

Work-Based Learning to Improve TVET Employability

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Abstract

Work-Based Learning (WBL) is a learning method that combines two learning mediums, namely theoretical learning in educational institutions and practical applications in industry. The combination of these two learning mediums can provide exposure and relevant industry experience according to the field of study that can bridge the mismatch between the needs of the industry with the graduates especially produced by TVET MARA. Through a systematic literature review (SLR), this paper aims to identify the existing WBL methods or models in TVET MARA capable of providing high impact in contributing to the marketability of TVET MARA graduates. Methods or models implemented in other public or private institutions are identified to improve the existing methods or models implemented in TVET MARA. The findings contribute to the expanding body of empirical data indicating that WBL has a favourable influence on TVET. Supporting the adoption of work-based learning (WBL) into mainstream TVET can be a way for policymakers, educators, and public members to contribute to the growth of TVET.

Keywords: *Technical and Vocational Education and Training (TVET), Work-Based Learning (WBL), employability, graduates*

1. Introduction

approved the “2015 TVET Recommendation” in 2016, which among UNESCO's aims is to promote TVET as lifelong learning. It also promotes decent work, inclusive and sustainable economic growth, competitiveness, social fairness, and environmental sustainability. The aim is also to improve the learning process to increase TVET quality and responsiveness to labour market signals. WBL reflects a country's capacity for youth employment, the success of multi-level TVET administration, and the necessity of developing a well-rounded learning process for future employment and personal growth. Malaysia's educational system has extensively used WBL, including in Public Universities, Polytechnics, Community Colleges, Private Universities, and TVET MARA. Work-based learning (WBL) is a method that combines two learning mediums, namely, in institutions and industry.

Work-based learning (WBL) was a paradigm shift in contemporary educational approaches that emerged in Malaysia in early 2007. For many years, Malaysia's educational system has extensively used WBL, including in Public and Private Universities, Polytechnics, Community Colleges, and even TVET MARA. In addition, the Malaysian Qualifications Agency (MQA) has accredited the WBL

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methodology. To ensure the high quality of WBL -based projects, guidelines for good practice of work-based learning in curriculum design were introduced by the MQA in 2015.

The work-based learning (WBL) landscape might look very different from one nation to the next, depending on the prevalent education and training paths and traditions. Because of this, advancing WBL models effectively involves an awareness of and adaptation to the cultural traditions and situations that are distinctive to individual nations. In Oxford Reference, work-based learning (WBL) means developing and accessing skills within and directly related to the workplace; meanwhile, Raelin [1] mentions that WBL blends theory and practice and recognises explicit and implicit ways of knowing individual and communal levels. It understands that learning occurs via tasks and interaction. As Osborne et al. [2] said, work-based education is good for students because it makes it easier for them to get jobs and helps them learn a wide range of job skills. Employers get more work done when new hires are "work-ready," when current employees learn new skills on the job, and when skills learned in the classroom are more easily transferred to work tasks.

This work-based learning (WBL) is a method that combines two learning mediums, namely, in institutions and industry. Through this method, students will be placed in institutions for further theory learning in the industry for practical application learning. According to Bragg, et al. [2], Chernus and Fowler [3], Holzer and Lerman [4] and Rayborn [5], WBL is an example of the integration between academics and employment where WBL students will have the advantage of offering higher salaries in line with the skills acquired while making WBL. Apart from that, WBL can also help increase students' interest and marketability [4]. According to Hasan [6], experience in WBL can help students apply skills needed in the world of work. In addition, WBL helps students build behaviours and attitudes towards the responsibilities that will be borne in the real world of work. Through WBL, students can increase their willingness to work from aspects of non-technical skills development, such as self-efficacy and teamwork [7]. WBL also contribute to increasing students' understanding of specific skills and roles in the actual field of employment [8]. A study by Jackson and Wilton [9] has shown that workplace learning is a good platform for developing self-awareness competencies among students; it also positively influences decision-making skills, opportunity awareness, and transitional learning.

For this reason, the Technical and Vocational Education and Training Majlis Amanah Rakyat (TVET MARA) set out to identify which WBL model is best for improving the marketability of graduates, especially acceptance from the industry. This well-crafted curriculum aims to generate proficient psychomotor employees who also possess the emotional domains demanded by the industry. Additionally, it is anticipated that these graduates would receive incomes more commensurate with the value of their talents.

2. Literature Review

2.1 Overview of Work-Based Learning

Technical colleges, industries, and students all agree that graduates' employability is a key success factor for most programmes in Technical and

Vocational Education and Training (TVET); as a result, strong partnerships between these parties would improve students' access to meaningful work-based learning opportunities that help them develop the soft skills employers seek.

As a consequence of this, many actors in the education and working sectors have maintained to devote a considerable amount of focus to the task of elevating the employability of graduates. Because of globalisation and the economy's shift from one focused on industry and technology to one based on information or knowledge, the skills required to be successful in the workplace in the 21st century have undergone a significant transformation. It was discovered that the development of just technical abilities in the graduates' domains was insufficient for graduates to acquire employment and to be productive while working in such occupations. Today's educational institutions strongly focus on pedagogical practices that encourage students' active participation in the various stages of the teaching and learning process in soft skills.

Technical colleges, industry, and students all agree that employability after graduation is considered as a key success factor for Technical and Vocational Education and Training (TVET) programs. As a result, productive partnerships between these stakeholders will enhance effective work-based experiences to enable students to acquire the soft skills they require. Due to globalisation and the shift of the economy from one focused on industry and technology to one based on information or knowledge, the skills required to succeed in the workplace in the 21st century have undergone a significant transformation. Today's educational institutions place a strong focus on pedagogical practices that encourage the active involvement of students in various stages of the teaching and learning process to cultivate students with soft skills that can be transferred; one of the identified methods is Work-Based Learning (WBL).

Work-Based Learning (WBL) is a type of Contextual Teaching and Learning (CTL) that incorporates work-related activities within the learning materials. With WBL, teaching and learning may be more effective by enhancing students' abilities in the workplace [9]. In addition, WBL combines the learning process with real-world job operations. WBL is often used to refer to anything that can be discovered in the workplace or is directly generated from activities that take place in the workplace. It's nothing more than an effort to break down the classroom walls and bring in the outside world as an additional source of education. The term "work-based learning" (WBL) refers to student learning that aided research and teaching techniques under formal instruction in real-life contexts and as part of a course polishing certain goals. Students are given a sufficient number of opportunities to develop a variety of skills and to make a connection between college and the industry via efforts. The gap between theory and practice is widened by students' opportunity to participate in WBL. This is done so that students may more effectively integrate material that is practical in nature. WBL requires the creation of experiential learning programs that use working in various environments as another component of content.

2.2 Work-Based Learning (WBL) in other Countries

Work-based learning (WBL) refers to all types of learning that occur in an actual workplace. It equips individuals with the skills necessary to seek and maintain employment and further their professional growth [10]. Most work-based

learning takes place through apprenticeships, internships or traineeships, and training on the job. Most of the time, but not always, these types combine learning at work with learning in the classroom. Both at the secondary and the higher education levels, the implementation of Work-Based Learning (WBL) in vocational education has been around for quite some time across the world [11].

Vocational Education and Training (VET) programmes require internships or work placements with many countries' local industries. Placements can be organised in various ways and normally last between 3 and 6 months; this period is around 20% of the whole VET programme. On the other hand, WBL may be an elective in school-based vocational programmes. For example, most vocational students in Israel are enrolled in school-based training programmes.

Vocational education and training (VET) programmes give students the skills they need to enter various professions immediately. Successful completion of such a programme results in a marketable vocational or technical credential. The form and scope of VET programmes are affected by the nature of economic regulation. The state labour market is significant variation between schools and, at times, even among individual students, making it difficult to speak of a single "system" in some countries; students have the option of a VET programme that is primarily delivered in the classroom and others in which the majority of the curriculum is delivered in the workplace. Apart from that, Work-Based Learning (WBL) approaches in a VET programme using many cooperative learning methods [12].

In most OECD nations, vocational programmes prepare students for higher education [13]. Table 1 shows WBL utilisation in OECD-responding nations' school-based vocational programmes.

Table 1. WBL in certain school-based vocational programmes [14].

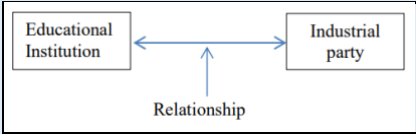
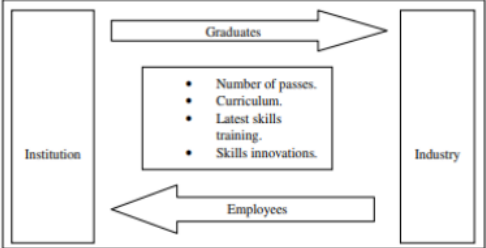
Country	Mandatory	Programme
Sweden	Yes	Required 15 weeks of work-based learning within a VET programme;
Finland	Yes	Mandatory work placement of at least six months during upper secondary vocational programmes (about 20% of the programme's duration);
France	Yes	At least 22 weeks of mandatory work placement for upper secondary VET students
Netherlands	Yes	Students in school-based VET programmes must spend at least 20% of their time in work placements, with an average of around 30%.
Spain	Yes	300 hours (out of a total of 18 months to 2 years)
England (UK)	Yes	The new T-level qualification requires 315 hours (or 20% of the course duration).
Australia	No	Variable according to the jurisdictions and the institutions
Israel	No	Students can undertake workplace visits as an option.

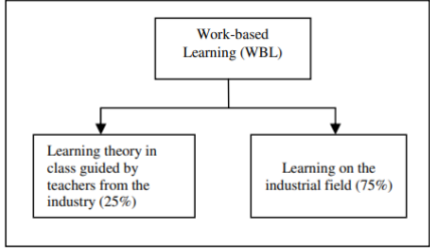
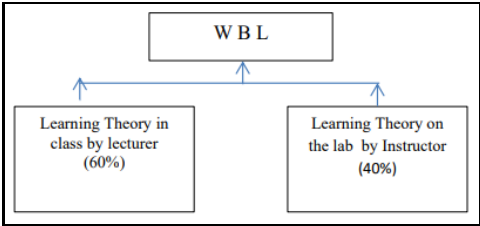
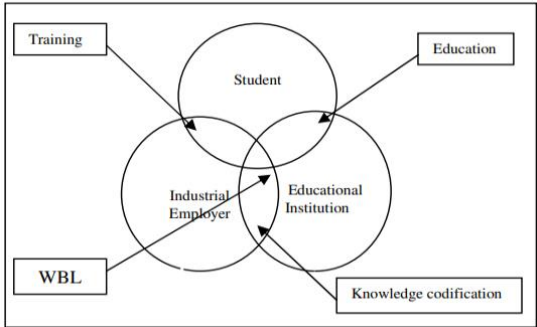
2.3 Work-Based Learning (WBL) Model

Many of the characteristics of WBL programmes, as described by Boud and Solomon [15], can be found in the following five areas: (1) partnerships between educational institutions and external organisations; (2) learner involvement as workers (through the creation of negotiated learning plans); (3) learning programme development based on workplace and participant needs; (4) learning programme adaptation at both the individual and group levels to account for prior knowledge and experience; and (5) lean practises.

Key features in the implementation of a theory-based learning programme are as follows, as outlined in the Work-Based Learning Guide [16]: (1) the programme is coordinated by a "qualified", and dedicated coordinator; (2) students join the programme based on clear work-related attitudes, needs, preferences, and goals; (3) the coordinator creates training places in the working place to provide on-the-job / working place information directly related to the learner; and (4) the coordinator evaluates the program's effectiveness. Evaluation activities assist teacher coordinators in keeping tabs on programmes; Advisory committees ensure gender, ethnicity, and occupation diversity in planning, development, and implementation; and (5) relevant prepared instructions that are closely related to the learner's OJT experience and demands. Employers give monetary remuneration and academic credit awards to students who successfully complete on-the-job training, as stated in (10) and (11), respectively. The WBL training site is in compliance with state or federal legislation regarding employment practises.

Table 2: Existing WBL Models Implemented

Country	Model	Description
Arizona	Arizona Work-Based Learning Resource Guide Model	<p>Through different activities and resources, WBL creates a two-way connection between the educational institution and the business world. [17].</p> 
Ontario	Ontario Relationship Model	<p>Technical or vocational education focuses on institution-industry relationships. Educational institutions enhance talents and design goods based on their own beliefs. The industry's participation in technical schools can't be contested. The institute's technical graduates must fulfil industry standards, regardless of quality. Industrial needs must be met [18].</p> 

<p>Malaysia</p>	<p>Collaboration with industry</p>	<p>Learning theory in the classroom under the direction of instructors who have worked in the industry (25%) and learning in the industry (75%)[19].</p> 
	<p>Development Model</p>	<p>Most diploma programmes and polytechnics in nearby countries, such as Malaysia, are inversely proportionate, with 60% theory and 40% practical. [20].</p> 
<p>Indonesia</p>	<p>i. Surakarta Mechanical Engineering Academy ii. Mercedes-Benz</p>	<p>The ideas of production-based education and training are included into both of these models. According to these principles, students participate in and learn to work directly in production units to generate market-oriented items. [21].</p>
	<p>Edmunds' Model</p>	<p>By combining education, training, and the codification of information, a link is established between the student, the employer, and the educational institution. [22]</p> 

2.4 TEVT MARA Work-Based Learning Model

The majority of Technical and Vocational Education and Training (TVET) programmes in Malaysia utilised the development model, which places an emphasis

on inversely proportional principles relative to the percentage of theory, which is set at 60%, and theoretical practise, which is set at 40%, and is carried out in the laboratory or workshop. According to Seagraves, et al. [20], the learning component of the Work-based learning (WBL) programme should be organised in such a manner that it is coordinated and integrated with the curriculum as well as the evaluation system. This should take place both in the classroom and in the workplace.

At TVET MARA institutions, all engineering technology programs implement 30-40% theory and 60-70% practical [23] based on the field of the programme and students are required to undergo Industrial Training in a period between 12 weeks to 26 weeks, depending on the needs of the program [24]. The period set by TVET MARA meets the minimum eight weeks of continuous training requirements stated in the WBL guidelines by the Malaysian Qualifications Agency [25].

3. Methodology

To achieve the goal of seeing the effectiveness of WBL implementation at TVET MARA, research articles published between 2018 and 2022 that met the criteria of "WBL", "Work-Based Learning," "Model of WBL," "WBL in TVET," and "Implementation of WBL in TVET" were selected from the following three databases: Scopus, Springer, and ScienceDirect. The search restricts to open access and engineering discipline. Through Google Scholar, a search was conducted to look for further materials of related research. The inclusion and exclusion criteria are shown in the figure 1 below.

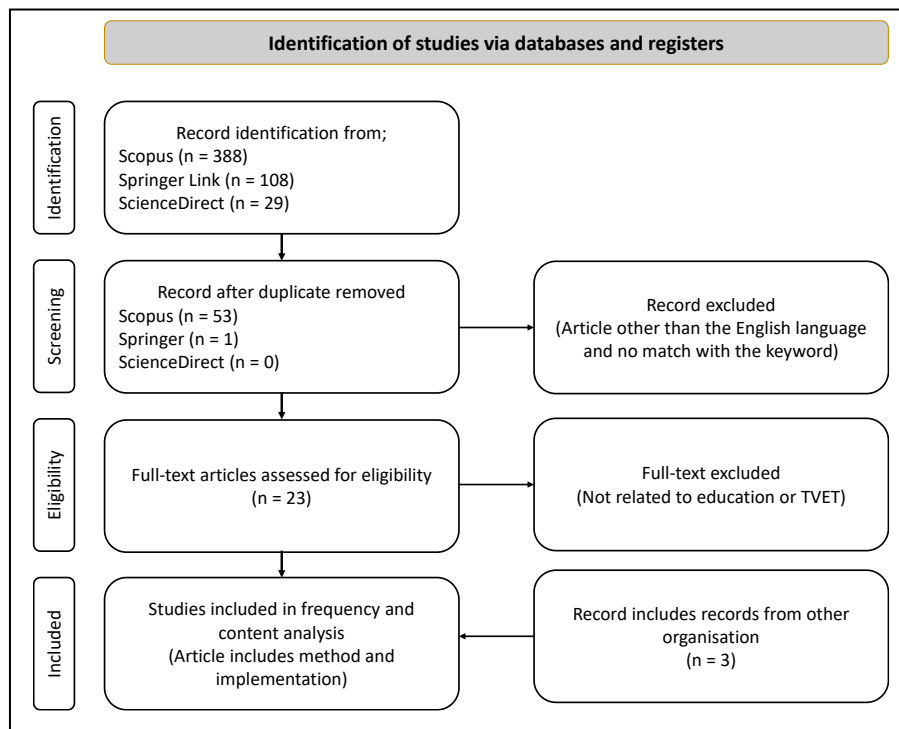


Figure 1. PRISMA flow of systematic literature review

In addition to review papers, the Tracking Study Report from the Ministry of Higher Education is another source of information on graduate employability. This

report is used to obtain the marketability of TVET MARA graduates especially when they finish their studies. The results of this marketability report can provide some data related to the effectiveness of WBL. In 2020, there were 78,660 graduates of TVET programmes, and 89.6% of those graduates, or 70,460, took part in this tracer research [26]. Of 78,660 people who have graduated from TVET, 5,500 graduated from Technical and Vocational Education and Training Majlis Amanah Rakyat (TVET MARA), and 95.1% are taking part in this tracer study. The more graduates who participate in this tracer study, the more accurate the data will be.

4. Results

In today's competitive job market, employees need technical expertise and generalisable "soft skills."

Table 2. Findings from Literature Review

Name of Researcher	Title	WBL Model / Methodology	Result / Finding
Ismail, N.I., Md Yusof, M.A., Herman, A.P., (2018).	Work Based Learning Strategy through a Structured Industrial Internship Program for Undergraduate	28 weeks industrial Internship consists of; <ul style="list-style-type: none"> • 14 weeks of Student Industrial Training • 14 weeks Student Industrial Project 	WBL strategy help students attain competencies and bridge the gap between learning and doing.
Ali, A.B., Mahmud, S., (2018)	Level of Soft Skill in the Implementation of Work-Based Learning among Community College Students	<ul style="list-style-type: none"> • Descriptive and inferential surveys to students implementing WBL 	WBL programmes have produced students with a high level of soft skills; <ol style="list-style-type: none"> i. high level of communication skills ii. high level of critical skills and problem-solving skills iii. high level of teamwork skills iv. high level of leadership skills
Ismail, N. I., Yusof, M. A. M., & Herman, A. P., (2018)	Work Based Learning Strategy through a Structured Industrial Internship Program for Undergraduate	<ul style="list-style-type: none"> • 28 weeks of industrial internship 	<ol style="list-style-type: none"> i. certain soft skills are best acquired through WBL ii. expose the real culture and practice of the real environment workplace.
Pramudhita, A. N., (2019)	Improving Quality of Education in Vocational School through WBL-IC.	Fieldwork Practices for 6 to 12 months	3 focuses on improving the quality; <ol style="list-style-type: none"> i. planning, (planning of class preparation from various aspects, resources, infrastructure, curriculum) ii. implementation, (time-frame) and iii. evaluation
Rouvrais, S., Remaud, B., & Saveuse, M. (2020).	Work-based learning models in engineering curricula: insight from the French experience	Minimum cumulated 26 weeks of internship include; <ul style="list-style-type: none"> • Operative internships (less than 1 month) • Company internships • Research internships • Final project 	<ol style="list-style-type: none"> i. exposing engineering studies to students with various skills, for whom inductive pedagogy (from experience to theory) is more effective. ii. greater knowledge of academic and employer limits and goals; iii. HEIs adapting courses to employer and societal demands.
Hafid, D., Djohar, A., Abdullah, A.G., Komaro, M. (2020)	Work based learning in motorcycle classroom part 2	Comparison between students who used WBL model and do not use the WBL model	The practice skills of students who use the WBL learning model are Higher.
Mohamad, M. M., Ismail, S., & Faiz, N. S. M. (2021).	A Tie between Educational Institution and Industry: A Case Study of Benefit from Work-Based Learning	WBL case study	<ol style="list-style-type: none"> i. engineer shares theory-based experiences and real-world capabilities that can only be acquired through practice in real situations. ii. strengthen the relationship between institutions and industry. iii. improve the existing curriculum and make the training evaluations more organized.
Sutiman, S., Sofyan, H., Arifin, Z., Nurtanto, M., & Mutohhari, F. (2022).	Industry and Education Practitioners' Perceptions Regarding the Implementation of Work-Based Learning through Industrial Internship (WBL-II). Int. J. Inf. Educ. Technol, 12(10), 1090-1097.	12 weeks	WBL-II help the students strengthening not only hard skills, but also soft skills, include industrial culture and career strategies.

In addition, for students to be able to do more than just certificates, the learning process ought to be structured in such a manner that the focus is placed less on the

memorisation of facts and more on the development of skills. Academic study, paid labour, participation in industry-based training, and the incorporation of job-based learning are ways a person's employability can be improved. According to the findings of Subekti, et al. [27], there was a considerable impact made by applying work-based learning on the employability abilities of vocational students. Based on existing model implemented in table 2, all models underline that WBL requires student, educational institution, and industrial employer participation. The student would excel in theory, academics, and hands-on technical abilities. In addition, the figure 2 also supports the advantages and benefits of this WBL implementation.

Apart from that, according to the Graduate Tracking Study System (SKPG) website, which is administered by the Ministry of Higher Education, the graduate employability rate for TVET MARA is 91.8% in 2020 and will increase to 92.9% in 2021. Apart from that only 44.9% graduates in 2020 and 46.7% of graduates in 2021 will earn a salary above RM1,5001. It can be assumed that by implementing WBL, indirectly, it can also increase the employability of graduates.

5. Conclusions

Based on the discussion on the result of this study, it can be concluded that the implementation of work-based learning (WBL) in TVET MARA has contributes significantly to the employability skills development of students in TVET MARA Institutions. As TVET MARA always collaborates with the industry in developing the curriculum, updating the curriculum and other teaching and learning activities, as well as implementing industrial training, TVET MARA is felt to be on the right track in implementing WBL. Therefore, it is possible to conclude that the implementation of WBL as a learning model may be employed in the development of employability skills among graduates of vocational programmes, especially TVET MARA graduates.

TVET MARA should maintain the existing practices and always be aware of the changes that occur in the industry, especially those related to technology. The practice of holding meetings/workshops with industry and academia in the MARA Technical Advisory Committee (MTAC) within a maximum period of 2 years or according to current needs is very important because technology changes rapidly, especially in electronics. It is hoped that TVET MARA is always committed to the needs and wants of the industry in producing highly marketable graduates.

In addition, TVET MARA must always act on every suggestion or comment given by outside parties, especially stakeholders. Continuous Quality Improvement needs to be taken seriously in ensuring that TVET MARA graduates always have the level or standard required especially by the industry.

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