLVK was later transformed into the Skills Development Department (JPK) under the Ministry of Human Resources in 2006, as outlined in the National Skills Development Act 2006. TVET in Malaysia in the context of the 10th Malaysia Plan to the 12th Malaysia Plan shows the commitment of the Malaysian government to strengthen and improve the technical and vocational education system. Based on the 10th Malaysia Plan (RMK-10) which began in 2011 to 2015 has outlined several major changes in TVET in Malaysia (Che Omar, 2020; Economic Planning Unit, 2010). Initiatives and measures taken such as increasing student access to TVET through increasing the number of vocational schools and institutes.

1.2 Work-Based Learning

Work-Based Learning (WBL) is a learning approach that requires collaboration between universities and industry. This method combines theoretical teaching in the classroom with practical application in industry. The implementation of this approach is in line with the achievement of the first core of the Strategic Plan of the Department of Polytechnic and Community College (JPPKK) 2018-2025 which is to produce quality TVET graduates, as well as the fifth core which is to strengthen community and industry collaboration (Mohd Rashid et al., 2022).

In Malaysia, WBL started in 2007 when Community College established a collaboration with the industry. Both parties signed a memorandum of agreement to work together to create this program. In July 2010, the Polytechnic took over as the second educational institution responsible for implementing the WBL program after the Community College (Watisin et al., 2018). The establishment and implementation of WBL is supervised by the Malaysian Ministry of Education (MoE). The phrase "Work-Based Learning" refers to a situation where education is closely related to industry standards. Through students' hands-on work experience in their respective industry domains, students can learn to use essential skills and perform their duties.

In addition, a strong two-way relationship between educational institutions and industry is especially important when evaluating students involved in WBL programs. Although students are still in their study period, the application of WBL can help students improve critical thinking, problem-solving skills, teamwork, and social skills in addition to improving their emotional intelligence. As a result, this strategy can produce well-rounded graduates for the sector. The next step is to build strong relationships between polytechnics and industry to ensure the design and implementation of this program runs smoothly and meets the learning goals (Mohd Rashid et al., 2022).

1.3 Self-Efficacy

In this study, the level of student efficacy can be understood through the lens of Albert Bandura's self-efficacy theory. Self-efficacy refers to a person's social skills. Bandura (1996) introduced it as a key element in social cognitive theory, which involves cognitive awareness, goal setting, reward, and decision making. This concept also describes a person's confidence in their ability to complete a certain task (Bandura, 1997). This theory views individual behavior as the result of thought and reflection processes. In addition, this theory also affects the way individuals learn. Individuals with high self-efficacy tend to be better able to face challenges and achieve their goals in life, both in the short and long term. Based on Bandura's self-efficacy theory, four factors influence self-efficacy, which is mastery experience where individuals can complete tasks or challenges because of their experience, physiological and emotional states, that is the individual's perception of their own physical and emotional reactions, vicarious experience by observing others succeed and also social persuasion by getting feedback and encouragement from others. The true strength and ability of individuals emerge when they have a positive attitude and high enthusiasm in living their daily lives (Mohamed & Hassan, 2021). Self-efficacy theory has been applied in various fields such as education, health, sports, and career development. This theory has been studied and used in various fields such as psychology and education. The level of student efficacy from the emotional, physical, and self-confidence aspects is a factor that is emphasized in this theory. Bandura and his colleagues extended this concept of self-efficacy to include career-focused areas. Following that, this concept has been widely used to study an individual's attitude toward a career (Betz, 2000). This theory of self-efficacy has

become a theory that is often used as a reference to evaluate a person's capacity and self-confidence to perform tasks successfully. A person's function or ability may also depend on their cognitive ability (Bandura, 1997).

In addition, individuals with a high level of self-efficacy are also expected to be able to work better and perfectly despite having challenges compared to individuals with a low level of efficacy (Mad Sehat et al., 2022). Individuals who have a high level of self-efficacy will also be able to work more diligently and diligently even if they are not sure of their abilities and abilities (Bandura, 1997). Students with high self-efficacy usually motivate themselves with plans and incentives to prevent themselves from facing failure (Abdul Hamid et al., 2019). Students who have a high level of self-efficacy are studied to have good learning quality and have good self-control in academic achievement. This student will live life as a student by being cooperative and calm. However, the study of (Banchefsky et al., 2019), found that students with high efficacy believe that they are at a low intellectual level. They question more about his ability to get better results or performance. Self-efficacy in students can help them determine choices and efforts to progress, obtain persistence and perseverance shown through their efforts to achieve targets, as well as being able to think positively when facing difficulties (Zagoto, 2019). Edgar et al., (2019) stated that student motivation and self-efficacy have been identified as the main contributors to student success at the higher education level in determining students to continue to stay in the chosen major as well as influencing the success that will be obtained. This is because Teshome Beharu (2018) stated that motivation is also a starting point for students to maintain momentum as well as have a continuous interest in completing the chosen major until the end of learning.

2. Methodology

The methodology used in this study is a systematic literature review that aims to investigate Work-Based Learning (WBL) in Technical and Vocational Education and Training (TVET) Programs. A systematic literature approach was used to collect, evaluate, and synthesize articles relevant to this topic (Xiao & Watson, 2019). Inclusion and exclusion criteria were set to determine relevant literature. Articles that focus on WBL in the context of TVET in Malaysia are the main focus. Literature sources included in the study are articles from Scopus, Google Scholar, and ScienceDirect, which are considered to have wide coverage and are relevant in the field of technical and vocational education and training. Literature identification was done using related keywords such as "Work-Based Learning," "TVET," "university-industry," "self-efficacy," and "Malaysia." A total of 10 articles were selected from those sources, and these articles were then analyzed in depth to obtain a comprehensive understanding of WBL in the context of TVET in Malaysia.

In addition, the selected articles were analyzed to identify the main findings related to the implementation of WBL in TVET programs in Malaysia. This analysis involves evaluating the quality of methodology, conceptual understanding, and research results that are relevant to the purpose of the study. The findings from the analyzed articles were synthesized to compile a comprehensive overview of the implementation of WBL in TVET programs in Malaysia. Aspects such as importance, challenges, and the need for further research are identified based on findings from the literature that has been analyzed. Using a systematic literature methodology, this study provides an in-depth understanding of the current state of WBL in the context of TVET in Malaysia and outlines the need for further research in this area.

3. Result and Discussion

From the analysis, there are 10 articles and journals discussed about WBL included in this systematic review. A detailed and systematic summary of each highlighted article in tabular form. Among the things prioritized in the study highlights are the study methodology, population, and findings according to the author. This step is also the 2nd step after identifying appropriate articles in the process of implementing a systematic literature review. The findings for the 2nd step are shown in Table 1. Table 1 is a systematic comparison of WBL.

Table 1 *A Systematic comparison of WBL*

Writer	Title	Methodology	Population	Findings
(Mohd Rashid et al., 2022)	Readiness of Industry Facilities in the Implementation of Work-Based Learning (WBL) for Polytechnic Students in Malaysia	Quantitative	Population - 27 industries. Small population (N < 100)	The results of this study found industry readiness at a high level and a positive and significant correlation between institutions and industry
(Mohamad et al., 2022)	Implementation of Work Based Learning (WBL) Bachelor's Degree Program in	Mixed-method (quantitative & qualitative)	90 WBL students, 45 mentors (quantitative)	The results of the study show that through a clear implementation process and robust evaluation,

	Electronic Engineering Technology (Medical Electronics) with Industry Honors. A Case Study		3 experts academics and 4 industry experts (qualitative)	students can gain excellent knowledge, skills, and behavior
(Jackson et al., 2022)	Employer Development Of Professional Capabilities Among Early Career Workers And Implications For The Design Of Work-Based Learning	Quantitative	306 business owners, managers, and human resource practitioners	The results of the study reinforce the importance of sociocultural factors, including barriers, in shaping how early career workers learn at work
(Ismail et al., 2021)	Graduate Marketability Through Work-Based Learning In Polytechnics	Qualitative	3 participants	The marketability of graduates through WBL is high
(Zakaria et al., 2021)	Results of Work-Based Learning From the Perspective of Industrial Training Supervisors	Quantitative	52 industry leaders	The WBL outcome level is at a high level and the dominant WBL outcome domain is the domain of professionalism
(Mohamed Zainudin et al., 2018)	Level of Problem-Solving Skills of Bachelor of Manufacturing Engineering Technology (Automotive Design) Students After Experiencing Work-Based Learning	Quantitative	26 respondents	The student's problem-solving skill level is moderate. WBL is an effective learning approach in producing knowledgeable graduates who are ready to enter the job market
(Ismail et al., 2018)	Case Study: Work-Based Learning Facility Management Technology Program Through Polytechnic & Industry Collaboration	Qualitative	2 participants - PUO and UEM Edgenta	The implementation of WBL at the polytechnic was a success and the collaborative relationship with the industry is at an encouraging level
(Mukhtar & Ali, 2018)	Polytechnic Student's Perspective on the Level of Readiness and Skill Level of Industrial Supervisors in the Implementation of Work-Based Learning	Quantitative	102 respondents	The overall findings of this study show that respondents agree that counselors have a high level of readiness and also a high level of counselor skills
(Watisin et al., 2018)	Teaching and Learning on Work-Based Learning (WBL) Program in Malaysia: Issues and Challenges in Industries	Qualitative	9 participants	The results of the study found that the teaching and learning style of industrial instructors is not effective in dealing with WBL program students
(Ali et al., 2017)	Mastering The Soft Skills In The	Quantitative	97 respondents	The findings of the level of soft skills (teamwork, communication, critical

	Implementation Of Work Based Learning Among Community College Students	and problem solving, entrepreneurial, and learning and information management among community colleges were high

Based on 10 journals that have been searched through the database and have been analyzed in Table 1, the researcher did not find any journal articles that studied the self-efficacy of students in WBL. However, the journals selected and analyzed are related to WBL and there are 6 out of 10 journals that can be described and linked to aspects that can influence self-efficacy from the implementation of WBL. Firstly, industry readiness is the main factor that contributes significantly to the successful implementation of the WBL program in the context of TVET (Mohd Rashid et al., 2022). In this context, a ready and supportive work environment is an important aspect that plays a key role in determining the effectiveness of the WBL experience for students. When the industry provides a suitable and supportive environment, students can make optimal use of the practical experience. They can get involved in real situations at work, face real challenges, and engage in tasks relevant to their field of study. In this context, the positive experiences gained by students through WBL in industry can significantly strengthen their confidence or self-efficacy in their ability to succeed in the workplace. When they see that they can face the tasks they face at work with the courage and skills they have, this will increase their self-efficacy with their abilities. This strengthened self-efficacy can then have a positive impact on their motivation, interest, and academic performance as well as their overall professionalism.

Based on research from Mohamad et al. (2022), a clear implementation process and strong evaluation have a positive impact on the development of students' self-confidence in Work-Based Learning (WBL). When students understand in detail how assessment is done and the goals of WBL, they tend to achieve better levels of knowledge, skills, and behaviors. This leads to increased learning effectiveness, as students can clearly see the targets to be achieved and can effectively adjust their learning approach. With a deep understanding of the assessment process, students can also measure their performance and identify areas for improvement. Therefore, providing clear instructions and ensuring thorough assessment is important in building students' motivation and self-confidence, which in turn contributes to their success in meeting workplace challenges. Studies by Jackson et al. (2022) emphasize the importance of social and cultural factors in the development of employees' professional abilities. These factors not only affect social interactions in the workplace but also have a major impact on how students evaluate themselves and measure their self-efficacy against different work challenges. Social aspects such as organizational culture, industry norms, and interpersonal relationships at work can influence a person's perception of their abilities. In addition, cultural conditions that are favorable or unfavorable to a person's self-development also play an important role in shaping their self-efficay and attitude toward career achievement. By understanding the impact of these social and cultural factors, educational institutions and industry can take appropriate measures to support the development of employees' professional abilities and increase their self-efficacy in facing workplace challenges.

Other than that, qualitative research from Ismail et al. (2021) shows that although the marketability of graduates through WBL is high, there are certain obstacles that students may face. Factors such as a challenging work environment, changing skill requirements, and pressure to meet industry expectations may have a negative impact on their level of self-confidence or self-efficacy. When faced with the complex and often challenging reality of work, students may feel doubt about their ability and ability to adapt and succeed in the workplace. Thus, a deep understanding of these obstacles and strategies to overcome them are important in strengthening students' self-efficacy and preparing them to face the challenges in industry confidently and effectively. This study from Zakaria et al. (2021) highlights the dominance in the domain of professionalism as a result of WBL. This supports the idea that through the WBL experience, students not only acquire technical skills that are important in the industry but also develop the professional attitude needed in the workplace. By being exposed to a real work environment and interacting with industry professionals, students can learn about work ethics, effective communication, responsibility, and other aspects that make up a professional personality. This dominance in the domain of professionalism shows that WBL not only provides opportunities for technical learning but also helps to form individuals who are ready to join the world of work with a mature attitude and ready to face challenges in their careers. Although the student's level of problem-solving skills may be moderate after undergoing the WBL program, it is important to recognize that WBL is an effective learning method (Mohamed Zainudin et al., 2018). This is because WBL not only allows students to master technical skills but also helps them practice problem-solving directly in the real context of the workplace. The opportunity to interact with real work situations strengthens their problem-solving skills and fosters self-efficacy in facing challenges in the job market. WBL also broadens their understanding of industry needs and improves their adaptability to a changing work environment. Therefore, while initial skills may be modest, the experience gained through WBL provides graduates with a solid foundation that prepares them to tackle the many challenges of the workplace.

Overall, the findings of these studies have various views on WBL, this discussion discusses the main findings that are related to self-efficacy indirectly because there are no studies that study the efficacy of students in WBL. Therefore, further studies are needed on students' self-efficacy in WBL. These studies provide a holistic view of the importance of WBL in the development of students' self-efficacy in the context of TVET. Through industry readiness, orderly implementation, social and cultural factors, as well as dominance in the aspect of professionalism, WBL has the potential to be the main driver in preparing students for success in the world of work. However, awareness and handling of obstacles that may arise need to be the focus to ensure that this positive effect can be translated into an increase in student self-confidence.

4. Conclusion

The Work-Based Learning (WBL) programme has emerged as a crucial educational technique in Malaysia to synchronise Technical and Vocational Education and Training (TVET) with the requirements of the industry. This study conducts a comprehensive literature review to assess the effectiveness of students in the Work-Based Learning (WBL) programme within the framework of Technical and Vocational Education and Training (TVET) in Malaysia. job-based learning (WBL) is crucial for seamlessly combining real-world job experience with conventional classroom learning, guaranteeing that students not only get theoretical information but also develop practical skills that are directly applicable to their field of study. The study examined 10 articles from reputable sources including Scopus, Google Scholar, and ScienceDirect. The findings indicate that there is a lack of research on the effectiveness of students in web-based learning (WBL). This highlights the importance of conducting future studies to assess the efficacy of WBL students. Such studies are necessary to enhance and advance the WBL programme in technical and vocational education and training (TVET). Ensuring that graduates from the TVET profession possess excellent credentials and competitiveness is crucial in a more competitive work environment. The future success of TVET relies on its capacity to meet industry demands and respond to changes in the dynamic world of work. Ultimately, this research emphasises the need for a stronger dedication to enhancing and refining the Work-Based Learning (WBL) curriculum in Technical and Vocational Education and Training (TVET) in Malaysia. Ensuring effective coordination among educational institutions, industry, and other stakeholders to guarantee that TVET students possess not just academic proficiency but also the requisite practical skills for job success. Furthermore, there is a demand for additional research to determine the effectiveness of students in enhancing the WBL programme to become one of the top TVET programmes. This programme aims to produce highly employable graduates who can contribute to the key factors driving economic and social advancement in Malaysia.

Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

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