Work-integrated learning and professional accreditation policies: An environmental health higher education perspective

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The introduction of a new work-integrated learning (WIL) policy for university environmental health education programs seeking professional accreditation identified a number of problems. This included how to evaluate the acceptability of differing approaches to WIL for course accreditation purposes and a need to develop an agreed understanding of what constitutes WIL in environmental health. This paper describes a Participatory Action Research (PAR) approach undertaken as an initial step towards addressing these problems. The key recommendation from this research is the need to develop a framework to evaluate approaches to WIL in environmental health. In such a framework, it is argued that a shift in focus from a specified period of time students are engaged in WIL, to greater consideration of the essential pedagogical features of the WIL activity is required. Additionally, input from all stakeholder groups, universities, students, employers and the professional body, is required.

Keywords: Environmental health, work integrated learning, work placement, accreditation, participatory action research

The increasing pressure on universities to produce work ready graduates and increase student employability is well documented (Bridgstock, 2009; Dunn, Schier, Hiller, & Harding, 2016; Ferns, Smith, & Russell, 2014; Hains-Wesson & Kaider, 2016; Patrick et al., 2008; Tymon, 2013). One measure to address this pressure has been to explore and implement work-integrated learning (WIL) strategies, which historically have been largely associated with the placement of students in a work place. With increasing difficulties associated with providing work placements for all students, there has been a global landscape change towards WIL. WIL is now considered to encompass more than just work placements (Edwards, Perkins, Pearce, & Hong, 2015; Hains-Wesson & Kaider, 2016; Wilson & Pretorius, 2017), and involves the adoption of ''a range of approaches and strategies that integrate theory and practice, within a purposefully designed curriculum'' (Patrick et al., 2008).

The growing array of approaches to WIL, has also introduced a range of challenges involved in its provision. These include the ability to satisfy the needs of all stakeholders: the university, students, employers and industry bodies (Patrick et al., 2008). It is also recognized that good WIL practice requires institutional vision, educational rigor and strong partnership between the university and the placement provider. This requires considerable effort, skill, collaboration and careful consideration of the context in which WIL policy and practice is being implemented (Crebert, Bates, Bell, Patrick, & Cragnolini, 2004; Edwards, 2015; Ferns et al., 2014; Orell, 2011).

Given these overarching challenges, this paper describes a participatory action research (PAR) approach adopted to address a range of problems experienced with the implementation of a newly

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formed WIL policy for tertiary institutions seeking professional accreditation of environmental health programs with Environmental Health Australia (EHA). The PAR process involved establishing a community of practice (CoP) (Wenger, 1998) consisting of academics from six states within Australia, representing all the environmental health accredited programs in the country. This resulted in the formation and exploration of the questions;

- What constitutes WIL in environmental health?
- How can WIL approaches offered by universities be evaluated for professional course accreditation purposes, including the authenticity of WIL activities as a means to contribute to student work-readiness?
- How can approaches to WIL in environmental health be sustained in the future?

This paper begins with a background to the current Australian environmental health WIL context, followed by an overview of the research approach and strategies adopted to explore the questions posed. The outcomes of these strategies are then discussed, followed by reflections on the PAR process and key recommendations arising from the research.

It is anticipated that this research will be of particular interest to other discipline areas involved in the development and implementation of WIL policies for professional accreditation purposes and to those interested in collaborating with other academic institutions with respect to WIL in their field of practice. It also aims to contribute to the discussion regarding the diversity of approaches to WIL, including the complexities associated with achieving good WIL practice, the development of evaluation frameworks to assess WIL practice outcomes and the need for future work in this area, particularly in the environmental health field.

BACKGROUND

To practice environmental health in Australia, particularly in statutory based environmental health roles, the completion of an undergraduate or postgraduate qualification accredited by Environmental Health Australia (EHA), is normally required. The completion of a 'work experience' component has traditionally been accepted as integral to the accreditation process, reflecting the origins of environmental health as a practical problem solving, vocationally oriented profession. Work experience has also been considered both by employers and the professional accreditation body to be an integral component of developing the environmental health professional (Dunn & Tenkate, 2011). For those not familiar with the environmental health profession, typical activities undertaken by professionals in this area include the investigation of incidents which impact human health and the environment, routine compliance visits of areas subject to public and environmental health legislative control together with public health planning and promotion. Incidents may include those involving food, water, air, noise and land contamination. Routine compliance visits to food and accommodation premises, tobacco retailers and personal service industries such as tattooists are common. Activities associated with public health planning and promotion may include food handler education, immunization programs, disaster management planning and research. Participation, or exposure of students to these types of activities, is anecdotally considered important for the preparation of a student for professional practice.

In 2014, the work experience component of the EHA accreditation policy (Environmental Health Australia, 2014) was altered as a result of a wider review of workforce training requirements for environmental health professionals undertaken by the Australian Commonwealth Government. The review identified a range of challenges facing the profession, including the need to enhance graduates'

work-readiness (Environmental Health Committee [enHealth] 2009, p. 25) and issues associated with the provision of work placements in both undergraduate and postgraduate environmental health training programs (Dunn & Tenkate, 2011; Environmental Health Committee [enHealth], 2007, 2010, 2012). Additionally, other challenge facing the professional area, such as workforce recruitment and retention concerns, low student enrolments in university programs and a high participation rate of non-traditional and family first university attendees has placed pressure on environmental health course viability, the ability to provide well managed placements and for some students the ability to participate in work placements (Department of Health and Human Services, 2005, Dunn & Tenkate, 2011).

As a result of the review, a shift occurred in the EHA Course Accreditation policy from *requiring* students to undertake a ''work practicum'' of a minimum of six weeks or equivalent (part-time) (Environmental Health Australia, 2011, p. 12), to a ''*recommended* practicum of six weeks (or equivalent part-time) or to be more integrated into programs when possible'' (Environmental Health Australia, 2014, p. 12). The new policy also identified that:

> Work placement is one option on a continuum of WIL strategies designed to strengthen the connections between learning and practice. Other examples include, but are not limited to, workplace visits, practical or problem based project work, investigative assignments, laboratory activities and work experience. The common aim of these activities is to provide authentic opportunities and environments where the learner draws on theoretical knowledge to build practical knowledge and skills in real or authentic simulated work environments. (Environmental Health Australia, 2014, p.7)

Following the implementation of the revised policy in 2015, universities were required to apply for reaccreditation of their programs with EHA. During this process the problem emerged of how to evaluate the acceptability of differing approaches to WIL, particularly non-work placement WIL activities (workplace visits, investigative assignment etc.) as authentic opportunities which would build practical knowledge and skills.

This policy also required accreditation panel members (representing industry, academia and EHA) to make the decision regarding the authenticity of such learning activities (Environmental Health Australia, 2014). Identification of this problem also highlighted a range of other challenges. These included developing an agreed understanding of what constitutes WIL in environmental health. Concerns also emerged regarding the appropriateness of placing an emphasis on evaluating the acceptability of WIL activities based on a period of time students spent in the workplace or were involved in a non-workplace WIL activity, with this measure becoming a default assessment mechanism in lieu of other more rigorous guidelines or frameworks. The ability of non-placement WIL activities to achieve the same outcomes as a well managed six week work placement experience and the employability implications for students with no experience in a workplace prior to graduation as a result of the new policy were also raised as serious concerns.

ADDRESSING THE PROBLEM BY ADOPTING A PARTICIPATORY ACTION RESEARCH (PAR) APPROACH

To explore the problems outlined above, a participatory action research (PAR) approach was adopted as a means to "get the people affected by a problem together, figure out what is going on as a group, then do something about it" (Kidd & Kral, 2005, p. 187). The evolutionary and developmental nature of PAR, the ontological (recognition of multiple realties) and epistemological assumptions (where

knowledge is co-constructed through shared experiences and meanings arising from interaction with the social world) together with the aim of generating practical solutions that were transformative rather than informative further supported the rationale for adopting this approach (Jacobs, 2016). This was particularly due to the complexities of the WIL problem and the need to identify solutions which are amenable to the practice context for all stakeholders. Additionally, a focus on involving those impacted by any changes resulting from the research process in a ''non-hierarchical, democratic environment'' was also considered appropriate to this context (Jacobs, 2016, p.49), as actions from the research process would have implications for WIL practice amongst environmental health academics, programs and the respective institutions. Given the nature of the problems being addressed, it is acknowledged that these actions would also have implications for employers, students and other relevant industry bodies. However, for the purpose of the research described in the paper, a PAR approach was applied to set the stage (Kidd & Kral, 2005) as an initial step to addressing the problems posed, with the need for further engagement of stakeholders to be determined, based on the outcomes of these initial steps.

THE PARTICIPATORY ACTION RESEARCH (PAR) PROCESS

The PAR process encourages a dialectic movement between "action and reflection'', to ''support the development of knowledge and change'', with respect to the problems identified (Kidd & Kral, 2005, p. 188). Adopting a PAR process also provided the opportunity to increase collaboration nationally amongst environmental health providers with respect to WIL, with a view to develop research opportunities as an evidence base to inform future teaching and learning practices. This included advancing professional development opportunities for students in collaboration with industry with this being the first time Australian environmental health academics had partnered in such a way with respect to WIL.

To support the PAR approach, a community of practice (CoP) was established (Wenger, 1998). The essential elements of the CoP included the practice of WIL, as the domain of knowledge, environmental health academics from the respective institutions as the community and the creation of a shared practice by participation of academics who felt they could both contribute and learn through the engagement and sharing within the domain of knowledge (Mann & Chang, 2010). Collectively, the CoP members, the majority of whom are qualified environmental health practitioners, with significant industry experience, had extensive experience in the coordination and development of WIL activities in environmental health.

The CoP collaborated by undertaking regular, scheduled meetings via an online video conferencing portal, followed by email exchanges and annual face-to-face meetings at the national Environmental Health Australia (EHA) educator's forum. In the initial stages of the project robust discussion amongst the CoP took place regarding the new policy and the potential implications of the non-work placement WIL activities as an acceptable alternative to the traditionally mandated periods of work placement. Although the issues associated with the ability to provide work placements for all environmental health students had been previously identified and discussed in the literature (Dunn & Tenkate, 2011), these initial discussions further highlighted the competing contexts, differing views and challenges experienced by academics within their respective institutions, and through engagement with students and industry employers with respect to the provision of WIL. For example, the recognition that work placements were in some contexts not always a viable option, but in other contexts were well supported and considered vital to the on-going viability of the environmental health tertiary program, highlighted the complexities the CoP faced when addressing the problem posed by the new WIL policy. These

discussions and further reflection on these complexities resulted in the formation of the previously outlined research questions.

STRATEGIES ADOPTED TO EXPLORE THE QUESTIONS

To explore the questions described earlier the following research strategies were adopted:

- mapping of the current WIL options offered by each accredited university, including work placement and non-placement WIL activities in environmental health, identifying key similarities and differences;
- undertaking a SWOT (Strengths, Weaknesses, Opportunities and Threats) of these two WIL approaches, identifying their respective benefits and challenges; and
- reflecting on each of the above findings and reviewing relevant WIL literature for guidance and information on how to address the problem posed by the new policy.

In keeping with a PAR approach, the selection of these strategies emerged after a process of reflection and sharing of the CoP members experiences, (Kidd & Kral, 2005). Reflections focused on each academics' own environmental health and WIL practice experience gained through informal engagement with employers, industry partners and students or more formally from feedback received from institutional reporting mechanisms, such as student and employer evaluations associated with WIL delivery, or during course accreditation processes. The outcomes arising from each of these strategies are presented in the following sections.

WIL APPROACHES IN ENVIRONMENTAL HEALTH AMONG AUSTRALIAN UNIVERSITIES

The approaches to WIL amongst the 10 accredited Environmental Health degrees in Australia, seven of which are offered at undergraduate level and three at postgraduate level was established by mapping the key characteristics of each universities work placement program. The characteristics included placement duration, whether the placement was paid or unpaid, the timing of placement, the type of industry sector students were placed, e.g., government, private, and whether the placement completion resulted in credits towards the degree.

It also involved each member of the CoP identifying and providing a description of what they considered were authentic non-work placement activities offered in their respective programs. These activities were offered in addition to the work placement option in programs. A summary of the WIL approaches in environmental health among Australian universities can be found in Appendix 1.

WORK PLACEMENTS SIMILARITIES, DIFFERENCES AND KEY REFLECTIONS

The mapping exercise in Appendix 1 identified that whilst some similarities exist there are also a range of differences in the provision of work placements in environmental health programs amongst Australian universities. In the first instance, similarities identified related to the provision of a work placement by each of the accredited institutions. It was also acknowledged by the CoP that these placements were guided by best practice principles, which in most instances included the planning and contracting of student learning, workplace and academic supervision, monitoring of student progress, facilitated reflection of student experiences together with the provision of a range of processes aimed at supporting students and industry (Edwards, 2015; Orrell, 2011). Differences identified generally related to the extent and quality of these practices, principally influenced by resource availability or institutional commitment or constraints, reflective of WIL literature in this area (Edwards, 2015; Patrick et al., 2008). For example, in contrast to other universities, Flinders University's (FU) work placement

for postgraduate environmental health students is entirely voluntary and student-organized, albeit with the added benefit of university insurance. This limits the academic advisor's ability to provide guidance with respect to the placement experience in accordance with WIL best practice principles. Other similarities identified related to most placements being unpaid with the exception of local or state government sponsored traineeships or cadetships whereby students are employed on a full-time basis and/or enrolled in part-time study such as the Swinburne University of Technology (SUT) 12 month paid industry placement program.

Differences in the number of hours students were engaged in the workplace were also identified, with 240 hours the most common, in line with the professional accreditation guidelines (Environmental Health Australia, 2014) and 12 months the least common. The amount of time a student should spend in the workplace in order to gain satisfactory work place experience was a key point of discussion amongst the CoP during this process. There was general acknowledgement that this is a contentious issue, as time spent in a workplace environment may not necessarily prepare students for professional practice (Edwards et al., 2015), due to the range of complexities which impact on this outcome. For example, it was agreed that not all environmental health workplaces afford the opportunity for students to develop higher-order thinking skills, an important factor in professional practice development (Cooper, Orrell, & Bowden, 2010). This can be attributed to a range of factors such as workforce shortages impacting on the ability to provide suitable experiences to facilitate this type of learning.

A difference with respect to whether the students gained credit towards the degree for participation in placements was also identified. The implications of this related primarily to the ability of the university to provide a structured work experience in the context of good WIL practice, including specifically linking the experience to the curriculum (Edwards et al., 2015). For example, the University of Western Sydney non-credit bearing work placement unit is currently being phased out due to resourcing constraints impacting on the ability to achieve good WIL practice outcomes, with WIL being more explicitly included in a year-long final year project-based credit bearing unit.

Other key differences related to the timing of the work placement within the environmental health program, with some taking place post the course completion (e.g., Flinders University) others scaffolding through-out the program (e.g., Edith Cowan University) with some taken after the second year of studies (e.g., Swinburne University of Technology. Guidance regarding when a placement should take place within a program is not prescribed in the EHA course accreditation policy, with the WIL literature also not explicit with respect to when this should take place (Dunn et al., 2016).

NON-WORK PLACEMENT WIL SIMILARITIES, DIFFERENCES AND KEY REFLECTIONS

In addition to the mapping of work placements, the CoP also identified activities considered to represent authentic non-work placement WIL, described in Appendix 1. There is considerable debate regarding what constitutes authenticity in WIL, particularly in relation to the assessment practices associated with these activities (Hains-Wesson & Kaider, 2016). For the purpose of this exercise, non-work placement activities were considered to be activities which offer students the opportunity to apply disciplinary learning to work-based scenarios (Hains-Wesson & Kaider, 2016) with the intention of developing graduate work readiness skills to industry standards to enhance employability (Edwards, 2015; Ferns et al., 2014). The key aim of this exercise was to document, compare and reflect on the non-work placement activities provided across the universities, given that this had not been previously attempted. It also provided a mechanism to: generate discussion regarding what constitutes

WIL in environmental health; identify alternate approaches to work placements; facilitate opportunities for resource sharing and promote discussion regarding potential ways to evaluate the acceptability of non-work placement approaches.

The mapping exercise (Appendix 1) also revealed that all universities were providing a range of non-work placement WIL activities reflective of the activities described in the new Environmental Health Australia (EHA) WIL policy. The areas commonly identified included site visits, industry guest speakers, and problem-based exercises. Discussion amongst the CoP also considered that the learning and assessment activities which accompanied the activities outlined by the respective institutions aimed to align with professional practice experiences. For example, a site visit to a food premises would involve students being assessed on their ability to conduct an audit in accordance with industry practice standards or a simulated or scenario-based activity such as a moot court, would involve students being assessed on their ability to interpret legislation, provide evidence and demonstrate court etiquette, reflective of real life environmental health scenarios.

This process also unearthed the potential for universities to collaborate on the development of resources, such as assessment guidelines reflective of practitioner-based expectations and a framework for the development of an environmental health practice portfolio to demonstrate the attainment of employability skills that could be shared among institutions. Approaches to gaining student access to WIL activities was also identified amongst the CoP , including the benefit of actively engaging course advisory panels in the facilitation of WIL opportunities. For example, a subcommittee of the environmental health course advisory panel at ECU was formed to develop a compulsory practicum unit. This resulted in employers providing input into the development of the WIL assessment portfolio and the development of a database which students could access to identify employers willing to support a placement together with a description of the type of environmental health WIL activities that students could be engaged in at the organization. Following the initial mapping of WIL activities, an analysis of the Strengths, Weaknesses, Opportunities and Threats, (SWOT) of both work placements and non-placement WIL was undertaken by the CoP as a strategy to more fully explore the questions posed for the research (Gordon et al.,).

SWOT ANALYSIS

The SWOT analysis took place over a 12 month period. Initially, the CoP members individually undertook a SWOT analysis of their respective institutional WIL placement and non-WIL placement programs in environmental health. Findings from the initial SWOT were analyzed by three CoP members to identify common themes and results were shared with and discussed amongst the wider CoP. An iterative process of reflection and discussion enabled further refinement of results which are presented in Appendix 2.

SWOT ANALYSIS WORK PLACEMENTS AND KEY REFLECTIONS

The SWOT analysis identified a number of key points. Firstly, the strengths and opportunities associated with the provision of well managed work placements, including the benefits to students, employers and the university were clearly acknowledged by the CoP and were reflective of the literature in the area (Cooper et al., 2010; Edwards, 2015). However, the threats and weakness of work placements identified a range of challenges associated with ensuring the ongoing provision of such placements for all environmental health students, in all contexts within Australia.

One of the key issues identified related to the ability to guarantee and provide a well-managed placement for all students, where factors such as institutional resources, unpredictable workplace environments and student-centered factors come into play. This is particularly pertinent to the environmental health context given the issues associated with workforce shortages, the demographic profile of environmental health student cohorts and pressures associated with maintaining university program viability as described earlier. It also highlighted the potential serious implications of a mandated requirement for students to spend a specified period of time in a workplace environment, regardless of the time frame. These implications may include the inability for students to graduate, a compromise to university professional accreditation status or the facilitation of a work place experience which is not reflective of good WIL practice, potentially impacting on student retention in the occupational area. It may also place pressure on course viability with students who are unable to meet the placement requirements being faced with no other choice but to withdraw from the program.

SWOT ANALYSIS NON-WORK PLACEMENT WIL KEY REFLECTIONS

The strengths and opportunities identified by the CoP associated with non-work placement WIL activities included an increased ability to plan and scaffold WIL in the curriculum as a means to develop higher order learning outcomes; the ability to engage industry in the design and delivery of these activities; and a greater ability to ensure equitable access to WIL for all students. Threats and weaknesses associated with non-work placement WIL related to concerns regarding whether employers would value alternate WIL activities and consider the activities were capable of achieving the level of job readiness currently expected of graduates. As a consequence, this may disadvantage graduates who have undertaken non-work placement WIL when competing in the job market against graduates with work place experience. Concerns regarding the ability of universities to ensure non-work placement WIL activities are authentic or reflective of practitioners' experiences and the resource implications associated with achieving were also identified by the CoP.

Overall, the SWOT process identified a wide range of complexities involved in the provision of both work placements and non-placement WIL. Reflection on these complexities highlighted the need to further explore appropriate ways to evaluate these approaches as a means to provide a solution to the problems posed by the new policy. Participants in this CoP identified that advantages could be gained from the use of a framework to guide evaluation of all types of WILs activities. Having such a framework was perceived as being highly valuable for guiding best practice both in curriculum development, WIL delivery and preparing graduates for professional practice. To guide this approach, a further review of the WIL literature was undertaken.

FRAMEWORKS FOR GUIDING THE EVALUATION OF WIL IN ENVIRONMENTAL HEALTH EDUCATION

The review identified the emergence of a growing interest in developing frameworks to evaluate WIL, which appears largely associated with the increasing focus on the provision of WIL in higher education internationally, together with the differing views regarding what constitutes WIL and the associated implications this brings for all stakeholders.

For example, Smith (2012) argues that given the significant investment in expanding WIL in the higher education sector, the relatively expensive nature of WIL curriculum compared to the standard lecture, tutorial designs and the lack of instruments to measure and capture essential WIL curricula elements, there is a need to develop suitable WIL evaluation frameworks. He further suggests that these frameworks need to go beyond a focus on the administration and management of WIL or merely

describing specific strategies of curriculum implementation, to providing a way to capture and measure its essential pedagogical features, particularly those related to the authenticity the WIL experience and the incorporation of integrative learning, defined as the ''integrating of discipline learning and workplace practice or application'' (Smith, 2012, p. 248). He also proposes an evaluation framework in which the WIL curriculum is described in terms of six separate constructs, these being: authenticity, alignment of teaching and learning and assessment activities with integrative learning objectives, integrated learning support, supervisor access and induction and preparation processes. Smith (2012) then proposes a range of measurement scales to assist in the evaluation of each of the six constructs.

Similarly, at the international level, in recognition of a growing confusion with respect to designing and describing the many and diverse models of WIL, McRae and Johnston (2017) propose a global work-integrated learning framework. In proposing this framework, they argue for a shift in focus from developing a shared description of WIL activities, whether these be curricular or non-curricular WIL, or termed in a different way, towards a better understanding of the "theoretical underpinning and best practice of WIL as they relate to the primary program and learning outcomes of any given model" (McRae and Johnston, 2017, p. 341). McRae and Johnston identify some clear benefits of this approach. These include the ability for stakeholders to better understand the key outcomes of various WIL models and to explore the commonalities and differences between such models based on identified attributes (experience, curriculum integration, student outcomes and reflection) whilst providing a framework for rationalizing and connecting WIL offerings. Their model also offers a way to conceptualize the evaluation of WIL through this lens, with the potential to articulate the breath of WIL activities and how each contributes to the development of the student as a professional practitioner.

Hains-Wesson and Kaider (2016) also highlight the need to further improve, develop and evaluate approaches to WIL as a means of preparing students for professional practice. This is in response to a recognized inability to provide all students, from a range of disciplinary areas, with a work placement experience. The provision of other authentic assessments, or non-placement WIL activities is considered a viable alternative to expand the employability development of students. Hains-Wesson and Kaider (2016) propose a model for scaffolding authentic assessments through the development of an authentic assessment framework and typology as a means to investigate the type and range of authentic assessments in this context (identified as applied and authentic learning activities and assessments which authentically emulate workplace practice and/or enable students to interact directly with workplace personnel). The framework, encapsulating a typology that applies measures of authenticity and proximity across a spectrum of low, medium and high, against a broad range of assessment activities, they argue, provides a number of advantages (Hains-Wesson & Kaider, 2016, p. 10). An example of this is the ability to develop and scaffold throughout the students' learning program discipline-specific authentic learning tasks and complementary authentic career development learning tasks (e.g., interview skills preparation). Significantly, as Hains-Wesson and Kaider (2016) highlight, this approach has the potential to not only complement the learning of students who gain a placement, but importantly for students who do not, provide "a parcel of rich work-related learning experiences that could serve as very valuable alternative to placements as preparation for entry or progression in their careers" (Hains-Wesson & Kaider, 2016, p. 17).

While not an exhaustive review of literature in this area, the above examples highlight the range of difficulties, including the different constructs which should be considered, when developing frameworks to evaluate WIL. It also highlights the importance of developing criteria which evaluate the ability of the WIL approach, whether placement or non-placement, curricular or non- curricular

WIL, to integrate disciplinary knowledge, skills and professional practice, as a means to promote work readiness.

KEY RECOMMENDATIONS

The key recommendations from this research relate to the need to further investigate the development of a framework to evaluate approaches to WIL in environmental health academic programs. It is also recommended that this framework includes criteria which enables the assessment of both workplace and non-workplace WIL activities. Additionally, such criterion requires a shift in focus from a specified period of time students are engaged in either WIL approach to greater consideration of the essential pedagogical features of the WIL activity. It is argued that this approach may also result in generating greater clarity amongst stakeholders regarding how work readiness in graduates is developed, whilst providing an avenue for the development of an evidence base to strengthen and legitimize differing approaches to WIL.

To ensure the sustainability of this approach in the future, further collaboration between all stakeholder groups, namely the universities, students, employers and the professional body is required. This research would also benefit from the exploration of WIL professional accreditation policies, approaches and implementation strategies pertaining to other professional discipline areas such as engineering, urban planning and in the broader health arena.

REFLECTIONS ON THE PARTICIPATORY ACTION RESEARCH (PAR) APPROACH

This research is an initial step in addressing the problems posed by the new Environmental Health Australia (EHA) course accreditation policy. The formation of the Environmental Health Educators Community of Practice (CoP) and the adoption of a participatory action research (PAR) research approach provided a useful framework for this investigation as it facilitated a process which enabled academics to reflect, question and research their own WIL and institutional practice in a scholarly way (Mann & Chang, 2010). By doing so, it enhanced the opportunity for the CoP to contribute more broadly to the scholarship of teaching and learning, arguably an important aspect from an individual academic and institutional perspective, also validating academic participation in this research. This is an important consideration in a resource-constrained academic environment. The process provided the opportunity to share WIL practice ideas and strategies identify opportunities to share resources, improve academics' scholarly understanding of the practice of WIL and importantly build a sense of community among academics in the environmental health field.

CONCLUSION

This paper describes a participatory action research (PAR) approach to exploring the complexities associated with the provision of WIL within the environmental health discipline area and the practical challenges associated with the implementation of a new professional accreditation policy. In doing so, it is acknowledged that further research is required to support the development of an appropriate evaluation framework to advance WIL practice in this area. This paper aims to contribute to the broader discussion regarding the diversity of approaches to WIL, including the complexities associated with achieving good WIL practice, the development of evaluation frameworks to assess WIL practice outcomes and the need for future work in this area, particularly with respect to the practical implementation of professional accreditation policies.

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APPENDIX 1: A SUMMARY OF THE WIL APPROACHES IN ENVIRONMENTAL HEALTH AMONG AUSTRALIAN UNIVERSITIES

University	Program Offering U*/PG*	Work placement key comparison areas					Non-work placement WIL
		Placement duration	Paid or Non Paid	Award Credits	Timing of Placement	Placement Industry Sector	Description of authentic activities
Central Queensland University (CQU)	U	240 hours	Non paid	Yes	Final year; other WIL activities throughout degree	State/Local Government	Site visits, including inspections & reporting, range of environmentally relevant activities, complaint investigation and foodborne outbreak simulations; assessment of food premises application and food safety programs; investigation of waterborne disease outbreak and legal investigation of a complaint; research based capstone project; disaster risk reduction exercise, EHO guest lecturers current and emerging issues.
Edith Cowan University (ECU)	U	280 hours	Non paid	Yes	Scaffolded through -out degree	State/Local Government (210 EH* sector/70 non EH sector)	Occasional (ad hoc) site visits to food premises, factories, sewage and water purification plants etc.
Griffith University (GU)	U	240 hours	Non paid	Yes	Final year; other WIL activities throughout degree	State/Local Government	Interview or analysis of a pre-recorded interview with an environmental health professional, access to career and employment services; guest speakers; scenario activities, development of range of reports, letters, and notices; site visits to state and local public health government offices, environmentally relevant activities, waste management facilities, water treatment, mass gathering e.g., festival sites, disaster centers and food manufacturing.
Swinburne University of Technology (SUT)	U	12 months	Paid	Yes	After second year of study other WIL activities scaffolded	State/Local/ Government/ Private Sector	Unit delivery by industry professionals, guest speakers, , environmental health practice based problem solving activities such as moot courts, site visits (food manufacturers, court proceedings) , field work (water pollution), lab work (water and food testing) , research based capstone projects, industry workshops (e.g food borne outbreak, disaster management), access to career services.

University	Program Offering U*/PG*	Work placement key comparison areas					Non-work placement WIL
		Placement duration	Paid or Non Paid	Award Credits	Timing of Placement	Placement Industry Sector	Description of authentic activities
University of Tasmania (UTAS)	U	40 days	Non paid	Yes	Last semester of final year	Mainly Local Government/ sometimes State Government	Field visits to a major food business, a major landfill with integrated composting, a major STP, a water treatment plant and private premises for onsite wastewater management, professional project units.
University of the Sunshine Coast (USC)	U	240 hours	Non paid	Yes	Last semester of final year	120 h State Government /120 h Local Government	Field and classroom based group problem-solving activities related to mass events and disaster management, food borne illness outbreaks, environmental regulation, water quality and environmental noise monitoring, site visit to commercial food premises, lab work. Technical lectures provided by industry professionals
Western Sydney University (WSU)	U	10 weeks (phasing out)	Non paid	No	Within the degree as a topic	Local and State Government	Group problem-solving activities, individual written reports and written reflection. Examples include scenario exercises in environmental regulation, environmental noise monitoring and disaster and emergency management. Final year project undertaken with professional client.
Curtin University (CU)	PG	100 hours	Non paid	Yes	Last semester (completed at least ½ the course)	Local Government	Online technical lectures and activities provided by industry professionals.
Flinders University (FU)	PG	0 h	Non paid	No	Voluntary	NA	Virtual activities, scenario-based activities, guest speakers, group work. Examples include "What would an EHO do?" a group activity that requires contacting local government and interviewing local EHOs.

University	Program Offering U*/PG*	Work placement key comparison areas					Non-work placement WIL
		Placement duration	Paid or Non Paid	Award Credits	Timing of Placement	Placement Industry Sector	Description of authentic activities
Queensland University of Technology (QUT)	PG	0 h	Non paid	No	Voluntary	NA	Site visits (food businesses, body piercing/tattoo businesses, potentially polluting industries, etc.), monitoring activities, workshops (e.g., communication skills, investigation skills), on-line activities, case studies, scenario activities, practice-based assessment items, EHO employers present during orientation and other sessions, specific lectures delivered by industry professionals, and access to employment career services.

Note: U= Undergraduate PG= Post Graduate EH Environmental Health

APPENDIX 2: SWOT ANALYSIS OF WORK PLACEMENTS AND NON- WORK PLACEMENTS WIL

SWOT	Work Placements	Non-work placement WIL
Strengths	Enables a strongly-supported introduction to environmental health professional practice and its interface with the student's academic learning Heightens student awareness of their personal-professional identity in the environmental health arena Develops students' professional competencies and confidence in themselves as a professional practitioner Enhances graduate employability and explicitly aligns with the University mission to prepare job-ready graduates	Enables ease of quality control through carefully-crafted and closely managed student activities Ensures equitable experiences across the student cohort through curricular integration of the full breadth of professional practice Can be closely monitored and rigorously assessed with clear accountability for design and assessment Can be closely and explicitly aligned with students' academic learning and offered at no additional cost to students Aligns well with current Federal Government requirement for all Universities to integrate WIL into STEM curricula
Weaknesses	Under-resourced placements undermine good WIL practice and accountability for quality assurance of student work experience Only one WIL placement unit can be typically provided, which can limit the ability to cover the required breadth of environmental health topics Ability for workplaces to offer the full range of experiences or suitable length of time, requiring students to identify alternative placements. Lack of recognition of work experience undertaken outside of the public sector by employers seeking graduates with an accredited qualification Students with concurrent on-campus learning commitments have reduced opportunity to participate in rural placements, can be cost-prohibitive for students on a tight budget	Students may graduate with no direct workplace experience Significant, sometime unrecognized, resource implications associated with the design and management of WIL activities such as site visits, guest speakers, scenario development, industry-aligned assessments and virtual materials Complexities of ensuring practice experiences are reflective of real world environmental health scenarios Reliance on industry partners to participate in curriculum development and delivery within specified time frames

SWOT	Work Placements	Non-work placement WIL
Opportunities	Students gain exposure to authentic professional environmental health experiences, develop a professional network, work outside of their personal comfort zone Facilitates the documentation of environmental health professional attributes and competencies in the workplace setting Enables the consolidation and application of prior academic learning in a professional context Potential for students to work autonomously, develop initiative while also working as part of a team Universities can broaden their network of industry contacts	Student WIL can be purposefully scaffolded through curriculum design to accommodate the broad range of topics required for course accreditation Activities can be selected/designed to ensure professional authenticity Debriefing can be facilitated and formalized with reflection on WIL activities included as an integral component of student assessment Encourages the development of close working partnerships between university educators and professional practitioner to ensure ongoing currency of WIL for all students
Threats	Shrinking and varying regional availability of environmental health traineeships places pressure on availability of well managed placements Student reluctance to take up work placements in remote and rural Local Government Authorities (LGA) may impact on future supply of work placements Limited university resources may impact on the ability to coordinate and assess student work placement Coursework results may be delayed pending student completion of the required placement period Pressure on students to undertake work placements before they feel ready to do so may result in poor outcomes Sending poorly-prepared students into the workplace discourages provision of future work placements	Graduates may be disadvantaged in the job market, being regarded by prospective employers as less job ready than applicants with work placement WIL experience Graduates without 'real world' environmental health work experience may initially lack confidence in themselves as professional practitioners and be less able to 'hit the ground running'