The contribution of work-integrated learning to undergraduate employability skill outcomes

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WIL has attracted considerable attention as an instrument for enhancing professional practice and developing work-readiness in new graduates. It is widely considered as a point of difference in developing graduate employability by enhancing skill outcomes, such as team-work, communication, self-management and problem solving, employment prospects and student understanding of the world-of-work. This paper investigates the role of WIL in improving undergraduate employability skills; gauging its impact on a range of skills; and identifying variations in outcomes for certain demographic, study background and placement characteristics using survey data from 131 WIL students in an Australian university. Results indicate a significant improvement in undergraduates' perceived ability to perform all ten employability skills following placement. Study background and demographic characteristics produced minor variations in skill outcomes, both in general and specific to the completed placement. The number of hours completed in the workplace was of particular importance. Implications for placement design are discussed. (*Asia-Pacific Journal of Cooperative Education, 2013 14(2), 99-115)*

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Work-integrated learning (WIL) in higher education broadly refers to on-campus and workplace learning activities and experiences which integrate theory with practice in academic learning programs. This includes work placements, internships and practicum; project-based learning; and service learning. It represents a collaborative effort by industry and higher education to enhance student learning through facilitating the application of theory into real-life practice and is becoming increasingly apparent (Bates, 2011) and important (Yorke, 2011) in the tertiary sector worldwide, even beyond traditional disciplinary areas such as Nursing and Education (Billet, 2011). WIL in undergraduate degrees has attracted considerable attention in recent years as an instrument for enhancing professional practice and developing work-readiness to the standard which industry expects of new graduates.

WIL comes in many forms; a flexible creature which can be adapted to different disciplines and organizational contexts. In the UK, WIL is often the sandwich degree where two years of on-campus learning is considered sufficient for undergraduates to develop technical expertise which directly benefits host organizations (Hanna, Curran, Fraser, Ayre & Nicholl, 2011) in the third year, before returning to university in the final year of study. In the US, it encompasses internships (temporary professional placements) and cooperative education (a structured program combining formal classroom learning with practical work-based activities). In Australia, different forms of experiential learning, including WIL, continue to grow (Dickson & Kaider, 2012) in response to employer demands (Business Council of Australia, 2011). Further, WIL is now broadly considered to encapsulate service learning, "a community-centric problem-based learning methodology where students address real community issues and problems" (Dixon, 2011, p. 45).

WIL is widely considered as a point of difference in enhancing graduate employability (Martin, Rees & Edwards, 2011); a potential means for producing graduates with the skills,

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sense of self and confidence to manage what Barnett (2004, p. 247) calls "an unknown future". Fundamentally different to mainstream university learning, it also varies from undertaking employment while studying at university; "learning is not a by-product of work rather learning is fundamental to engaging in work practice" (Smith, Meijer & Kielley-Coleman, 2010, p. 2). WIL is widely assumed to enhance employability skill outcomes in undergraduates (Wilton, 2012) and be of critical importance to employability and work-readiness (see Dacre Pool & Sewell, 2007). These skills span team work, communication, self-management, critical thinking and problem-solving (Australian Association of Graduate Employers, 2011; Confederation of British Industry, 2011), among others, and their development in undergraduate education is now considered essential as they enable the effective application of graduate disciplinary knowledge and skills in the workplace. Further, WIL encourages undergraduates to reflect on their own learning; gain a better of understanding of the world-of-work and the profession related to degree studies; and learn how to conduct and manage themself in different contexts (McIlveen, Brooks, Lichtenberg, Smith, Torjul & Tyler, 2011) – all vital to graduate employability. It forces undergraduates to integrate theory with practice by providing opportunities for practicing acquired knowledge and skills and problem-solving (Weisz & Smith, 2005).

This paper specifically investigates the role of WIL in enhancing undergraduate employability skills. It aims to empirically examine which employability skills, and to what degree, are improved as a result of completing a work placement. Although previous studies have noted improvements in certain skill outcomes following student placement in industry (see Coll, Eames, Paku, Lay, Hodges & Bhat, 2009; Freudenberg, Brimble & Cameron 2011; Yorke, 2011), Wilton's (2012) findings suggest placements do not consistently result in enhanced skill outcomes; highlighting the need for further research in this area. Unlike others, this study is not limited to one particular disciplinary group and may therefore allow inferences to a broader cohort of undergraduates. Further, the study acknowledges tendencies for variations in skill outcomes among undergraduates with different background characteristics, such as age and gender (see Jackson & Chapman, 2012).

The research objectives are to gauge the impact of WIL on a range of employability skills; and to identify any variations in skill outcomes by demographic, background and/or placement characteristics. Discussion of the research objectives is based on data gathered from undergraduates (n=131) undertaking WIL as part of their degree program from all faculties within a single Australian university. The paper is structured to first provide a background review of the impact of WIL on graduate employability, followed by an outline of methodology, presentation of results and discussion of findings. Finally, implications for placement design are discussed, as well as directions for future research.

BACKGROUND

Benefits of WIL

Billet (2011) argues that different types of WIL activities, such as placement, shadowing and workplace projects, will lead to different learning outcomes. In some professions, particularly in Education and Health Sciences, WIL is required for professional accreditation purposes. It is considered particularly important in business and management to retain its status as an applied discipline (Council for Excellence in Management and Leadership, 2002) "with an explicit emphasis on preparing students for the labor market in terms of both knowledge and transferable skills" (Wilton, 2012, p. 604). WIL is also increasingly considered as part of the

undergraduate capstone experience; their association augmented by complementary links in their overarching objective of "the transition to professional practice" (McNamara, Kift, Butler, Field, Brown & Gamble, 2012, p. 1).

Extant literature relating to WIL focuses on its benefits to various stakeholders (Coll et al., 2009). Host organizations capitalize on disciplinary expertise (Martin & Hughes, 2009) at relatively little cost. For higher education providers, there is increased networking with professional practitioners (Martin & Hughes, 2009) which may inform educators of any changes in current workplace practices and clarify expected skill standards in new graduates, thus facilitating a more industry-aligned curricula design. Student perspectives on the impact of WIL on employability skill outcomes are key foci in emergent literature, particularly the embedment of meta-cognitive processes (Smith et al., 2010) and how WIL facilitates the integration of theory with practice (see Dean, Sykes & Turbill, 2012)..

Impact of WIL on Graduate Employability

It is widely accepted that enhancing undergraduate employability is now integral to degree programs and that "people leaving higher education should be confident not only that their knowledge, skills and capabilities for entering the world of work are appropriate, but that they are able to articulate these to potential employers" (Butcher, Smith, Kettle & Burton, 2011, p. 3). WIL is considered to augment graduate employability in a number of ways. First, it builds student confidence in their capabilities in professional practice (Billet, 2011; Martin et al., 2011). Martin and Hughes (2009) argue this is due to students listening, questioning and responding to timely and constructive feedback and positive reinforcement. Second, those who participate in WIL have a greater appreciation of the importance of employability skills (Freudenberg et al., 2011; Patrick & Crebert, 2004), in addition to superior outcomes in certain skills (Coll et al., 2009; Freudenberg et al., 2011). Gamble, Patrick and Peach's (2010) study found Australian WIL students were more employable through a better understanding of required skill standards and their ability to perform in the workplace. Lightfoot (2009) argues placements provide an opportunity for practicing skills which may not otherwise be available to students, particularly in periods of economic downturn. Wilton (2012) also reported greater fit between jobs and degree-acquired competencies among placement students.

Third, many acknowledge the importance of WIL as an introduction to the workplace; enhancing understanding of workplace values and culture (see Coll et al., 2009) and developing professionalism (Martin et al., 2011; Poulter & Smith, 2006). In his study on the impact of work placements on 880 UK graduates, Wilton (2012) concluded that the value of the placement is not so much enhancing skill outcomes but more personal development and fostering a tacit understanding of the demands of the working environment and employment. Incorporating real-world context into university learning is critical for certain professions, including management, which many argue cannot be taught solely in the classroom (Mintzberg, 2005) and requires a 'real world context' (Wilton, 2012).

WIL is also perceived to improve employment opportunities in placement students (Blackwell, Bowes, Harvey, Hesketh & Knight, 2001; Crebert, Bates, Bell, Patrick & Cragnolini, 2004; Jensen, 2009). Dressler and Keeling (2004) found WIL students have more favorable outcomes in securing employment and career progression, and wages (Blair, Miller & Hammer, 2004). Brooks (2012) found UK sandwich degree graduates were more likely to gain places on competitive and highly regarded, larger firms' graduate recruitment programs

and 25 per cent achieved employment in their host organization upon graduation. Wilton's (2012) longitudinal study of UK graduates, however, revealed no significant differences in employment outcomes among those who completed placements. The four year lag since graduation may have attenuated the impact of WIL on employment prospects although placement graduates did feel they had a labor market advantage over others. Bourner and Millican (2011) argue student-community engagement programs may actually worsen employment outcomes by distracting students from their subject-specific studies and attracting those who care less about material advancement than community engagement. Wilton (2012) warns more research is needed on the characteristics of good placements which facilitate improved skill development, workplace performance and employment outcomes. Irrespective, WIL provides excellent networking opportunities (Bourner & Millican, 2011; Martin et al., 2011) which are vital for career progression (Martin & Hughes, 2009).

There is some suggestion that WIL enhances learning transfer in graduates, although there are inconsistencies in evidence reported. Eames (2003) advocates value in enabling students to put classroom theory into practice in a work environment and Crebert et al. (2004) found evidence that students who complete work placements do not encounter major difficulties in applying their generic skills in the workplace. However, a recent study of business graduates (Jackson, n.d.) found WIL made little difference to the transition of skills from university to the workplace. It may be, however, that post-graduation work experience in Jackson's study nullified graduate perceptions of the importance of WIL in facilitating transfer. Self-reported achievement in the workplace indicated placement graduates were more likely to state they were using degree-acquired knowledge but there was no significant difference in the level of time taken to learn to do their current job to a competent level (Wilton, 2012). Finally, Bourner and Millican (2011) suggest student-community engagement through service learning, a form of WIL, enables students to discover, and subsequently provide evidence of, talents and strengths beyond their disciplinary expertise, thus enhancing employability.

Despite this multi-faceted influence of WIL on graduate employability, this paper focuses specifically on its influence on undergraduate employability skill outcomes. Enhancing a complement of employability skills in WIL participants is largely assumed by stakeholders (Wilton, 2012) and is a significant motivator for embedding WIL into undergraduate curricula. There is, however, mixed evidence to support academics' premise that WIL will automatically assist undergraduates in developing employability skills, notoriously difficult to unpack, foster and assess in a hypothetical environment such as the university classroom. The purpose of this paper is to enrich our understanding of the benefits of WIL and its role in making graduates more employable; particularly important in uncertain economic times and increasingly tight and highly competitive graduate labor markets.

METHOD

Participants

Table 1 summarizes data on the demographic and placement characteristics of the 131 participants in the study. Each completed WIL as part of their undergraduate degree studies during 2012. For Business and Law students, work placements are an elective component of their degree program other than Recreation and Event Management students for whom it is compulsory. Work placements form an essential element of degree studies for those in Education, Health and Science and Engineering. Placements are structured and integrated with formal, campus-based learning for all disciplines. In the main, university staff is

responsible for arranging placements although some students in Business and Engineering negotiated their own with parameters and guidance from academic practitioners. Just over 70 per cent of the sample was female, slightly above the approximate 62:38 female-to-male composition in the university's student population. The age distribution is as one would expect for those completing an undergraduate program, the majority younger than 21 years. A high proportion of the participants were in their third year of study, aligning with conventional understanding of when placements are integrated into undergraduate degree programs. There was a fairly even spread in regard to the size of host organizations with relatively few students based in not-for-profit organizations.

Procedures

An online survey was used to address the defined research objectives. This was deemed the most suitable method for reaching the targeted sample size (n>100) required for the proposed quantitative analysis. Further, it was considered the most efficient way of reaching a relatively diverse sample, some students operating under different semester timetables but all with access to a central learning management system and university email account. Undergraduates were invited to participate during October and November 2012.

TABLE 1. Data on participants' demographic and placement characteristics

Factor	Subgroup	Respondents	
		n	%
Age Group	19-21 years	58	44.3
	22-25 years	35	26.7
	26+ years	38	29.0
Sex	Female	94	71.8
	Male	37	28.2
Degree type	Business	26	19.8
	Event, Sport and Recreation	12	9.2
	Education	32	24.4
	Engineering	13	10.0
	Health and Science	48	36.6
Year of study	First	16	12.2
	Second	21	16.0
	Third	74	56.5
	Fourth	20	15.3
Hours on placement	Less than 100 hours	41	31.3
	Between 100 and 200 hours	49	37.4
	More than 200 hours	38	29.0
	Not answered	3	2.3
Organization type	Private	61	46.6
	Public	51	38.9
	Not-for-profit	19	14.5
Size of organization	Small (1-49 employees)	42	32.1
	Medium (50 – 149 employees)	42	32.1
	Large (150+ employees)	47	35.8

They were contacted by relevant Unit/Course coordinators via email, announcement in class, and/or the university's learning management system. Coordinators provided relevant information on the purpose and nature of the study in addition to an electronic link for accessing the survey.

Instrument

The survey instrument initially captured participant's demographic characteristics and background information on completed placements – as presented in Table 1. Students were then asked to rate their own capabilities before and after placement against a framework of employability skills. The framework, summarized in Table 2, was adapted from Jackson and Chapman's (2012) framework of non-technical competencies which broadly represents typical industry skill requirements in new graduates. Jackson and Chapman's own framework derived from an extensive review of employer-based studies on skills requirements in undergraduates (see Jackson, 2010). The resulting employability skills framework comprises 10 skills and 40 constituent behaviors and is considered a valid tool for addressing the research objectives. The detailed behavior descriptors are important for overcoming ambiguities in stakeholder interpretation of the precise meaning of different skills, a problem plaguing studies which examine the development and assessment of employability skills (Barrie, 2006). Importantly, the framework encapsulates the skills, attributes and values defined in Australia's national skills framework (Department of Education, Science and Training [DEST], 2002) and the university's own set of graduate attributes which comprise the ability to communicate; ability to work in teams; critical appraisal skills; ability to generate ideas; and developing a cross-cultural and international outlook.

Participants rated, on a scale of one to seven, the level which best describes their ability to perform each skill in the workplace before and after their work placement. A rating of one means they consider themselves unable to perform the skill in the workplace. A rating of seven means they consider themselves an expert and able to teach others in the workplace. Cronbach's alpha for student ratings prior to placement was .911 and post-placement was .920, indicating the framework is a reliable measure of the employability skill construct. The online survey instrument was pretested by a small number of academics who are familiar with the literature and practice of WIL. Based on their feedback, a number of minor changes were made to improve the clarity of certain questions.

Analysis

Data were analyzed using SPSS software. Measures of central tendency and variation were calculated for perceived ability in the 10 skills both before and after work placement. Repeated measures ANOVA was used to detect any variations in undergraduate perceived ability in the ten skills before and after placement by participant background characteristics. Within-subject interaction effects and between-subject main effects were examined. Given the exploratory nature of the study, a significance level of α=.05 was retained for multiple comparisons; a Bonferroni correction otherwise reducing alpha to the stringent level of .005. Post-hoc analysis of significant main and interaction effects was conducted. A preliminary analysis of the data was undertaken, including the identification of outliers and assessment of normality, to ensure the assumptions of repeated measures ANOVA were appropriately satisfied.

TABLE 2. Employability skills framework (adapted from Jackson & Chapman, 2012)

Employability Skill	Behavior Name	Behavior
Working effectively with others	Task collaboration	Complete group tasks through collaborative communication, problem solving, discussion and planning.
	Team working	Operate within, and contribute to, a respectful, supportive and cooperative group climate.
	Social intelligence	Acknowledge the complex emotions and viewpoints of others and respond sensitively and appropriately.
	Cultural and diversity awareness	Work productively with people from diverse cultures, races, ages, gender, religions and lifestyles.
	Influencing others	Defend and assert their rights, interests and needs and convince others of the validity of one's point of view.
	Conflict resolution	Address and resolve contentious issues with key stakeholders.
Communicating effectively	Verbal communication	Communicate orally in a clear and sensitive manner which is appropriately varied according to different audiences and seniority levels.
	Giving and receiving feedback	Give and receive feedback appropriately and constructively.
	Public speaking	Speak publicly and adjust their style according to the nature of the audience.
	Meeting participation	Participate constructively in meetings.
	Written communication	Present knowledge, in a range of written formats, in a professional, structured and clear manner.
Self-awareness	Meta-cognition	Reflect on and evaluate personal practices, strengths and weaknesses in the workplace.
	Lifelong learning	Actively seek, monitor and manage knowledge and sustainable opportunities for learning in the context of employment and life.
	Career management	Develop meaningful and realistic career goals and pathways for achieving them in light of labor market conditions.
Thinking critically	Conceptualization	Recognize patterns in detailed documents and scenarios to understand the 'bigger' picture.
	Evaluation	Recognize, evaluate and retain key points in a range of documents and scenarios.
Analyzing data & using technology	Numeracy	Analyze and use numbers and data accurately and manipulate into relevant information.
	Technology	Select and use appropriate technology to address diverse tasks and problems.
	Information management	Retrieve, interpret, evaluate and interactively use information in a range of different formats.

Problem solving	Reasoning	Use rational and logical reasoning to deduce appropriate and well-reasoned conclusions.
	Analyzing and diagnosing	Analyze facts and circumstances and ask the right questions to diagnose problems.
	Decision making	Make appropriate and timely decisions, in light of available information, in sensitive and complex situations.
Developing initiative & enterprise	Entrepreneurship/ Intrapreneurship	Initiate change and add value by embracing new ideas and showing ingenuity and creativity in addressing challenges and problems.
	Lateral thinking / creativity	Develop a range of solutions using lateral and creative thinking.
	Initiative	Take action unprompted to achieve agreed goals.
	Change management	Manage change and demonstrate flexibility in their approach to all aspects of work.
Self-management	Self-efficacy	Be self-confident in dealing with the challenges that employment and life present.
	Stress tolerance	Persevere and retain effectiveness under pressure or when things go wrong.
	Work / life balance	Demonstrate the importance of well-being and strive to maintain a productive balance of work and life.
	Self-regulation	Reflect on and regulate their emotions and demonstrate self-control.
Social responsibility & accountability	Social responsibility	Behave in a manner which is sustainable and socially responsible (e.g., consistent with company policy and/or broader community values).
	Accountability	Accept responsibility for own decisions, actions and work outcomes.
	Personal ethics	Remain consistently committed to and guided by core values and beliefs such as honesty and integrity.
	Organizational awareness	Recognize organizational structure, operations, culture and systems and adapt their behavior and attitudes accordingly.
Developing professionalism	Efficiency	Achieve prescribed goals and outcomes in a timely and resourceful manner.
	Multi-tasking	Perform more than one task at the same time.
	Autonomy	Complete tasks in a self-directed manner in the absence of supervision.
	Time management	Manage their time to achieve agreed goals.
	Drive	Go beyond the call of duty by pitching in, including undertaking menial tasks, as required by the business.
	Goal and task management	Set, maintain and consistently act upon achievable goals, prioritized tasks, plans and realistic schedules.

Limitations of the Study

This study is based on self-report data which may be impacted by participant inability to accurately recall required information (Schacter, 1999). Two other major issues with self-report data are participant social desirability bias (Archambault, 2011) and halo error (Gonyea, 2005). Gonyea discusses the difficulties in accurately assessing the net impact of a particular education experience, such as WIL, on ability and personal growth, yet his review suggests validity, within limits. Social desirability bias concerns participants revising their responses to make themselves look better to researchers; particularly problematic when reporting on socially undesirable behavior or under circumstances where respondents feel pressured to retain their self-esteem (see Gonyea). Given the anonymity of the survey, its online nature and the relative detachment of the researcher from the subjects in this particular study, it is believed this type of bias should be limited. Halo error is where participants consistently evaluate survey items in the same light and effectively as one – for example, as a broad perception of their overall employability rather than their capability in each of the individual skills. Self-report data is still widely used, with assertions of validity and reliability suggesting it should not automatically assumed to be 'inherently flawed' (Chan 2009, p. 330). Baird (1976) argues that self-reported student assessments of academic achievement are as reliable as school-reported data and academic aptitude tests available at that time.

A further limitation is the data is gathered from a single source at one point in time, raising concerns for common-method variance (Podsakoff, MacKenzie, Lee & Podsakoff, 2003) when generalizing findings. Given the broad range of academic units from which the WIL participants derived, and some only forming a small proportion of unit enrolments, drawing conclusions for each discipline is problematic. Instead, the study gives a snapshot of the impact of WIL on employability skill outcomes and highlights areas for further consideration; possibly in the form of a cross-disciplinary and cross-institutional study. Leung (2011) highlights concerns with the practice of presenting post-hoc results without the a priori development of relevant hypotheses. The broad second research objective of identifying variations in skill outcomes by demographic, background and/or placement characteristics sufficiently highlights the intended investigation, prompted by the literature's acknowledgement of the influence of demographic profile on skill outcomes. Finally, there are concerns associated with the required assumptions and complexity of the repeated measures design (Huck & McLean, 1975). Huck and McLean support the simpler one-way ANOVA of gain scores, equating here to improvements in perceived ability in the skills before and after placement, although they acknowledge the repeated measures design is statistically correct. It is still widely used, particularly in the field of management (Bergh, 1995).

RESULTS

Perceived ability in skills

The mean scores and standard deviations for perceived ability in the 10 skills before and after work placement are presented in Table 3. T-tests indicate undergraduates perceive they are better able to perform all 10 skills following placement. The skill recording the greatest improvement was 'developing professionalism' and the least improvement was in 'social responsibility and accountability'.

TABLE 3. Perceived skill performance before and after placement

Skill set	Before		After		Paired samples t-test				
	Mean	SD	Mean	SD	Mean Diff	Std Error	t	df	p
Working effectively with others	5.24	1.07	5.97	.82	.733	.068	10.85	130	.00
Communicating effectively	5.10	1.00	5.98	.82	.878	.073	12.07	130	.00
Self-awareness	4.80	1.12	5.72	.93	.916	.075	12.20	130	.00
Thinking critically	4.76	1.08	5.69	.97	.931	.077	12.13	130	.00
Analysing data and using technology	4.70	1.30	5.50	1.13	.802	.086	9.36	130	.00
Problem Solving	4.95	1.18	5.78	.81	.824	.091	9.06	130	.00
Developing initiative and enterprise	4.68	1.15	5.53	1.12	.855	.072	11.88	130	.00
Self-management	5.13	1.18	5.87	1.00	.740	.083	8.93	130	.00
Social responsibility and accountability	5.26	1.14	5.92	.87	.664	.073	9.07	130	.00
Developing professionalism	5.07	1.12	6.15	.77	1.076	.089	12.08	130	.00

Influences on perceived ability

Repeated measures ANOVA was conducted for background, demographic and placement characteristics, as per Table 1, to test for differences in undergraduate perceived ability in the ten skills before and after placement. The within-subject main effect (difference in skill performance between the two time points) was significant throughout (p=.000), aligning with the t-test results. Table 4 summarizes the significant within-subject interaction effects (difference in perceived skill performance before and after placement attributed to the defined characteristic) and between-subject main effects (that of the defined characteristic on perceived skill performance). None were detected for 'working effectively with others' or 'self-awareness'.

The significantly higher perceived ability in 'communicating effectively' following a placement may be attributed to host organization type; the reported mean improvement was considerably higher for those based in private sector organizations than not-for-profit and public organizations. For 'thinking critically', the significant between-subject main effect for sex indicates males and females differ in their perceived ability in critical thinking skills. Further analysis showed the mean rating for males was significantly higher than females both before (p=.013) and after placement (p=.038). Further exploration of the significant within-subject interaction effect for year of study showed improvement in the skill arising from the placement was considerably greater for those completing placements in the later stages of their degree studies.

TABLE 4. Significant within- and between-subject variations across background/ demographic characteristics

Skill set	Characteristic	Between-subject variations				Within-subject variations			
		F	*df*	*p*	η^2	λ	*F*	*df*	*p*
Communicating effectively	Organization type					.933	4.600	128	.012
Thinking critically	Sex	6.619	129	.011	.049				
	Year of study					.940	2.721	127	.047
Analyzing data & using technology	Age group	4.016	128	.020	.059	.933	4.559	128	.012
	Degree type					.920	2.737	126	.032
	Placement hours					.916	5.728	125	.004
Problem solving	Organization size	3.607	128	.030	.053				
	Placement hours					.905	6.540	125	.002
Developing initiative & enterprise	Placement hours	4.091	125	.019	.061				
Self-management	Placement hours	5.980	125	.003	.087				
Social responsibility & accountability	Year of study	3.597	127	.015	.078				
	Placement hours	4.831	125	.010	.072				
Developing professionalism	Placement hours	3.952	125	.022	.059				
	Year of study	3.537	127	.017	.077				
	Degree type					.903	3.379	126	.012

Post-hoc analysis for the significant between-subject main effect for age group for 'analyzing data and using technology' indicated those aged between 19 and 21 perceive themselves as less able than 22 to 25 year olds (p=.024) although there was no significant difference for those aged 26 and above. The within-subjects interaction effect for age group revealed those in the 22 to 25 age group recorded a much higher mean improvement than their younger counterparts and, to a lesser degree, those above 26. The within-subjects interaction effect for degree type showed considerably higher mean improvements for Engineering and Health and Science students than those completing other degrees. Finally, further investigation into the significant variation for placement hours indicated those who completed more than 200 hours achieved a considerably higher mean rating than those with less time in the workplace. Interestingly, those with less than 100 hours achieved a higher mean rating than those with 100 to 200 hours.

Post-hoc analysis for 'problem solving's' significant between-subject main effect for organization size indicated those based in medium-sized organizations had significantly higher perceptions of their abilities (p=.040). The within-subjects interaction effect for hours on placement was further explored with those who completed more than 200 hours on placement achieving a considerably higher mean rating than those with less time in the workplace. For 'developing initiative and enterprise', post-hoc analysis of the significant between-subject main effect for placement hours indicated students with less than 100 hours considered themselves less able (p=.014) than those with 100-200 hours, although there was no noted difference for those with more than 200 hours. The between-subject main effect for placement hours for 'self-management' indicated a lower perceived ability for those with less than 100 placement hours (p=.002) than those completing 100-200 hours, yet no noted differences against those with more than 200 hours.

'Social responsibility and accountability's' significant between-subject main effect for year of study revealed first year students rated themselves less able than fourth years (p=.008). There was also a between-subject main effect for hours on placement with post-hoc analysis indicating students with less than 100 hours perceived themselves as less able (p=.010) than those with more than 200 hours in the workplace. 'Developing professionalism's' between-subject main effect for placement hours indicated a lower perceived ability among students with less than 100 hours than those completing 100-200 hours (p=.018), yet there were no noted differences against those with more than 200 hours. Also, post-hoc analysis of the between-subject main effect for year of study suggested students completing their placement in the first year had significantly lower scores than those in the fourth year (p=.026). Finally, the significant within-subjects interaction effect for degree type indicated far greater improvement in Engineering students than all others.

DISCUSSION AND IMPLICATIONS

Perceived Ability in Skills

Results indicate the mean rating in perceived ability for all ten skills increased significantly, to varying degrees, after participating in WIL. This indicates a tangible improvement in all employability skills arising from the work placement, similar to Freudenberg et al.'s (2011) findings, although some previous studies document improvement in only certain skills (Bourner & Millican, 2011). Given the study is based on self-assessed ratings; an alternative perspective might be that the improvement represents a greater confidence in abilities among WIL students, rather than a measured improvement in their performance. This would align with other studies which advocate the overarching value of WIL is enhancing student confidence in their ability to perform effectively in the workplace (Jones, 2007).

The skill recording the greatest improvement was 'developing professionalism', aligning with Billet (2011) who argues WIL allows students to learn more about their chosen profession and the world of work in general. The improvement in communication supports Freudenberg et al. (2011) who found marked improvements in both oral and written communication among WIL students, along with information literacy. The least improvement was detected in 'social responsibility and accountability', 'working effectively with others' and 'self-management'. One might expect difficulties for students in conceptualizing and appreciating the different facets to 'social responsibility and accountability' and how it can be demonstrated in the workplace, particularly in short periods in the workplace. The relatively small improvement in 'working effectively with

others' may be due to limited opportunities for team work during placement, urging review of placement design given it is one of the skills most highly desired by graduate employers (AAGE, 2011; CBI, 2011). This finding does not align with Freudenberg et al. (2011) who found that interpersonal and team working skills were among those skills recording the greatest improvement in WIL students. Variations in the degree to which skill outcomes improve may indicate certain skills are more malleable than others in the work environment and/or highlight a lack of focus on certain skill areas during placement, both of which should be considered in future design.

Influences on Perceived Ability

In regard to the influence of demographic characteristics, age influenced only how well students perceived their ability in 'analyzing data and using technology' both in general and outcomes arising directly from the placement. Given the narrow bands and significant variations among only two of the three age groupings, these findings may be sample-specific. Males considering themselves more able than females in critical thinking aligns with previous studies reporting males outperforming females in this skill area (Wangensteen, Johannson, Bjorkstrom & Nordstrom, 2010) although others claim they are similar (Giancarlo & Facione, 2001), supporting French, Hand, Therrien & Vazquez's (2012) supposition that evidence is mixed. Inconsistencies in the reported influence of gender are acknowledged by Reddy and Moores (2006) who found no gender effect on the benefits gained from placement experience among a large sample of UK university students.

The study background of participants had some minor influences on skill outcomes, both in general and specific to placement completion. Participants' degree type influenced the improvement in skill outcomes during placement for both 'analysing data and using technology' and 'developing professionalism'. Engineering students saw significantly greater gains in both skills while Health Sciences only in the former. Given the more 'technical' nature of the data analysis skill set, this finding is most likely to relate to the focus and content of placements. The significant improvement in 'developing professionalism' among Engineering students could be attributed to less prior exposure to the working environment or a rigorous introduction to the importance of time management, goal and task management and efficient working practices during their assigned period in the workplace.

Year of study had a general influence on 'social responsibility and accountability' and 'developing professionalism,' with fourth year students exhibiting more confidence in their abilities than their first year counterparts. Performance in both skills is likely to be enhanced by a general exposure to the working environment and/or a better understanding of what it entails, expected in students at the later stages of their degree. Given the continued increase in student employment during degree studies (Robotham, 2012), this finding is not unexpected. It is also likely to be further compounded by the drive to enhance employability during the undergraduate degree studies: increased access to networking opportunities with industry professionals; incorporation of professional learning activities in the classroom; and bringing the university classroom closer to the working environment all being valuable strategies (see Lawson, Fallshaw, Papadopoulos, Taylor & Zanko, 2011).

Improved critical thinking arising from placement for those in their later years of study is a positive finding, given documented difficulties in developing this "defining characteristic of a university graduate" (Phillips & Bond, 2004, p. 277) in the university classroom. Wide acknowledgement that it is better learned in a hands-on and practical environment with real-

life problems has catalyzed authentic learning in higher education, yet the development and assessment of critical thinking still presents significant challenges as academics grapple with its precise meaning and scope in their particular discipline (see Hammer & Green, 2011). Continued focus on conceptualizing and successfully developing critical thinking skills in the work environment is important for those designing placements, particularly placements for students in the early stages of their degree.

Focusing on placement characteristics and, more specifically, organization size, the only detected difference was students based in medium-sized organizations rating themselves as more able in problem solving. Despite this difference only relating to one of the ten skills, this provides some evidence to support Varghese, Carleton, Parker, Adedokun, Shively, Burgess et al. (2012) who argue the benefits of WIL are greater for internships in small/start-up companies than larger ones, as students are given more responsibility and are provided with more diverse challenges and a broader range of problems for analyzing and solving. Analysis of organisation type reported a significant improvement in communication skills, as a direct result of the placement, of students based in private-sector organizations. This may be sample-specific but certainly highlights an area for future investigation. Not surprisingly, the number of hours spent on placement had considerable impact on skill outcomes with significant variations in six of the ten skills. Although there were several incidences of only significant variations between two of the three placement groupings, the general trend indicated more time on placement is beneficial for the performance of, or at least undergraduate' confidence in performing, certain skills. This aligns with Blasko, Brennan, Little & Shah (2002) who argued there were significant employment benefits for those students who had 'substantial' – classed as more than nine months – periods of work experience during their degree studies.

CONCLUSION

This study provides strong support for the role of WIL in enhancing graduate employability. It documents improvement in an entire framework of employability skills following a period of work placement for 131 undergraduates from different faculties in an Australian university. Given the study is based on self-report data, at the very least the findings indicate increased student confidence in their ability to perform the different skills in the workplace. This will positively impact their ability to transfer acquired skills upon graduation (Kirwan & Birchall 2006) and assist them in gaining relevant employment (Heaton, McCracken & Harrison, 2008). Findings also highlight the important role of structured and integrated exposure to the workplace for nurturing professionalism in undergraduates. Graduate ability to multi-task, work autonomously, manage time efficiently, and remain motivated and on task is critical to employers and organizational productivity (Jackson, 2010) yet are areas which traditional campus-based learning may find difficult to develop. Findings empirically support the argument for increased access among undergraduates to university-approved WIL opportunities (Wilson, 2012) although, despite the noted benefits, it is important to remember Brown, Hesketh and William's (2003) cautionary note that graduate employability does not just concern competencies but also macro supply and demand, particularly during periods of economic downturn.

Documented improvement in skill outcomes largely aligns with extant literature although benchmarks are limited and more research in this area would benefit academic and professional practitioners. Also, there were some variables which are considered to impact

on learning outcomes during the WIL experience which were not examined in this study. Billet (2011) argues student readiness and prior experience will influence the degree of learning during placement; Blasko, Brennan, Little and Shah (2002) note the importance of socio-economic status; Reddy and Moores (2006) investigate ethnicity; and Duignan (2003) the role of academic capability. This study affirms the contribution of WIL to graduate employability skill outcomes and urges further examination of a greater range of influencing variables in a cross-institution and cross-disciplinary study.

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