The role of authentic assessment as a work-integrated learning model

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This case study presents the key outcomes, impacts and learnings gained from integrating a scaffolded authentic assessment (AA) WIL model, as part of a work-integrated learning (WIL) strategy within a Faculty at an Australian University. The series of three assessment interventions across three (minimum) core units functioned as a complement to existing WIL offerings. The model was designed to develop transferable skills with a focus on professional social responsibility within the context of the discipline being studied. Survey findings about the model reveal benefits for three key stakeholder groups: 1) for students by enhancing student employability learning for graduate success; 2) for faculty by strengthening the enculturation of scaffolded WIL interventions across the course; and 3) for employers by aligning employability skills and talent with evolving workforce needs. This paper proposes that AA offers a low risk, agile and scalable approach to transforming authentic curricula via a WIL lens.

Keywords: Work-integrated learning (WIL), employability, authentic assessment, multiplicity-WIL, professional social responsibility

Enabling and supporting graduate readiness for a rapidly changing world, including changing labour markets and worlds of work (Ferreira et al., 2024), is both a global economic necessity and a socio-cultural obligation. It is also a fundamental responsibility of international Higher Educational Institutions (HEIs) (Chankseliani & McCowan, 2021). HEIs play a key role in nation-building missions (Marginson, 2014), which include driving education innovations to advance society (Universities Australia, 2025). In Australia, HEIs are essential in preparing students for complex, dynamic and radically changing working environments that are expected to transform global economies (Department of Education, 2025; Department of Industry, Science and Resources, 2024; Jobs and Skills Australia, 2023).

The Australian Government's jobs and skills report (Jobs and Skills Australia, 2023) recently identified critical skill shortages, and emphasized the importance of workforce readiness among Science, Technology, Engineering, and Mathematics (STEM) graduates. In response, Federal budgets have prioritized funding for STEM specific initiatives to meet the growing demand for professionals with advanced STEM capabilities (Department of Industry, Science and Resources, 2024). In Australian Higher Education (HE), there is an increasing focus on expanding work integrated learning (WIL) opportunities for STEM students (Edwards et al., 2015; Winchester-Seeto, 2019) to align with the evolving skills and knowledge demands of emerging STEM technologies and methodologies (Atkinson et al., 2015).

Universities Australia (2019) reported on the invaluable connection between education and employment via WIL. WIL is defined as "an educational approach involving three parties - the student, educational institution, and an external stakeholder - consisting of authentic work-focused experiences as an intentional component of the curriculum. Students learn through active engagement in

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purposeful work tasks that connect theory with meaningful practice, closely aligned with their discipline of study and/or professional development" (Zegwaard et al., 2023, p. 38). When WIL activities incorporate co-creation principles, involving industry/community/First Nations Community[2] partners in curriculum design, delivery and assessment, the risk of graduates being unprepared for the world of work can be significantly reduced (Smith, 2012).

Implementing high-quality WIL involving educators and industry/community/First Nations Community provides significant challenges, particularly when creating educational approaches that are intentionally embedded within curriculum (Zegwaard & Pretti, 2023b). HEIs play a crucial role through delivering pedagogies and assessments that emphasize 'readiness', commonly understood as work readiness. Cultivating graduate readiness is a complex undertaking. It necessitates that students acquire specialized disciplinary knowledge and skills and understand how this knowledge can be used to benefit society (McArthur et al., 2022; Sustainable Development Solutions Network, 2020). Additionally, students must develop a range of transferable professional skills, which are essential for adapting to various roles and industries in an evolving workforce. To facilitate their entry into the workforce, students also need a comprehensive understanding of industry trends, opportunities, and diverse occupational pathways.

Studies suggest that utilizing a range of WIL types can enhance employability outcomes for students (Oliver, 2015) and support students' professional development and graduate readiness (Ferns & Moore, 2012; Jackson, 2013). As such, curriculum strategies for optimizing student employability outcomes are evolving in both practice and research (Dollinger & Brown, 2019; Jackson & Bridgstock, 2021; Jackson & Dean, 2023). This paper presents an Authentic Assessment (AA) model, as a specific WIL type that when designed to deliver authentic learning experiences contextualized within a discipline, meets economic and societal needs for employable 'citizen scholars' (Arvanitakis & Hornsby, 2016; Miller et al., 2020; Young et al., 2022). These conceptualizations contribute to the continuous advancement of WIL types (Johnson et al., 2019; Orrell, 2011; Rowe et al., 2012), as demonstrated by the expanding body of research that investigates innovative practices and approaches (Australian Collaborative Education Network, 2018).

What is AA and What is its Relationship to Work-Integrated Learning and Employability?

In HE, the concept of 'authentic' became closely linked to assessment in the early 1990s, emerging as the term Authentic Assessment (AA). Initially, AA was described as a method of assessment that did not use a proxy for evaluating a skill (Wiggins, 1990). By the mid-1990s, AA was associated with real workplace contexts, focusing on the authentic application of skills used in the workplace (Seagraves et al., 1996). Towards the end of the 1990s, AA began to bridge discipline theory and workplace practice, being described as an alternative to tests that evaluated the skills required to perform tasks, often replicating professional practice (Joughin, 1998; Riley & Stern, 1998; Woodward, 1998). In the 2000s, AA was characterized as an assessment requiring active engagement with real-world problems (Bryan & Clegg, 2019).

[2] The term "First Nations Community" is used in this paper to refer specifically to the First Peoples of Australia, including Aboriginal and Torres Strait Islander peoples, and in doing so recognise that while people have personal preference, none of these terms are perfect and carry residual forms of colonial power. It is our intention to acknowledge the distinct cultural, language, beliefs and practices of Australia's First Peoples. The term "Community" is capitalised as a sign of respect and to recognise the cultural and collective identity of the First Peoples of Australia.

By the 2010s, definitions of AA included feedback and collaboration (Ashford-Rowe et al., 2014). Bosco and Ferns' (2014) framework emphasized high cognitive engagement in a workplace context, integrating student self-review and industry feedback. In the absence of a singular internationally recognized AA definition, the following definition supports the use of AA in a multiplicity-WIL approach: "Authentic Assessment requires students to engage with a problem or task that is contextualized within a realistic environment, and assesses the knowledge, skills and attitudes required in workplaces, community, and for life-long learning" (Schultz et al., 2022, p. 79).

As described by McArthur (2023), AA can be more than preparing graduates for the world of work, it is about supporting students to think for themselves to transform that world. The intersection of formal education and authentic work-related industry-oriented learning activities is where AA can effectively support both the assessment of and the assessment for employability learning (Ajjawi et al., 2024; Schultz et al., 2022; Young, McKenzie, & Thomas, 2024; Zegwaard & Pretti, 2023a).

AA tasks qualify as a WIL-type due to the emphasis on real-world relevance, the application of knowledge, and theory-to-practice learning via a real-world wicked problem that focuses on equipping students with the skills required for the world of work in the process of devising real-world solutions for industry/community/First Nations partners. Students must recognize, develop and demonstrate the necessary transferrable skills at the required level of socially responsible professional practice while completing the task and devising solutions to real-world problems.

AA are significantly enhanced through co-design with industry/community/First Nations partners (Jung, 2022; Lasen et al., 2018), providing a flexible approach to non-traditional experiential learning (Billett, 2011). Collaborations that integrate real-world practices into discipline-specific learning for employability enhancement (Young, Miller, et al., 2024), serve as a strategy within curriculum design geared to improving graduate success. Positive curriculum-led impacts relating to the employability of graduates (Jackson, 2015; Young et al., 2025) benefits not just students, but also industry and society (Edwards et al., 2015).

Given that WIL is an intentional educational experience that integrates authentic work-focused experiences into curricula, enabling students to actively apply theoretical knowledge to practice, AA shares many of the features of the broad definition of WIL (see Zegwaard et al., 2023). The AA approach is an additional means for delivering WIL at scale. The defining characteristic of AA lies in the development of skills 'within a realistic environment' but not always in a placement context (it can be simulated WIL, but it is often undertaken in a classroom environment). Indeed, removing the need for students to undertake external placements in order to gain real-world experiences is of great value when scale, diversity, and inclusivity are necessary considerations.

According to the authenticity-proximity framework by Kaider et al. (2017), when an AA task is designed as a WIL-type, it is positioned higher in the authenticity element, as the work completed by the student closely resembles that done in the workplace. In terms of the proximity element, it is positioned at a medium level, because although industry may be involved in developing the task, the student is not physically located in the workplace. This study concurs with Lasen et al. (2018) that industry/community partner involvement in curricula development results in higher quality WIL. The industry/community/First Nations Community engagement is a key component of AA co-design, with the teaching team remaining responsible for the assessment of the demonstration of skills (preferably with industry/community/First Nations Community partner feedback integrated into the overall assessment process).

CASE STUDY: THE ROLE OF AA IN A MULTIPLICITY-WIL APPROACH

This case study examines the reform and expansion of WIL in the Faculty of Science, Engineering and Built Environment (SEBE) at Deakin University, Australia. The STEM-oriented disciplines of the Faculty are taught across four schools: Architecture and Built Environment, Life and Environmental Sciences, Information Technology, and Engineering. This case study explores the AA component as part of the Faculty's WIL strategy (noting ethics approvals for two related studies: SEBE-2021-62-_HEAG "Implementing Authentic Assessment across SEBE courses" and SEBE-2023-30_HEAG "Evaluation of a chemistry (and related subjects) redevelopment using context-based learning."

This commitment to WIL is based on empowering students to shape their aspirations and professional identities (Young et al., 2017, 2019), by providing a multidimensional curriculum that collectively and actively aims to enhance graduate employability. Equipping students to create work, transition into meaningful careers, and make significant societal impact, which includes preparing graduates to be contributing members of the global community as citizen scholars (Miller et al., 2020), underpins the Faculty's educational reform. Oliver's (2015) definition of employability has been instrumental to Deakin Universities' curriculum considerations:

> Students and graduates can discern, acquire, adapt, and continually enhance the skills, understandings and personal attributes that make them more likely to find and create meaningful paid and unpaid work that benefits themselves, the workforce, the community, and the economy (Oliver, 2015, p. 59).

Oliver (2015) and Miller et al.'s (2020) definitions have been adopted during the Faculty's evolution of WIL because they provide a useful way of describing students who would benefit from employability learning including and beyond the obvious career or employment opportunities of Deakin University students as future leaders.

Aside from the decade of commitment to a WIL strategy based on embedded and scaffolded employability enhancement (Young et al., 2022), SEBE has a long-standing commitment to 'integrated' learning, fostering collaboration between academic staff and industry/community/First Nations Community (Deakin University, 2023) partners, to enhance student engagement in WIL and to achieve ongoing success related to STEM graduates' employability outcomes. It has "well-established industry partnerships ensuring courses are relevant and responsive to an evolving industry. Each of the schools offer a diverse range of professional placement opportunities to ensure graduates are work-ready with strong employment prospects" (Deakin University, 2024, p. 1). In 2020, SEBE launched its most ambitious initiative to date, aiming to provide multiple, course sensitive, discipline-specific, and unit-tailored approaches to WIL, enhancing the employability of all undergraduate students. This marked a shift, with employability becoming central to educational strategy, realized via a suite of complementary WIL units, geared to developing graduate-readiness.

It was crucial to be practical and pragmatic about the scalability of 'more-WIL'. While the strategy had a mission to improve Faculty-wide student participation and engagement in WIL, the increase in WIL opportunities meant that the AA model had to meet the following objectives:

- Complement and build readiness for Placement-based-WIL (P-WIL).
- Provide students (through simulations) with experiences to test their work-readiness via authentic, real-world learning.

- Provide a comprehensive, course-wide approach to the application and demonstration of the university's eight graduate learning outcomes for iteratively enhancing employability.
- Provide a low-risk, agile and sustainable curriculum approach co-created with external partners.

The rational was that AA was a lower-risk curriculum intervention compared to placements (P-WIL), mostly due to partner involvement. The AA-WIL type avoids the need to vet organizational sites (physical workplaces), thus reducing matters of health and safety (i.e. potential workplace accidents due to physical on-site hazards) and host-related risks like variable supervisor quality (Smith et al., 2021) and reliability of alignment between student-employer placement goals and high-performance expectations (McKenzie et al., 2025).

Nevertheless, 'more-WIL', including a greater diversity of WIL type offerings, was incumbent to the Faculty mission to upscale industry-oriented learning contexts and uplift existing industry-oriented courses (Young et al., 2017). The AA project did this via an evidence-based approach maximizing the authentic and proximal opportunities (Kaider et al., 2017) of all existing and proposed WIL experiences. Expanding beyond core-to-course placement-based WIL (P-WIL), referred to in the Faculty as 'multiplicity-WIL' (Young et al., 2022, 2025) integrates scaffolded career education (CE) and scaffolded AA across undergraduate programs alongside and in addition to placement and project-based WIL offerings. This comprehensive and multidimensional intervention aspires to improve the curricula designed for future-proofing STEM graduates, by equipping them with a broad range of transferrable skills, via 'practice' in diverse professional environments.

To shape the approach to designing and delivering the AA model within the 'multiplicity-WIL' strategy, the project team were invigorated both by Deakin's mission to embed employability across all programs (Deakin University, 2020) and the Faculty's commitment to integrating core-to-course diverse WIL opportunities, through assessment led reform.

The inspiration for the AA model within the 'multiplicity-WIL' approach was first evidenced by the Faculty's long-term commitment to AA (Schultz et al., 2022). In 2021 an AA project formally connected AA strategies to the Faculty WIL strategy uplift via it's *Employability Guiding Plan* (SEGP) (see Young et al., 2023). The SEGP was aligned to the overarching institutional imperatives (and sector-wide employability agendas). The original goal was for each course to have one flagship WIL offering (primarily P-WIL) and to implement a sequenced employability curriculum design. A key priority for SEBE and the central aim of the AA-SEGP project was to coordinate and purposefully scaffold AA tasks across every course.

An AA project was incubated as a strategic initiative within the faculty's efforts to promote whole-of course approaches to curricula design and delivery, aimed at enhancing the employability of graduates (Young et al., 2022). The AA project's aim was to ensure that all courses provided at least three AA tasks, purposefully designed and scaffolded to support student development and recognition of their employability skills within their discipline. The AA project was informed by the findings from a previous faculty-led action-research project that facilitated both the development of a faculty-agreed definition for AA and a bespoke tool to measure the authenticity of an assessment based on that definition (Schultz et al., 2022).

To be considered an AA assessment that supports employability (WIL), assessment tasks were evaluated against a set of questions (Schultz et al., 2022). The key questions were adapted and updated (see 'checklist' below) representing the implicit checks for ensuring and assuring the authenticity of the

task, the assessment, and the overall AA project. Table 1 below reflects the thinking process intended to support teaching teams to self-diagnose the authenticity of the assessment tasks they had previously created, prompting extension of the depth and breadth of the AA.

TABLE 1: The factors for quality authentic assessment design and delivery.

Category (4 Factors)		Self Diagnoses
1.	**Workplaces, Community, and Lifelong Learning**	How does the assessment task simulate tasks completed in workplaces or the community? **Task checklist – the level of authenticity of the task** ☐ Theory to practice learning (live and meaningful) real-world scenarios to enliven stakeholder-driven contexts. ☐ Simulated professional environment (in class/studio locations on campus/ online).
2.	**Co-created Assessment**	How are industry or the professional community/First Nations Community involved in the design, delivery, and/or marking of the assessment? **Industry checklist – the spectrum of external engagements within curricula** ☐ Design (minimum requirement) of the task (assessment *for* learning). ☐ Co-development of the assessment (assessment *of* learning). ☐ Co-created consideration of professional capabilities to promote industry-relevant learning. ☐ Delivery of content aligned to the assessment. ☐ Provision of feedback to students (and academics). ☐ Provision of guest lectures in which real-world examples and contexts were provided to inform the completion of the AA tasks. ☐ Supervise small group projects. ☐ Client stakeholder role (to whom students present findings/solutions). ☐ Contact for new ideas for further 'live' scenarios for class projects. ☐ Offer expertise and insights into the skills valued by employers. ☐ Participate as panel members to evaluate student outputs and in marking and assessment processes and provide feedback on the outcomes of AA projects.
3.	**Graduate Employability**	Which transferable skills (skills not dependent on discipline-specific knowledge) are assessed, and what is their weighting in the overall mark? **Employability checklist — the development of capabilities that count** ☐ Co-created consideration of professional capabilities to promote industry-relevant learning. ☐ Active learning, with collaboration and teamwork activities. ☐ Knowledge and skills (focusing on transferrable skills) with a career interest literacy lens to point students to why developing employability within the context of a discipline is critical to their graduate employability outcomes.
4.	**Structure of the Assessment**	How does the assessment design prepare students for the way they will be required to perform in the workplace? **Assessment *of* and *for* employability learning**. ☐ The process of assessing student work can occur internally by the educators (with industry/community/First Nations Community if feasible and appropriate). ☐ A feedback loop using evaluative judgement and incorporating self and peer review included to enable students to practice applying their skills while observing and providing feedback to each other. ☐ Alignment of academic standards to work performance within the context of a discipline-based problem to develop socially responsible professional practice.

A key component of the assessment (a suite of team and self-evaluation real world tasks) was the design of four level AA rubrics: 'Well met, Met, Partially Met and Not met' (Rust, 2002; Schultz et al., 2022). The intention was to convey how graduate tasks were likely to be judged at work (as compared to the High Distinction through to Fail system traditionally used in Australian HE). AA units were signposted by branding the assessments within an AA infographic as: 'Learn. Apply. Ready.' This branding helped students recognize that they were enrolled in an AA unit intentionally designed to support the development of their employability skills within the context of their discipline. For the academics, the branding provided reinforcement of their vital role in supporting the development of students' employability skills across their course (a step-change toward a minimum of three AA units scaffolded across each program).

Leveraging a team-based approach, AA tasks emphasized the collective importance of both discipline-specific skills and transferrable skills with unique interpersonal and technical abilities (Gunning et al., 2023). The approach also purposefully fostered the action of evaluative judgment (Bearman et al., 2024; Boud et al., 2018) in a team setting, as it was identified as a way in which students could meaningfully reflect on their own performance as well as that of their team members. Enhancing the team's understanding of individual skill sets was deployed during the team tasks, emphasizing that employability was foundational to assessment. This rationale was presented to academics noting that pedagogical and curriculum-based enhancements could aid in the engagement of students in their path to employability skill development. It was also explained that it was essential to award marks for both demonstration and reflection on the growth of their transferrable skills, rather than simply using the team output as a proxy for assessing these skills.

This approach aligns with the concepts of assessment of, for, and as learning (Earl & Katz, 2006), as it involves students learning through collaboration on a product for assessment, while simultaneously applying their interpersonal and professional competencies. Consequently, the final product of an authentic assessment can be utilized as an assessment of learning (Gunning et al., 2022); and when students receive feedback from their peers and evaluate their own learning, the task also becomes assessment as learning.

Scaffolding AA across a course required analysis of course maps to identify units that were core to each course and met the criteria to be AA units. That is, the unit could support a team-based project that provided a real-world problem scenario, set within the context of the discipline of study. The structuring of the curriculum around projects enables educators to adapt content and problem scenarios that respond to evolving technological advances and socio-cultural landscapes, whilst maintaining the structure of the assessment. Course directors were engaged at an early point to confirm and approve the units to be targeted. This ensured that the unit chairs not only had support from course directors, but they received recognition across the course as playing a vital role in developing students' employability skills as part of a faculty-led project.

An initial concern for academics was how AA could be achieved within an already crowded curriculum and assessment schedule. The solution was to replace the end of unit exam with a trimester long team-based project. This was achieved through co-design involving discipline experts, curriculum experts, and industry/community/First Nations Community partners. Unit Chairs received professional development at their point of need, from curriculum and assessment experts, to collaboratively redesign assessments, ensuring they met the criteria of AA within the employability plan. Building the capability of academics to improve their understanding of the merits of WIL, was a key aspect of reframing and uplift (see Young et al., 2017). Provision of professional development for academics, not

only supported skills and confidence building in the design, delivery, and assessment of AA it also worked towards academics taking ownership of the changes made to the assessment, supporting the permanency of the new assessment.

Understanding where academics were across the spectrum of previous and current partner engagement (with industry, community, First Nations Community, government), including previous employment in industry was crucial to ensuring AA projects were appropriately supported for industry-alignment. For example, academics with existing relationships were able to leverage their relationships to co-create curriculum. Those academics who were still building their industry relationships were open to advice on how to do this and how to effectively incorporate partner feedback into the AA within their unit. This project found that a useful way to support academics to build collaborative relationships with partners was via an external source initiating engagement and facilitating a planned interaction for the purpose of co-creating authentic learning experiences for students (SEBE-2023-30 HEAG).

Nested curriculum designers (experts in the design, delivery, and assessment of AA projects) provided essential leadership ensuring the projects were robust and relevant, and provided a consistent strategy across the faculty. To support consistency in the student experience of AA, and to remove the burden from academics, centralized student-facing resources were created that focused on the development of a range of student's transferrable employability skills. Early in the project, the terms 'hard skills; and 'soft skills' were replaced by 'discipline-specific skills' and 'transferrable skills', as many academics and students assumed that 'hard' meant that it was more important and 'soft' was less important. This change in language helped the AA project emphasize the importance of employability skills being transferrable across to the world of work. The resources provided students with the opportunity to learn and consolidate their understanding of a range of transferrable skills (communication, teamwork, reflection, time management etc.) before the direct assessment. The students' transferrable skills were assessed via demonstrated application during their AA experience.

As the project progressed, it also became evident that a key strength of using a team-based project in the AA suite, was the opportunity to embed professional social responsibility into the discipline context. By incorporating layers of sustainability, sustainable development and social challenges into assessment criteria, students were provided with the chance to explore and reflect on their individual and collective social responsibilities within their academic discipline. To support this, a series of non-assessed interactive modules were designed to facilitate learning and reflection on critical issues, such as the importance of collaborating with First Nation Communities (Ah Chee et al., 2024) and the integration of the United Nations Sustainable Development Goals (United Nations, 2024) into project design. To ensure student engagement, the assessment criteria were constructively aligned with these modules and incorporated into the assessment rubric. Furthermore, to reinforce students' consideration of their professional social responsibility, criteria were included in the self and peer review of transferrable skills, requiring students to identify and evaluate social responsivity traits both in themselves and their teammates. By integrating socio-cultural elements such as sustainable development, cultural diversity and social inequalities, students were encouraged to critically examine how these factors shape professional practices. In enticing students to consider the ethical dimension of their discipline, the aim was to not only highlight the complexities of working within their chosen field but also to prepare them for contemporary challenges with a holistic, inclusive, and culturally sensitive approach. This preparation was considered crucial for influencing the world of work, as it equips students to navigate ethical dilemmas and contribute positively to their professional environments. Consequently, AA provides students with valuable opportunities to connect course

content with real-world applications which should include how their discipline knowledge contributes to broader society (McArthur et al., 2022), thereby enhancing engagement and preparing them for the world of work.

As identified by Schultz et al. (2022), designing AA in generalist courses and in first year units which have unknown or multiple career pathways was difficult. In this case study AA tasks in first year and the more generalist courses addressed this by focusing student attention on the skills required in workplaces in general, rather than a workplace associated with a specific discipline. Thus, connections to industry or community/First Nations Community in the curriculum, assessment and guest lectures were made by focusing on transferrable employability skills that are valued across all disciplines. For example, the skills required to work in a team are the same regardless of the context and when communicating ideas and solutions students need to be able to suitably address a range of stakeholders. When choosing a stakeholder for first year and generalist course projects, generalist examples were chosen (such as local council, or a community interest group). Specific industries would only be relevant for sub-groups of the cohort. The iterative design and implementation of the AA model were guided by feedback from both student and academic staff. To capture stakeholder perceptions following the initial implementation phase, an online survey was distributed to students and academics upon completion of the first round of AA tasks. The survey comprised both closed and open-ended items, including prompts inviting participants to comment on aspects they liked and disliked about the AA experience (SEBE-2021-62-_HEAG). The survey was open for two weeks after the conclusion of the teaching period, and no incentives were offered for participation.

Survey Results

Five of the units that had ethics approval for the incorporation of the AA survey, provided n=35 open-ended responses to the following prompts: 'What I liked about AA'; 'What I disliked about AA'; 'I think AA helped me to...'; and 'What transferrable employability skills did you develop or improve?' Student responses were analyzed, with themed responses >15, providing a final set of four dominant themes**:** (1) teamwork, (2) communication, (3) self-awareness, and (4) real-world application, with representative student quotes displayed in Table 2.

TABLE 2. Student perspectives on Authentic Assessment (AA).

Theme	Examples	Summary finding
Teamwork (30 responses)	"Work with a group better and help expand critical thinking" "Work better in groups, apply content in real world context" "Develop and improve my team skills" "Group work can be challenging if some members don't participate"	Students noted AA helped them work effectively with peers, develop teamwork skills, and navigate group dynamics. AA also exposed students to realistic teamwork experiences, mirroring professional environments, that are not always initially perceived as a positive lived student experience.
Communication (20 responses)	"My communication skills with people on my team as I am pretty introverted" "My communication and working in teams has greatly improved"	Students reported improvement in verbal communication through presentations, reporting, or team tasks.
Self-awareness (20 responses)	"It allows me to identify my strengths" "Sometimes, open-ended tasks make me feel nervous" "Develop important transferable skills"	Students highlighted opportunities for reflection on strengths, weaknesses, and skill development.
Real-world application (18 responses)	"Could experience how the real world works" "Experience working in a setting I might face in future professional work" "Hands-on experience, more engaging than lectures or labs"	Students stressed the value of applying knowledge in practical, career-relevant contexts.

One academic from each of the same five units responded to the survey *(n=5).* Their written responses to the prompts 'What I liked about AA', 'What I disliked about AA' and 'I think AA helped students to …' provided representative insights into the lived experience of academics supporting AA. Due to the smaller sample size, themes were not applicable, rather comments are provided to illustrate the educator voice. Notwithstanding, teamwork was the most referred to aspect of AA. Positive comments were found: "Contextualizes teamwork in a project that would be done in a very similar way by a group of scientists" and "In good working teams it is nice to see how students support each other in the common quest for a good final product." Negative comments were also noted: "Some students do not adequately participate and sometimes are a significant burden for a team; this causes a lot of grief." The following observation is also noteworthy: "It [AA] seemed to encourage the students to think about the problem more deeply than they would usually. For the most part it kept them more engaged as they had more ownership over the project." These responses demonstrate an agreement in the importance of team-based authentic learning experiences to ignite student engagement in the simulation of professional practices.

Outcomes and Impacts

Since the inception of the AA project, there have been many significant outcomes (short-medium term results) and impacts (longer-term systemic and/or cultural transformation) for the three key stakeholders (Faculty, students, and external partners) (see Table 3 below). Faculty impacts relate to how institutional strategy affects academic staff and WIL curriculum design; student impacts are presented as the educational outcomes that relate to student experience and employability; and external partner impacts relating to professional and employer needs. All are aligned to ongoing and anticipated learnings and outcomes.

TABLE 3: The outcomes and impacts for stakeholders as a result of the AA model in SEBE.

Faculty outcomes	**Student outcomes**	**Partner outcomes**
18 Faculty-owned undergraduate courses include the AA model, extending the high-visibility endeavor of employability enhancement via alternative WIL models. All SEBE undergraduate students now complete three scaffolded WIL-type AA's. 5000 student enrolments annually complete at least one AA task. A strategic shift from proctored exams to applied learning, emphasizing the application and demonstration of transferable skills in authentic contexts. The model enables highly agile WIL curricula uptake, that is of lower-risk and requires less resourcing than placement-WIL. Upskilling of academics in employability curricula, positioned as a collaborative pursuit with an agreed shared set of goals and pedagogical principles (led by the AA expert, with AA and WIL champions) results in positive staff engagement in WIL.	Development and recognition of strengths and growth areas, with exposure to potential unconscious incompetence (i.e. the types/levels of transferable skills required to demonstrate socially responsible professional practice). Enculturation of the iterative development of knowledge and skills required of STEM graduates. Simulation of team-work scenarios modelling employee roles and responsibilities, with practice-based learning connecting coursework with personalized future professional practice. Creation of Faculty-wide student-facing discipline-agnostic resources focus on the development of transferrable skills through AA (to ensure consistency across all courses). Promotion of mindsets around the value and need for active engagement in career aspirations enabling personalized pursuits of employability. Transparent connection for student of Unit and Course Learning Outcomes as a suite of course-wide WIL experiences.	Co-creation of the curricula and engagement in the development of socially responsible professionals, within the context of the discipline being studied. Contribution to student employability confidence. Simulates the processes and practices used in industry/community/First Nations Community for solving the complex unknowns of tomorrow. Networking with students to identify potential future employees. Allowance of flexibility in implementation of the assessment, based on partner collaboration, provides educators and partners with space for ownership and responsibility of AA revisions (for sustainability). Provision of capability building (at point of need) and within the context of the unit fosters trust and expertise in the co-design enhancement of curricula.
Impact: Curriculum Transformation and Academic Capability in WIL The initiative is a scalable business-as-usual model, transforming curriculum practice across a large, multi-disciplinary Faculty by embedding fit-for-purpose, employability-focused approaches aligned with Faculty WIL and university-wide educational strategies. Iterative innovations strengthen academic capability and leadership. Evaluation (and action-research approach) catalyzes a collective responsiveness to contextually relevant and future-focused WIL models within the higher education employability ecosystem.	**Impact: Student Experience and Enhancement of Graduate Employability**. The model enhances the educational experience and career readiness of a diverse student cohort by embedding discipline-relevant learning that builds professional capability, strengthens transferable skills—such as communication and teamwork—in collaborative settings, and deepens understanding of real-world professional contexts, ultimately elevating graduate employability.	**Impact: Influence on Workforce Alignment and Employment Outcomes** The model fosters meaningful co-creation of discipline-relevant, real-world curricula with continued development of external partnerships to contribute to the shaping of socially responsible professionals and emerging talent pool of work-ready graduates responsive to workforce capabilities and evolving industry needs.

The AA developments have been successfully embedded in the Faculty's curricula as multiplicity-WIL. The first step was securing P-WIL as core to course, the second step was supported inclusion of

additional WIL types (i.e., AA, career development learning) and the third step was the scaffolding of AA, functioning as an AA model, in all undergraduate courses. The fourth step was using AA curricula to intentionally develop socially responsible professional practices (which was not a specific objective of other WIL types offered in the Faculty) but has become an important facet of the vision for how to best educate the STEM graduates of tomorrow.

DISCUSSION

This case study provides an example of a systemic approach to embed WIL into STEM curriculum, to meet the growing demand for STEM workers and to provide an education that prepares for current and long-term future graduate readiness. The optimal way to achieve this end was a multiplicity WIL approach, noting the endeavor requires time to design, implement and mature. For WIL impact to fully mature within the Faculty, the decision to activate a Faculty-led employability plan was fortified by the setting of curriculum targets for embedding multiple WIL types within each course. This included AA as a supplement to the traditional hallmark of WIL (P-WIL), but also to career development learning and project-based WIL offerings (Young et al., 2022; Young, Miller, et al., 2024).

The Faculty position is that 'more WIL' allows the application of a range and depth of portable employability skills (Oliver, 2015; Young et al., 2025) across the course and useful for students' lifelong employability journeys. A deliberate sequencing of WIL (in this case, the AA WIL model) plays a critical role in the acquisition and enhancement of students' employability (Young et al., 2025). The approach aligns with the increasing demand for more WIL opportunities for students (Dean et al., 2020; Young et al., 2022) as supported by the significant growth in student participation with WIL over the last five years (Jackson & Cook, 2024).

However, scaling 'more' WIL is inherently complex, especially when integrating multiple WIL experiences in HE curricula to enhance the employability of large, diverse student cohorts with varied learning styles as well as unique personal and/or professional strengths. This complexity is further compounded by the intrinsic currency of WIL experiences, which necessitates agile curriculum design, capable of incorporating and responding to rapidly evolving work practices. In short, it is improbable that a single WIL approach can fully assure or demonstrate graduate readiness. Therefore, a strategically coordinated approach that integrates multiple WIL interventions across a course – encompassing more than one WIL experience – and emphasizes reflective practice to promote self-awareness and critical thinking, while connecting discipline-specific skills with transferrable skill sets (Hains-Wesson & Young, 2017), is the key to significantly enhancing graduates' readiness for the world or work. Nevertheless, as mentioned, this study does not claim that 'more' is always better. Delivering good practice WIL (Campbell et al., 2019, 2021; Smith, 2012), is fundamental.

Strategic aspirations need to be framed as large-scale and long-term goals informed by educational directions that enable context-specific fit for purpose WIL types/models/approaches enacted within core curricula. Any institution (or part thereof: faculty, program, or even unit of study) contemplating how to bridge the gap between formal education and learning of/about/for work might be well placed to explore 'multiplicity-WIL' as a long-term goal, with AA as a cornerstone of that approach. This is because AA is a particularly useful WIL type for preparing for (and simulating) the workplace and its potential complications (Sotiriadou et al., 2020).

AA allows for curricula with a broad workplace orientation to mobilize a balance of transferrable skills with discipline knowledge and skills, necessary for developing socially responsible professional practices. It does so in a way that P-WIL cannot. Limitations pertaining to resourcing and barriers

relating to curriculum agility (or lack thereof) in P-WIL, necessary for assuring and governing curriculum and contractual and administrative processes, do not always make educational strategies to uplift employability learning a straightforward task. However, given that the AA model is deemed here as a lower risk and highly agile WIL type, it is an appealing intervention, especially when constructively aligned and scaffolded with other WIL units purposed with enhancing student employability.

Further to this, interventions designed to purposefully prepare graduates for life in a global community, where students can consider how their chosen discipline contributes to the world of work and community/First Nations Community, both locally and on a global scale, as citizen scholars (Miller et al., 2020), hold important value. They promise to expand and mature alignment with the Universities Accord 2024 objective to "drive national economic, social development and environmental sustainability" (Department of Education, 2024, p. 45) and to support the implementation of the United Nations Sustainable Development Goals (SDGs) in Australia (United Nations, 2015). The AA model provides learners with an avenue to engage across their course as socially responsible professionals via specific socio-cultural elements. As identified by McArthur et al. (2022), intentionally adding elements of social responsibility to AA tasks, does not guarantee that graduates will develop a "sense of social membership"(p. 708). However, doing nothing is problematic. This study responds to the agenda by focusing on where student engagement has significant impact, and that is via assessment. Furthermore, if that assessment requires students to reflect on elements of their professional social responsibility, it may encourage them to consider the interconnectedness between themselves, their discipline and society.

Including AA as a WIL type and integrating an AA model as part of a WIL strategy, improves the positioning of courses to equip students, not just for their placement experience, but across their learning journey – with the literacies, awareness, and demonstration of the skills needed to thrive in a rapidly changing world. Here AA can support students in their evaluative judgements (Boud et al., 2018; Tai et al., 2018), about the industry and the business in which they find themselves when on placements (or when considering prospective employers).

It is for this reason that this paper presents a cautionary consideration for those contemplating multiplicity-WIL as a pathway for improved employability and employment outcomes for STEM graduates. While it provides a depth and breadth of experiences that function interdependently to enhance student employability learning (and while the approach appears in principle to translate across contexts), the endeavor is not without its limitations. One cannot discount the prevalence of exogenous factors impacting employability. Noting that even when developing curricula for graduate employability across an entire course, without learning moments to evaluate the gains (Young, McKenzie, & Thomas, 2024), the nexus of education and employment is not always neatly resolved.

When WIL activities are grounded in co-creation principles - where industry/community/First Nations Community are involved in the design, delivery, and/or assessment – they create a unique opportunity to reduce the risk of graduates being unprepared for the immediate future. This is because industry/community/First Nations Community involvement in curricula design, delivery and assessment makes a valuable contribution to the work-readiness of graduates (Smith, 2012). While establishing and delivering formal partnerships with industry and community/First Nations Community that facilitate the inclusion of real-world practices and contexts into discipline-centric curricula can be challenging, they can also be mutually beneficial (Edwards et al., 2015).

When WIL activities are based on co-creation principles, involving industry or community/First Nations Community in the design, delivery, and/or assessment, they provide a unique opportunity to better prepare graduates for the workforce. Industry and community/First Nations Community input into curriculum development enhances graduates' work-readiness (Smith, 2012).

This highlights the challenge of AA design as part of a multiplicity-WIL approach — the need for co-creation of assessments with industry/community/First Nations Community representatives. While some unit chairs relied on existing industry/community/First Nations Community connections for advice and feedback, many others required support in building these relationships. This underscores the importance of building capability (Young et al., 2017) for designing and delivering WIL, but also for factoring in workload constraints that may impact future initiatives aimed at fostering collaboration between academics and industry.

Nevertheless, the realized benefits demonstrated in this study, particularly that the marrying of course learning outcomes with the graduate outcomes, via a low risk and agile implementation of an AA model within a multiplicity-WIL approach, indicates that the development of employability is achievable in a way that no one WIL unit can ever try to accomplish. It offers educators flexible pathways to integrate socially responsible professional practice within the context of the discipline. AA ensures that the curriculum remains relevant and contemporary, via discipline-specific real-world problems. Furthermore, the constructive alignment between AA and other WIL types facilitates the implementation of effective course-centric approaches geared to enhancing the employability of students while fostering their professional social responsibility.

Project findings suggest that a comprehensive approach to employability, grounded in the concept of employability, enables the integration of broader educational objectives, while maintaining focus on preparing students for the workplace. This includes transferrable skills, alongside discipline knowledge and skills. For WIL to fully mature within HEIs, it is best enabled via employability agendas that call for an embedding of WIL types (including AA to supplement P-WIL and CE), through a whole-of-course approach, even a 'multiplicity-WIL' approach.

CONCLUSION

This case study demonstrates that when AA is intentionally designed as a WIL-type, within a multiplicity-WIL approach, and scaffolded across at least three learning points, it provides positive outcomes for multiple stakeholders. This paper suggests that education systems that utilize WIL models and that include AA-WIL that value the awareness, acquisition and application of transferable skills fostering socially responsible professional practices specific to the discipline, reinforce constructive outcomes for STEM students. The real-world currency provided by AA design and delivery responds to the perennial educational challenge of future-proofing the STEM students of tomorrow. This AA model, as part of multiplicity-WIL employability aligned agenda, leverages the enormous opportunities that real-world curricula provide for all stakeholders, particularly in the context of the widespread adoption of generative AI, which is reshaping traditional assessment practices and approaches to validating learning.

In short, AA is an agile model — it ensures course content can be swiftly adapted to maintain curriculum relevance. It therefore provides a low-risk alternative to providing additional P-WIL offerings, whilst also serving as an effective scaffold and complement to existing P-WIL experiences. Herein, is where 'more WIL' is indeed advantageous not just for the student but for HEIs targeting scalable and effective curriculum means for better impacting employability learning gains and

improving graduate success. When traditional curricula (where appropriate) can free-up pedagogy, assessment and learning design to include WIL approaches, in a constructively aligned and whole of course fashion, then contemporary disruptors may well become contemporary enablers for a brave new world of education. WIL strategies, via AA curricula, provide a viable, variable and valuable way for educators to offer packets of learning suite(s) in which transferrable skills are acquired, where the solving of real-world problems is practiced, and wherein 'live' contexts and scenarios are purposed with developing responsible professionals as citizen scholars. AA excels in emphasizing a human-orientation of solutions, enabling students to adapt to digital disruptions and embrace new technological integrations, to navigate their future, for the benefit of social progress.

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About the Journal

The International Journal of Work-Integrated Learning (IJWIL) publishes double-blind peer-reviewed original research and topical issues related to Work-Integrated Learning (WIL). IJWIL first published in 2000 under the name of Asia-Pacific Journal of Cooperative Education (APJCE).

In this Journal, WIL is defined as:

> *An educational approach involving three parties – the student, educational institution, and an external stakeholder – consisting of authentic work-focused experiences as an intentional component of the curriculum. Students learn through active engagement in purposeful work tasks, which enable the integration of theory with meaningful practice that is relevant to the students' discipline of study and/or professional development* (Zegwaard et al., 2023, p. 38*).

Examples of practice include off-campus workplace immersion activities such as work placements, internships, practicum, service learning, and cooperative education (co-op), and on-campus activities such as work-related projects/competitions, entrepreneurships, student-led enterprise, student consultancies, etc. WIL is related to, and overlaps with, the fields of experiential learning, work-based learning, and vocational education and training.

The Journal's aim is to enable specialists working in WIL to disseminate research findings and share knowledge to the benefit of institutions, students, WIL practitioners, curricular designers, and researchers. The Journal encourages quality research and explorative critical discussion that leads to the advancement of quality practices, development of further understanding of WIL, and promote further research.

The Journal is financially supported by the WILNZ, WACE, WIL Australia, and the University of Waikato.

Types of Manuscripts Sought by the Journal

Types of manuscripts sought by IJWIL are primarily in two forms: 1) *research publications* describing research into aspects of WIL and, 2) *topical discussion* articles that review relevant literature and provide critical explorative discussion around a topical issue. The journal will, on occasions, consider good practice submissions.

Research publications should contain; an introduction that describes relevant literature and sets the context of the inquiry. A detailed description and justification for the methodology employed. A description of the research findings - tabulated as appropriate, a discussion of the importance of the findings including their significance to current established literature, implications for practitioners and researchers, whilst remaining mindful of the limitations of the data, and a conclusion including recommendations.

Topical discussion articles should contain a clear statement of the topic or issue under discussion, reference to relevant literature, critical and scholarly discussion on the importance of the issues, critical insights into how to advance the issue further, and implications for other researchers and practitioners.

Good practice and program description papers. On occasions, IJWIL seeks manuscripts describing an example of good practice, however, only if it presents a particularly unique or innovative practice or it was situated in an unusual context. There must be a clear contribution of new knowledge to the established literature. Manuscripts describing what is essentially 'typical', 'common' or 'known' practices will be encouraged to rewrite the focus of the manuscript to a significant educational issue or will be encouraged to publish their work via another avenue that seeks such content.

By negotiation with the Editor-in-Chief, the Journal also accepts a small number of *Book Reviews* of relevant and recently published books.

Reference
Zegwaard, K. E., Pretti, T. J., Rowe, A. D., & Ferns, S. J. (2023). Defining work-integrated learning. In K. E. Zegwaard & T. J. Pretti (Eds.), *The Routledge international handbook of work-integrated learning* (3rd ed., pp. 29-48). Routledge. https://doi.org/10.4324/9781003156420-4

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