Scaffolded Framework to Build Student Resilience in Work-Based Learning at FTKIP-UTeM Malaysia

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ABSTRACT

Work-Based Learning (WBL) is an educational model that emphasises hands-on industry training to prepare students for professional demands. However, many students experience a mismatch between their abilities and industry expectations, often requesting placement changes within the first six months. This paper adopts an autoethnographic approach, drawing on three cohorts of engineering students to reveal a recurring pattern of narrative manipulation aimed at exiting WBL placements. These behaviours often stem from struggles in managing the socio-emotional realities of work life. In response, this study critiques overly structural WBL models and introduces the WBL Scaffolded Resilience Management (WSREM) framework, a multi-semester intervention beginning in the first semester. Each term, the WBL coordinator visits classrooms to share real-world narratives and set expectations for future placements. Students are briefed on the mental and physical readiness required to navigate a one-year WBL experience. Initial implementation of the framework revealed high dropout intentions where nine students in the first year and six in the second. However, in the third year, only two students considered early withdrawal, highlighting the framework's effectiveness. The WSREM approach, grounded in progressive advising, expectation setting, and peer-to-peer storytelling, equips students with the resilience and behavioural awareness needed to face, rather than escape, workplace challenges. This project is developed based on a case study conducted at the Faculty Teknologi dan Kejuruteraan Industri dan Pembuatan (FTKIP), Universiti Teknikal Malaysia Melaka (UTeM), providing a Malaysian perspective on enhancing WBL resilience through structured emotional and behavioural preparation.

Keywords: Work-Based Learning (WBL), Student Resilience, Expectation Management, Engineering Education, Autoethnography.

INTRODUCTION

In the era of Industry 4.0, the call for industry-ready engineering graduates has positioned Work-Based Learning (WBL) as a central pillar of technical higher education curricula. The Malaysian Technical University Network (MTUN) has embraced this mandate by introducing intensive WBL programmes, including a full-year industrial placement. WBL is a mode of study in which students undertake a one-year industrial training placement, during which they are not only engaged in full-time professional work but also complete industry-based academic courses. Consequently, students attend classes within the industrial setting itself, effectively blending academic learning with authentic workplace experience ((Rohanai, 2024; Yusoff, 2024). WBL bridges the gap between theory and practice by integrating structured academic programmes with real-world industrial environments, enabling students to apply theoretical knowledge while developing essential professional competencies (Rienties, 2023). In this model, students are expected to demonstrate not only technical proficiency but also resilience, adaptability, and socio-emotional competence to thrive in

today's dynamic and demanding workforce (Rienties, 2023). This study builds upon this context through a case-based implementation at the Faculty Teknologi dan Kejuruteraan Industri dan Pembuatan (FTKIP), Universiti Teknikal Malaysia Melaka (UTeM), examining how structured resilience management can enhance student preparedness and retention throughout the WBL experience.

Table 1 presents the design of the Development Work-Based Learning (WBL) model, which is organised into four sequential phases, each with a specific focus, expected output, and implementation responsibility. The first phase, Industry Engagement, involves securing committed host companies. The second phase, Student Placement, focuses on matching students with industry partners and managing logistics. The third phase, Material Development, is dedicated to designing workplace-aligned assignments and assessment rubrics during the immersion period. The final phase, Execution and Assessment, requires students to work full-time during the day while completing academic assignments outside of work hours, with final assessments conducted remotely through submitted reports. This integrated approach enables real-time development of learning materials, facilitates smooth student placements, and ensures that assessments are both practical and contextually relevant (Ferns et. al, 2024; Dean et. al, 2025) .

Table 1: The development of WBL Model

Phase	**Key Activity**	**Expected Outcome**	**Implementer's Responsibility**
Phase 1: Industry Engagement	Identify & secure agreements with partner companies.	Company commitment to host students.	Sourcing & persuading companies.
Phase 2: Student Placement	Place students in agreed-upon companies.	Student commences industrial placement.	Managing placement logistics.
Phase 3: Material Development	Develop T&L materials (assignments, rubrics) *while* students are in the industry.	A full set of assessment materials.	Designing assignments & rubrics.
Phase 4: Execution & Assessment	Students work & collect data by day; complete assignments at night/weekends. Assessment is 100% report-based.	Comprehensive final student reports.	Briefing & supervising remotely.

Despite gaining global recognition and being adopted by Malaysia's polytechnic institutions and the Malaysia Technical University Network (MTUN), Work-Based Learning (WBL) is still developing and often implemented in a fragmented way, driven more by policy than by well-coordinated pedagogical planning. While WBL is widely valued as an essential part of technical and vocational education, its execution varies significantly across institutions. A key challenge noted in both research and practice is fostering professional resilience, which refers to students' ability to adapt to stress, recover from setbacks, and persist through workplace challenges (Buchan et. al 2022; Brenner & Dymond, 2023). Without this critical skill, students risk disengagement, limited personal growth, and difficulties succeeding in demanding professional settings.

This challenge becomes most visible when students begin their industrial placements. The shift from a structured academic classroom to the dynamic reality of a workplace can be jarring, often leading to discomfort, resistance, and profound self-doubt. Students who are used to predictable, supportive learning environments often struggle to meet the fast-paced, results-driven expectations of industry. This expectation-reality gap can manifest as dissatisfaction, disengagement, and even formal requests to change industrial placements that directly compromise the goals of Work-Based Learning programs (Hodges & Eames 2021; Winchester et. al, 2023).

Allowing this situation to continue risks several negative consequences. Students might display inconsistent skill development due to frequent changes in placements and may be seen as lacking the resilience necessary for future challenges. Moreover, permitting transfers for some can create a ripple effect, encouraging others to follow and threatening the overall integrity of the WBL program. These issues underscore the urgent need to proactively reshape students' attitudes and expectations to keep them engaged throughout WBL.

To address these challenges, resilience should be nurtured through structured reflection and scaffolded strategies that build autonomy, confidence, and realistic expectations. This paper proposes a scaffolded framework specifically designed to strengthen professional resilience in Malaysian WBL programs. By emphasizing progressive exposure, guided reflection, and mentorship and integrating quantitative data from student participants alongside an autoethnographic approach, this framework aims to bridge the gap between theory and practice and better prepare students to navigate the real-world demands of WBL.

METHODOLOGY

This study offers an insider perspective, with the researcher involved in all stages of the Work-Based Learning (WBL) programme, from curriculum design and industry sourcing to student supervision and problem solving. As a lecturer and coordinator, the researcher's dual role enabled direct data access and deeper insight into institutional and student dynamics. This position added valuable context but also potential bias. To manage this, the researcher maintained consistent record, while triangulation with peers, mentors, and industry supervisors strengthened objectivity and transparency. This role revealed key gaps between research ethics, policy, and practice, grounding interpretations in evidence over opinion. A mixed-method case-based design was used. Data came from observation logs, intervention records, reflective journals, and feedback from industry mentors and academic coordinators. Qualitative data were analyzed for recurring behavioral and emotional patterns, and results were verified through peer debriefing to reduce bias. Quantitative data from post-intervention surveys were analysed descriptively, with effect size used to assess improvement in student resilience and engagement.

Table 2 summarises the key early findings. An analysis of placement change requests from two academic cohorts (Cohort 1: n = 21; Cohort 2: n = 23; total n = 44) revealed key factors affecting continuity and satisfaction in Work-Based Learning (WBL) placements. During the second and third months, the adjustment phase presents nine students (42%) in Cohort 1 and seven (30%) in Cohort 2 requested company transfers, averaging a 36% change rate.

These findings raise concerns about students' readiness for workplace realities and the alignment of institutional preparation with industry expectations. Self-reported reasons varied. The most common was being assigned unrelated tasks, reported by 28% of Cohort 1 and 13% of Cohort 2 (average 20%), indicating a mismatch between academic training and job roles. Safety concerns were noted by 14% and 8%, while conflicts with staff appeared in only 4% and 3%.

Triangulated data from academic mentors, industry supervisors, and students revealed deeper causes. The main issue was difficulty accepting feedback, affecting 23% of Cohort 1 and 8% of Cohort 2 (average 16%), showing a gap in emotional maturity and resilience. Misunderstandings of task scope appeared in 19% and 8% (average 14%), suggesting the need for clearer role communication. Personal issues, such as transport problems, contributed to 9% and 4% of cases.

Table 2: Analysis of Student Placement Change Requests (Cohorts 1-2, n=44)

Metric	**Cohort 1 (n=21)**	**Cohort 2 (n=23)**	**Average**
Total Change Requests (Months 2-3)	9 (42%)	7 (30%)	~36%
Stated Reasons by Student:			
- Safety Issues (frequent accidents)	3 (14%)	2 (8%)	~11%
- Unrelated Tasks	6 (28%)	3 (13%)	~20%
- Conflict with Industry Staff	1 (4%)	1 (3%)	~5%
Actual Root Cause After Tripartite Investigation:			
- Difficulty Accepting Critical Feedback	5 (23%)	2 (8%)	~16%
- Misunderstanding of Task Scope	4 (19%)	2 (8%)	~14%
- Personal Issues (e.g., transport)	2 (9%)	1 (4%)	~6%

Note. Data reflect formal placement change requests during the second and third months of Work-Based Learning (WBL) placements for Cohorts 1 and 2 prior to the introduction of the WSREM framework.

Proposed Framework: The WBL Scaffolded Resilience Management (WSREM) Framework

Purely structural interventions are insufficient to address the behavioural challenges observed. A broader developmental approach is needed, focusing on students' growth over time. The Work-Based Learning Scaffolded Resilience Management (WSREM) Framework is introduced as a multi-semester intervention designed to build professional maturity and manage expectations from the start of the academic journey. It is based on the principle that resilience is a skill developed through guided experience and reflection.

The WSREM operates through structured, sequential interventions across the student lifecycle. As shown in Figure 1, it unfolds in three academic stages that progressively strengthen career readiness and emotional resilience. In Year One, structured advising sessions are embedded in foundational courses to link academic study with future employment, reinforcing students' sense of purpose and motivation (Bandura, 1997; Jackson, 2020). In Year Two, peer storytelling is introduced as a reflective and communal practice. Students share challenges in a safe environment, promoting emotional preparedness, adaptive coping, and a supportive community (Hodges & Eames, 2021; Bilgin, 2024). In the final year before placement, targeted pre-professional preparation begins. Students engage in experiential learning to build workplace competence, professional identity, and confidence in real employment settings (Zegwaard & Rowe, 2019; Jackson & Coll, 2021). Table 3 summarises all framework activities.

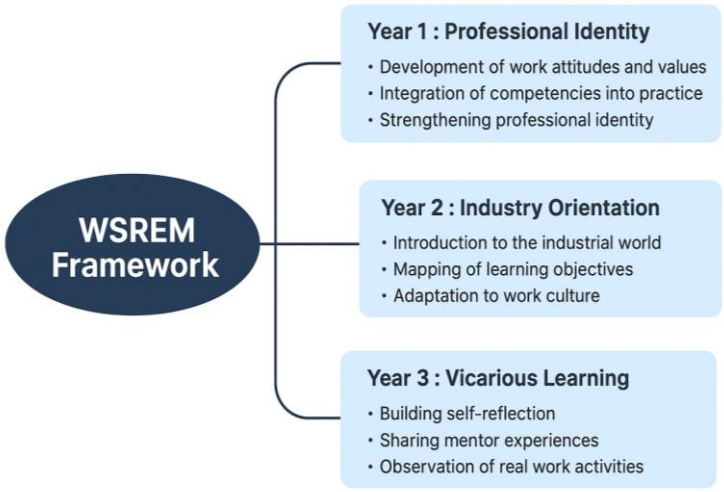

Figure 1: The WBL Scaffolded Resilience Management (WSREM) Framework.

Table 3 : Staged Implementation of the WSREM Framework for Developing Psychological and Professional Readiness

Implementation Years	**Key Activities:**
Stage 1 (Year 1): Foundation and Expectation Setting	1. Discussions on workplace realities, highlighting that challenges, strict supervisors, and critical feedback are normal. 2. Workshops on professional communication, including email etiquette and effective questioning. **3.** Linking coursework to real job functions to build engagement.
Stage 2 (Year 2): Vicarious Learning and Resilience Building	1. Semesterly "Real-Talk" sessions where senior students share both successes and difficulties in WBL, including handling criticism and team issues. **2.** Case studies of anonymised WBL challenges from past cohorts for group reflection and response planning.
Stage 3 (Year 3 – Pre-Placement): Final Preparation and Commitment	1. Workshops on conflict resolution, feedback handling, and workplace stress. **2.** Final briefing on WBL structure with students formally committing to learning plans and professional expectations.

Note. WSREM = Work-Based Learning Scaffolded Resilience Management. The table presents a progressive, three-stage intervention designed to build students' professional identity and psychological readiness before WBL placement

RESULTS AND DISCUSSION

The Work-Based Learning (WBL) programme spans 3.5 years. Students spend the first 2.5 years on campus and the final year (Semesters 6 and 7) in industry placements. Preparation for placement begins six months earlier, during which academic staff liaise with industry partners to update company databases. For a cohort of 21 students, about 10 companies are typically engaged. Companies are briefed on the value of a full-year placement, which supports meaningful projects and potential recruitment. After agreements are set, students select placements and begin supervised projects. A recurring challenge is the sudden shift to workplace culture, which often causes adaptation difficulties.

Findings from Cohorts 1 and 2 (Table 2) highlight a minor disconnect between academic expectations and industrial realities. Students enter the workforce with theory-based mindsets and expect tasks to match their academic learning. In practice, companies prioritise productivity, and students are often rotated across departments or assigned training unrelated to coursework. This mismatch can lead to frustration and perceptions of irrelevance. To address this, the WSREM framework adopts a holistic approach focused on psychological and professional readiness, not logistics alone. It assumes readiness must be developed progressively through scaffolded interventions that strengthen resilience, adaptability, and professional identity (Jackson, 2020). Table 4 summarises its implementation and reflection components.

Table 4: Implementation and Reflective Activities Supporting Psychological and Professional Readiness in the WSREM Framework

WSREM Stage	Implementation Focus	Delivery Personnel
Year 1: Semester 1	Students are encouraged to choose a university lifestyle that suits them and to participate in co-curricular activities they enjoy.	Lecturers, Senior Students
Year 2: Semesters 2–4	Consistent reminders are given about the purpose of entering university—to prepare for employment. Students are trained according to allocated time and advised not to be solely grade-oriented but to focus on skill and attitude development.	Lecturers, Technicians
Year 3: Semester 5	Discussions are held on the roles and responsibilities of Human Resources (HR), helping students understand workplace operations and the importance of accountability for smoother adaptation to industrial environments.	Lecturers

Note. WSREM = Work-Based Learning Scaffolded Resilience Management. The table outlines staged interventions designed to progressively build psychological readiness and professional maturity before industrial placement.

Table 5 presents data from three academic cohorts, with the WSREM framework introduced in Cohort 3. Comparative analysis of placement change requests shows clear evidence of WSREM's effectiveness in improving adaptability and placement continuity. Cohorts 1 (n = 21) and 2 (n = 23) did not implement WSREM, while Cohort 3 (n = 28) received full pre-placement preparation. In Cohorts 1 and 2, placement change requests during the second and third months reached 42% and 30%. After WSREM implementation, the rate dropped sharply to 7%, showing greater commitment and adaptability among students who underwent scaffolded preparation. These students managed workplace challenges more effectively and remained in their placements longer. The top self-reported issue was "unrelated tasks," recorded at 28% and 13% in Cohorts 1 and 2, but reduced to 10% in Cohort 3. Safety concerns also declined from 14% to 3%, while conflicts with staff stayed low at 4%, 3%, and 3%.

Tripartite reviews involving advisors, students, and industry supervisors revealed that early cohorts struggled with accepting feedback (23% and 8%), but this dropped to 3% in Cohort 3. Misunderstandings about task scope also decreased from 19% and 8% to 3%, indicating stronger alignment between academic and industry expectations. Personal issues such as transportation difficulties remained minor but fell from 9% to 3%. Although some external factors cannot be fully controlled, the overall decline suggests improved emotional readiness and problem-solving skills fostered through WSREM's holistic preparation.

Table 5: Comparative Data Across Three Academic Cohorts with WSREM Framework Introduced in Cohort Three

Metric	**Cohort 1 (n = 21)**	**Cohort 2 (n = 23)**	**Cohort 3 (n = 28)** ***(after WSREM implementation)***
Total change requests (Months 2–3)	9 (42%)	7 (30%)	2 (7%)
Stated reasons by students			
Safety issues (frequent accidents)	3 (14%)	2 (8%)	1 (3%)
Unrelated tasks	6 (28%)	3 (13%)	3 (10%)
Conflict with industry staff	1 (4%)	1 (3%)	1 (3%)
Actual root causes after tripartite investigation			
Difficulty accepting critical feedback	5 (23%)	2 (8%)	1 (3%)
Misunderstanding of task scope	4 (19%)	2 (8%)	1 (3%)
Personal issues (e.g., transport)	2 (9%)	1 (4%)	1 (3%)

Note. Data compare placement change requests and their underlying causes across three cohorts. Cohort 3 shows significant reductions following implementation of the WSREM framework.

The WSREM framework serves as a proactive strategy to manage student expectations. Studies show that dissatisfaction in Work-Based Learning (WBL) often arises from a mismatch between what students expect and workplace realities (Collins & Tangney, 2020; Costley, 2022). By introducing these realities as early as Semester One, WSREM helps students build psychological resilience and reduce "reality shock." Students learn that success at university goes beyond academic results as the curriculum is framed as early industry preparation where communication, adaptability, and professionalism matter as much as technical skills.

Semesters Two to Four act as a bridge between theory and industrial practice. Students engage in practical and project-based learning, especially in machining and hardware areas. They are reminded that real industrial environments differ from university settings. Instead of aiming for perfection, they focus on readiness, endurance, and adaptability to unfamiliar contexts (Hodges & Eames 2021; Suyitno et. al, 2025). Students are also encouraged to avoid comfort zones, take consistent action, and understand that learning continues beyond the university into the workplace.

In Semester Five, WSREM uses senior student storytelling, seeing peers handle real challenges strengthens juniors' confidence in managing similar situations. These stories provide practical lessons and reinforce the idea that early challenges lead to later competence and stability (Billett, 2021). In Manufacturing Engineering, WSREM also includes exposure to human resource principles focused on employee roles, workplace ethics, and HR functions. Students learn that preparing for WBL involves more than technical skills; it requires professional maturity and awareness of social and economic workplace realities (Rohanai, 2024; Yusoff et. al 2024). The framework thus helps students think and act like professionals even before entering WBL in Semesters Six and Seven.

Overall, WSREM strengthens two key qualities, which are professional identity and resilience. In today's uncertain labour market, employers value individuals who can adapt and perform under pressure. These are now core competencies, not optional soft skills. By introducing and reinforcing them from the first semester onward, WSREM creates a clear developmental path that helps students progressively build resilience. When implemented consistently, especially in practical classes, WSREM shifts students' perspectives from routine participation to meaningful, reflective preparation for WBL grounded in real experience.

A key policy implication of this study lies in the scalability of the WSREM framework across institutions within the Malaysian Technical University Network (MTUN) and beyond. WSREM provides a structured model that integrates psychological readiness, professional identity formation, and resilience training into existing WBL programmes without requiring major curricular restructuring. This alignment makes it suitable for adoption across diverse technical disciplines. For MTUN institutions, policy adaptation could focus on embedding WSREM principles into early-semester modules and strengthening collaboration between universities and industry partners through coordinated mentoring systems. At a national level, WSREM could

inform guidelines for WBL quality assurance, ensuring that student preparation addresses not only technical competency but also emotional and professional resilience. Future implementation research should examine how institutional culture, resource availability, and stakeholder engagement influence the success and sustainability of WSREM across different educational contexts.

CONCLUSSION

1. The Work-Based Learning Scaffolded Resilience Management (WSREM) framework advances Work-Based Learning (WBL) by shifting attention from placement logistics to psychological and professional readiness. This study shows that effective workplace preparation should begin early and progress through structured stages that build resilience, adaptability, and professional identity.
2. Analysis of three student cohorts in the Industrial Machining Technology programme at Universiti Teknikal Malaysia Melaka (UTeM) reveals a clear decline in placement-related issues after WSREM implementation. Early exposure to workplace realities, peer storytelling, and reflective engagement improved students' ability to manage industrial challenges and strengthened motivation, confidence, and professional mindset.
3. WSREM complements existing WBL systems by preparing students to engage more meaningfully. It transforms WBL from a reactive problem-solving model into a proactive approach focused on identity formation and resilience building. The framework offers a scalable, research-based foundation for enhancing student well-being, placement continuity, and long-term employability. Future research should explore its adaptability across disciplines and institutions.

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Author Contributions

Hadzley Abu Bakar: Conceptualization, Data Collection, Hadzley Abu Bakar: Supervision, Writing Original Draft, Mohd Basri Ali: Project Administration, Siti Rahmah Shamsuri, Umi Hayati Ahmad: Validation, Nor Ana Rosli: Visualization, Shaiful Anwar Ismail: Technical Support, Safarudin Gazali Herawan: Critical Review, Resources

Open Data

All data generated or supported for this study are fully included in this article.

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