

Developing graduate employability through partnerships with industry and professional associations

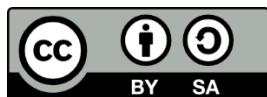
Final report 2015

RMIT University
Monash University
University of Southern Queensland

Margaret Jollands, Bronwyn Clarke, Danilla Grando,
Margaret Hamilton, John Smith, Sofia Xenos,
Megan Brodie, Catherine Pocknee,
RMIT University

Angela Carbone, Monash University
Lorelle Burton, University of Southern Queensland

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Office for Learning and Teaching
Department of Education and Training
GPO Box 9880,
Location code N255EL10
Sydney NSW 2001

<learningandteaching@education.gov.au>

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Final Report 2015

Lead institution

RMIT University

Partner institutions

Monash University
University of Southern Queensland

Project leader

Associate Professor Margaret Jollands, RMIT University

Project manager

Catherine Pocknee, RMIT University

Project team and authors

Associate Professor Margaret Jollands, RMIT University
Catherine Pocknee, RMIT University
Ms Bronwyn Clarke, RMIT University
Associate Professor Danilla Grando, RMIT University
Associate Professor Margaret Hamilton, RMIT University
Associate Professor John Smith, RMIT University
Dr Sophia Xenos, RMIT University
Megan Brodie, RMIT University
Associate Professor Angela Carbone, Monash University
Professor Lorelle Burton, University of Southern Queensland

Research team

Catherine Pocknee, Sheila Thomas, & Megan Brodie, RMIT University

Evaluator

Dr Grace Lynch, Dr Garry Allan & Geoffrey Edlund, RMIT University

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List of acronyms used

ACER	Australian Council for Educational Research
AEN	Australian Education Network
APAC	Australian Psychology Accreditation Council
ASM	Australian Society for Microbiology
ATN	Australian Technology Network
AWPA	Australian Workforce and Productivity Agency
CBI	Confederation of British Industry
CEQ	Course experience questionnaire
EA	Engineers Australia
HERDSA	The Higher Education Research and Development Society of Australasia
ISSOTL	International Society for the Scholarship of Teaching and Learning
ICT	information and computer technology
OLT	Office for Learning and Teaching
UKCES	United Kingdom Commission for Employment and Skills
USQ	University of Southern Queensland
WIL	work-integrated learning

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Executive summary

Employability skills are changing, shaped by economic and market demands, at a time when supply of graduates exceeds demand and many graduates struggle to find full-time employment. Employers frequently report that graduates do not have the requisite employability skills. While professional bodies encourage teaching staff to engage with the discipline they have noted declining participation rates of academics. The development of graduate employability within the student cohort is both complex and challenging for all stakeholders. For the purpose of this study 'employability' includes the skills required to obtain a new position and those required to maintain existing employment.

Aims

The aims of the project were:

1. to identify the key issues and challenges that influence graduate employability from the viewpoint of a wide range of stakeholders across a variety of disciplines
2. to identify the gap between industry expectations and student and academic perspectives of graduate employability
3. to build staff capacity to develop curriculum and learning affordances that promote student acquisition of employability skills, knowledge and attributes
4. to identify the key challenges for staff in developing curriculum for employability skills in students

Approach

This project was informed by:

- a literature review exploring the key themes, tensions and developments concerning graduate employability across Australia and internationally
- conversations with 287 stakeholders from a broad range of disciplines: engineering, ICT, life sciences, media and communications and psychology

The study was underpinned by a qualitative research methodology and data were collected through a series of focus groups, small group discussions and interviews.

Impact

The potential impact of the project is significant. The project's institutional partners had a key focus on employability in 2015 and outcomes of this project will inform their policy, practice and future research. Four conference publications were published and three journal publications drafted. An existing employability framework was enhanced with the addition of a number of

new sub-categories that emerged from the data in this study. An overarching framework was developed that will enhance program renewal for employability. New developments included a professional development module (at Monash University) and a core course with curriculum and assessment that covered a full range of employability skills and attitudes (at RMIT University).

Success factors

Critical success factors included the collaborative approach adopted by the multi-disciplinary project team, the diversity of the five disciplines studied, the very different demographics represented by the institutional partners, and the use of excellent project management strategies. Close cooperation between the three OLT commissioned projects on graduate employability also brought many benefits. Several joint presentations were made and future collaborations were planned.

Key findings

In recent years many frameworks have been developed to address graduate employability, but most become outdated as the notions of graduate employability evolve over time. The CareerEDGE framework (Dacre Pool & Sewell 2007) was selected as a foundation for this study as it is systematic, comprehensive and adaptable. This project enhanced the CareerEDGE framework by adding four new well defined sub-categories, and the enhanced framework proved a useful tool to analyse differences between stakeholders and disciplines.

Conceptions of employability were remarkably similar among disciplines and stakeholders. Stakeholders from all disciplines readily identified a similar broad range of concepts relevant to employability. In particular, students' understandings of employability were much broader than just subject knowledge and skills. Furthermore, students' conceptions varied in level of sophistication, with descriptions of employability varying from simple to more nuanced, depending on whether they had undertaken work experience of a program with project- or industry-based.

However some gaps were found between employer perceptions of employability and the perceptions of other stakeholders. A major gap concerns the importance of work experience. Contrary to the popular idea that work experience is the best way to develop graduate employability, employers in this study took a much broader view, indicating that experience in general was more valuable than just work experience.

Outcomes

An overarching framework was devised to distinguish programs that enhance learning for employability from those that inhibit learning. It highlights the limitations of the traditional 'silo' approach and describes the holistic approach that will best develop employability to match the current and future expectations of employers that:

- stakeholders share a professional identity
- employability is integrated into a designed curriculum
- collaborative teaching teams use a student-focused pedagogy
- programs are designed for the work of today and tomorrow

Short stories were written that showcase innovative approaches to developing graduate employability. These transcend discipline boundaries and are broadly applicable. This is a useful contribution as there are few high-quality resources available on curriculum for employability.

Recommendations

An employability framework is useful if it identifies learning objectives for renewal of curriculum for employability. It must be coherent, systematic, detailed and adaptable. It should also promote a deep understanding of employability issues and facilitate development of sequenced curriculum. However, no such framework currently exists. A new framework should be developed that has taxonomic categories with scaffolded development. This would assist staff to identify scaffolded learning objectives suitable for different year levels.

More high-quality teaching resources are needed to assist staff to adopt and adapt good practice to foster their students' learning for employability. Better organisation and easier access to resources is needed. More evidence of effective practice is needed to ensure practices promoted for adoption are indeed effective.

Educators should plan to develop students' employability systematically from the beginning to the end of their studies. This major change would require a cultural shift from the silo approach of the traditional program, with academics isolated from each other, industry, students and graduates. New program design is needed with employability integrated seamlessly into curriculum and assessment, and a new culture is needed where stakeholders share a professional identity.

1. Introduction

1.1 Context

In an increasingly globalised and competitive economy, there is a demand to ensure that graduates have the skills, knowledge and attitudes needed to perform in the workplace. Employability skills are changing, shaped by economic and market demands. This has led to greater need for dialogue between universities, industry and governments about 'graduate attributes' and 'employability'.

Universities, higher education institutions and other public institutions play a pivotal role in ensuring the development of employability skills for economic growth and prosperity (Pegg et al. 2012). There has been a rapid increase in the rate of post-secondary education, so the number of graduates is rising. The supply has exceeded demand for new graduates in many sectors since the global financial crisis of 2008 and many graduates struggle to find full-time employment (Finch et al. 2013; Graduate Careers Australia [GCA] 2014a).

A gap in the employability skills of graduates has been reported in numerous employer surveys (Spinks, Silburn & Birchall 2006; GCA 2014b) and studies (Archer & Davison 2008; Mason, Williams & Cranmer 2009; Lowden et al. 2011). A study by the Confederation of British Industry (CBI) revealed that almost a third of employers (30 per cent) found that graduates did not possess generic employability skills such as teamwork, communication and problem-solving to a satisfactory standard (CBI/Pertemps 2006 in Archer & Davison 2008). A recent national survey reported Australian employers were more positive, and ranked 90 per cent or more of graduates as 'meets or exceeds average expectations' (GCA 2014b, p. 44).

Barrie, Hughes and Smith (2009) reported there is considerable disagreement among academic staff about the meaning of generic skills and how to develop them in students. The views of students are largely unexplored (Tymon 2013) even though they are vital, as '[university] strategy has not worked unless it is perceived by students to have actively engaged them in developing worthwhile attributes' (Barrie, Hughes & Smith 2009). Similarly, the views of graduates are important: Cranmer's seminal report for the United Kingdom's Higher Education Academy casts doubt on whether universities can develop graduate employability effectively (Cranmer 2006).

Several studies in the literature report significant gaps between the views of business students and employers (Arnold et al. 1999; Gabric & McFadden 2001; Jackson 2013). The differences vary from study to study. So, the gap in understanding of employability between students and employers is unclear.

Professional bodies that accredit undergraduate degrees have the capacity to influence tertiary education for graduate employability. Two disciplines in this study have accrediting bodies:

Engineers Australia (EA) and the Australian Psychology Accreditation Council (APAC). Both EA and APAC specify generic skills in addition to discipline knowledge (EA 2011; APAC 2010). The requirements of these professional bodies sit within current employability frameworks. EA is also active in bringing stakeholders together through professional seminars, its website (Institution of Engineers Australia 2015) and research studies (Male & King 2013). However, the 'steady decline' of academics' engagement in professional activities is a matter of concern; EA, for example, has taken a number of initiatives to address the issue through new tertiary partnership packages (Baitech 2014).

While many posit that work experience in the discipline field is the best way to develop employability (Lowden et al. 2011; Male & King 2013; Smith, Ferns & Russell 2014), the challenge here is that provision of work placements is insufficient for the one million students in Australian universities (Australian Workforce and Productivity Agency [AWPA] 2013; Australian Education Network [AEN] 2014). Approaches to work-integrated learning (WIL) have expanded to include classroom simulations where students can apply their disciplinary and generic skills to 'real-world' scenarios. However, to date little evidence has been published showing the efficacy of simulations in producing learning outcomes equivalent to work experience (Smith, Ferns & Russell 2014).

Thus, current research and discourse regarding employability demonstrate that there is a need for action by universities, employers, students and governments to further investigate and invest in strategies to improve graduate employability.

1.2 Employability – definition and frameworks

1.2.1 Employability definition

Over the last 10 years there has been a greater focus on the relationship between education and employment outcomes of graduates through the development of graduate attributes, defined as the 'generic attributes that ideally graduate should have' (Precision Consultancy 2007). 'Employability' is now the more common term used across the government, higher education and industry sectors. However, its specific definition is still being developed (Brown & Scase 1994; Hillage & Pollard 1998; Yorke 2006).

York (2006) offers the following frequently cited definition:

[Employability is] a set of achievements, skills, understandings and personal attributes that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy.

This is echoed by the United Kingdom Commission for Employment and Skills (UKCES 2009):

We take employability skills to be the skills almost everyone needs to do almost any job. They are the skills that must be present to enable an individual to use the more specific knowledge and technical skills that their particular workplaces will require.

Owing to the changing nature of the workforce, employability should also include the skills both to maintain employment and to obtain new employment (Hillage & Pollard 1998). Further, the term 'job' should be replaced by the more inclusive 'work', as 'job' implies employers – sectors such as creative arts are characterised by self-employed, part-time, casual or client-based work opportunities (Bridgstock 2005).

However, despite the growing consensus on the definition of employability, it is still sometimes confused with 'employment outcomes' (Bridgstock 2009). Employment outcomes measure the number of graduates who gain employment, while employability reflects whether a graduate has the ability to gain and maintain employment (and work), independent of economic conditions. Employment outcomes depend on the number of work opportunities available, which varies over time with many factors, including economic activity and technical developments in industry sectors (GCA 2014a). When graduate supply exceeds demand, 'employable' graduates may fail to find work in their field.

1.2.2 Employability frameworks

When a phenomenon can be characterised by multiple descriptors, a framework may be built to organise the descriptors into categories. Many frameworks have been developed for employability, primarily from the employer perspective. A variety of government-funded reports and academic studies have attempted to identify and classify the set of employability skills that are valued by employers across all sectors. The frameworks range from simple (few concepts and categories) to complex (systematic and detailed). As with the contested definition of employability, there is no consensus on the best framework.

A simple framework consisting of a narrow selection of concepts was defined in *Employability for the future* (ACCI/BCA 2002 in Cleary, Flynn & Thomasson 2006). It identifies eight 'unique' employability skills: communication, teamwork, problem-solving, self-management, planning and organising, technology, lifelong learning and initiative and enterprise. Another simple framework developed by Knight and Yorke (2003) is the four-category USEM framework (understanding, skills, efficacy and metacognition). Other studies have identified individual concepts, such as cognitive and thinking skills (Harvey et al. 1997; Knight & Yorke 2004), flexibility and adaptability (Lowden et al. 2011) and professionalism (Wilson et al. 2013).

Complex lists and frameworks of employability skills have been developed by several groups (Oliver 2011; Jackson 2013; Smith, Ferns & Russell 2014) with multiple descriptors and categories (up to 45 items). Smith, Ferns and Russell (2014) found gaps, generalities and vagueness in the

other frameworks. A weakness of their own list is that it has not been developed as a framework, and their categories are not taxonomic.

Another framework is the CareerEDGE framework developed by Dacre Pool and Sewell (2007). It has five categories with multiple sub-categories. It aligns with the typical organisational structures in higher education institutions, which allows pragmatic implementation of incremental change. For example, career development learning aligns with the careers department, while degree subject knowledge, understanding and skills aligns with academic departments. Like other frameworks, it has a number of skills gaps (Smith, Ferns & Russell 2014). Its strengths are that it is systematic and comprehensive, as well as readily adapted by addition of new sub-categories, so it was chosen as the framework for this project.

1.3 Rationale and aims

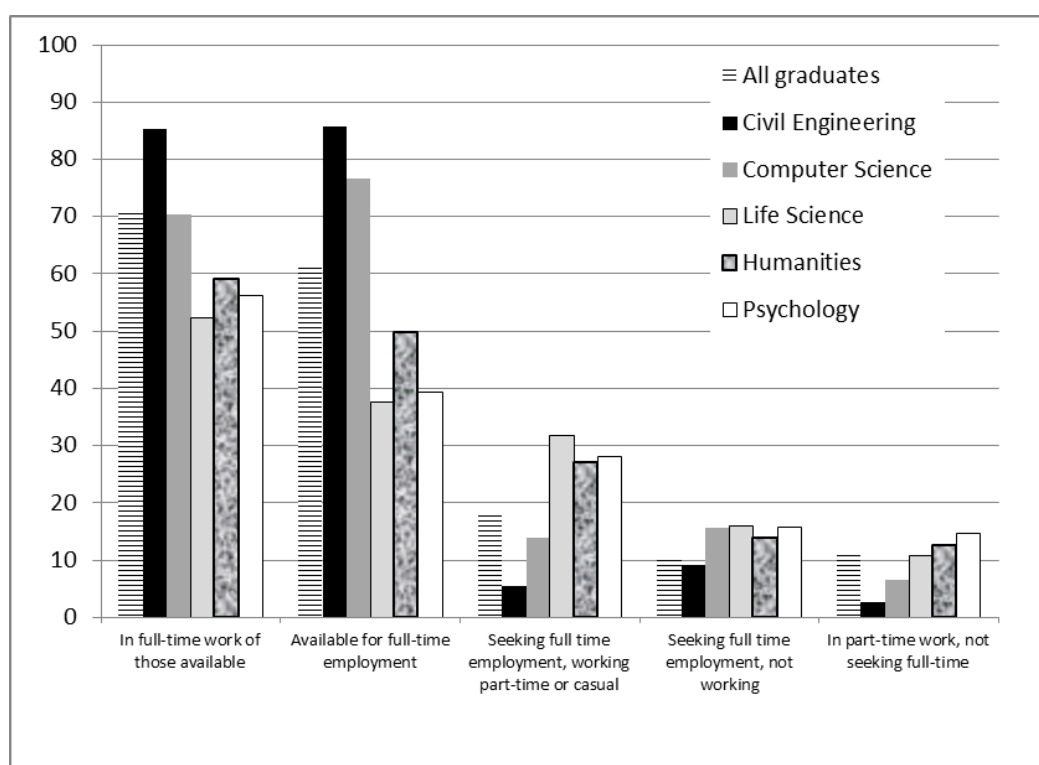
While there have been many studies on the best pedagogical approach to develop generic skills in higher education students, there is no consensus. Different groups recommend problem-based learning (Walker & Leary 2009), project-based learning (Jollands, Jolly & Molyneaux 2012), community-based projects (Segalàs et al. 2009), peer teaching (Chester et al. 2013), industry-based final year capstone projects (Male & King 2013) and WIL (Orrell 2011). Similarly, there is no consensus on generic or employability skills (Smith, Ferns & Russell 2014). Of particular concern is the considerable disagreement among academic staff about the meaning of 'generic skills' and how to develop them in students (Barrie, Hughes & Smith 2009) and about whether they can be developed at all (Cranmer 2006).

Further work was therefore needed to define what employability means to different stakeholders in an Australian context, and what is the best pedagogical approach to develop the requisite skills in students. Different disciplines have a wide range of employment outcomes (GCA 2014a) but rarely share approaches to employability. Very little work has been done on the dependence of the employability skill set and pedagogical approach on the academic discipline. Many studies have documented employer and student views, but few have considered other stakeholders. One of the recommendations for further work by Oliver (2011, p. 5) is to 'continue to focus on ways to work in partnership with industry and professional bodies'. This is a focus of this project.

In Topic 4 – Employability, the OLT (2013) identified four disciplines for particular focus in submissions for commissioned projects, owing to their low employment outcomes: humanities, visual/performing arts, life sciences and computer science. In this study five disciplines were selected that have a range of employment outcomes. Three correspond with the OLT's low employment outcome list (media and communications, life sciences and computer science); a fourth is a discipline with low employment outcomes that is not on the OLT's list (psychology). For comparison purposes, a fifth discipline with high employment outcomes was also included (civil engineering).

Employment statistics for the five disciplines are shown in Figure 1. The rates of full-time work varied in 2013 from around 53 per cent (life sciences) to 85 per cent (engineering). Those seeking full-time work and not employed showed the opposite trend, but with a much narrower range: from around 9 per cent (engineering) to 16 per cent (life sciences). The proportion of those looking for full-time work was much higher: up to 33 per cent (life sciences). This indicates there was a significant number of graduates who were employed, but not in their preferred occupation (around 18 per cent).

Figure 1 Employment outcomes (percentages) for 2013 Australian graduates



Source: GCA 2014b, Table 4 and Table 4a.

This project brought together stakeholders to develop a shared understanding of employability across the five disciplines, each with varied employment outcomes for graduates: engineering, information and computer technology (ICT), life sciences, media and communications, and psychology. The project mission was to align the various expectations and perceptions, to develop an employability framework, and to identify good practice curriculum that promotes graduate employability.

Thus, the aims of the project were:

1. to identify the key issues and challenges that influence graduate employability from the viewpoint of a wide range of stakeholders across a variety of disciplines

2. to identify the gap between industry expectations and student and academic perspectives of graduate employability
3. to build staff capacity to develop curriculum and learning affordances that promote student acquisition of employability skills, knowledge and attributes
4. to identify the key challenges for staff in developing curriculum for employability skills in students

1.4 Project outcomes

A key outcome of the project was an overarching framework that distinguishes programs that enhance rather than inhibit learning for employability. It was developed in partnership with academics, students, graduates, employers and professional bodies. It highlights the limitations of the traditional 'silo' approach and describes the holistic approach that will best develop employability to match the current and future expectations of employers in terms of:

- employability criteria across industry sectors
- the generic skills of students developed during educational programs, and how these align to industry expectations of graduates
- the impact of the business cycle (demand) and student numbers in programs (supply) on employment outcomes

Alongside this framework, short stories were written that showcase innovative approaches to developing graduate employability. Through the research process, the development of the framework, the capture of best practice and the dissemination of results, the project:

- built closer relationships between industry, universities, peak bodies and graduates to identify curriculum strategies to develop work-ready graduates capable of full participation in their chosen professions
- promoted innovation and engagement across the sector by identifying, promoting and sharing a wide range of innovative approaches to developing employability in students

2. Project approach

The primary outcomes of the project – the employability framework and short stories – were informed by:

- a literature review exploring the key themes, tensions and developments concerning graduate employability across Australia and internationally
- conversations with 287 stakeholders from a broad range of disciplines: engineering, ICT, life sciences, media and communications and psychology

This included:

- consultation with 49 individuals representing employers and professional bodies
- workshops with 38 academic and professional staff, discussing curriculum design and employability
- focus groups engaging 55 students, gauging their understanding of employability and how it is currently being developed through their studies and other activities
- interviews with 24 graduates to gather their recent experiences in gaining employment
- interviews with 15 academic and industry experts, to explore best practice case studies
- dissemination and roundtable workshops on future directions with 106 individuals representing employers, professional bodies, academics, professional staff, students and graduates

This fieldwork was carried out at three universities (RMIT, USQ and Monash University) across six campuses (RMIT City, Bundoora; USQ Springfield and Toowoomba; and Monash Clayton and Caulfield). These were chosen to represent a range of institutional cultures and demographics. Five disciplines were chosen to represent a range of low employment outcomes: media and communications, life sciences, ICT and psychology, and one high employment outcome discipline: engineering.

2.1 Project stages

The project consisted of five distinct stages:

1. consultation with the project's reference group on project design and planning
2. consultation with the industry and professional bodies

3. consultation with academic staff, students and graduates
4. framework development and good practice case study collection
5. community engagement and dissemination

2.1.1 Project design and planning review

In the first project stage, review of the project design and plans was carried out with the reference group. The reference group affirmed the project design and plan, and gave advice on process to ensure successful outcomes from the June industry roundtable forum.

The literature review examined the many existing studies on generic skills and employability. This allowed the project objectives to be built on the substantial body of current knowledge. The literature review brought to light the various and competing understandings of employability, reports on employer views of gaps in graduate skills, and best practice for developing generic skills in higher education programs. The literature review, alongside data on employment outcomes, longitudinal trends and results from employer surveys sourced from Graduate Careers Australia, were used to guide the interview schedules, survey questions and subsequent data analysis.

2.1.2 Industry consultation

The second project stage focused on consultation with employers and professional bodies. An industry roundtable event was held on 18 June 2014, bringing the project team together with 43 industry employers, including five representatives of professional bodies, to seek feedback on generic skills required of graduates in their industries, and any perceived gaps. Another six employers were also interviewed. This aspect of the project was designed to engage industry in the dialogue regarding graduate employability and build upon the existing body of work canvassing the perspective encapsulated in the literature review.

2.1.3 Academic, student and graduate engagement

The third project stage consisted of consultation with academic staff, students and graduates. At least one workshop per discipline was held, at RMIT or the partner institutions. An eighth workshop was run at Bond University Employability Seminar, with 11 academic and careers staff. These workshops enhanced academics capacity to identify approaches to development of graduate employability in their programs and alignment of learning objectives, activities, assessments and outcomes.

Furthermore, a series of 13 focus groups involving 55 students were conducted (at least one focus group per discipline and per partner institution). These gathered student perspectives and understandings of employability and collect evidence about when and where students develop

generic skills throughout their time at university. This evidence and these perspectives were complemented by interviews with 24 graduates, to document their experiences of employability upon leaving university. This enabled the perspectives of students and graduates to be canvassed, filling a gap in the current literature on employability.

2.1.4 Framework development and collection of short stories

The data collected from the first three stages were analysed through the lens of existing understandings of employability drawn from the literature review. The perspectives of each of the stakeholder groups – students, graduates, academics and employers – were compared and amalgamated to develop a framework to model how teaching approach, practices, ties with industry and context all contribute to development graduate employability. The framework integrates the common elements across disciplines and institutions, as well as capturing any differences. The framework was validated by comparison with the 16 short stories gathered in the fourth project stage, informed by interviews with 15 university staff and industry members involved in the development of graduate employability in higher education.

2.1.5 Dissemination

The final stage of the project was to consolidate the findings and engage with the wider academic community through a national forum, to disseminate the results and identify strategies to implement changes. A national forum was held on 27 November 2014 to disseminate the results of the project and engage with employers and university staff in the employability discourse; it had 106 participants.

Four conference papers were published and a number of journal papers were drafted (Appendix D), with further papers planned in 2015 and 2016. In addition, numerous project presentations were given by team members at national events (Appendix E). Short stories on innovative practice were published (Appendix F) and are available online at <http://www.olt.gov.au/resource-library>.

2.2 Research method and approach

2.2.1 Data collection

This study was underpinned by a qualitative research methodology and data were collected through a series of focus groups, small group discussions and one-to-one interviews.

The focus group and interview questions were informed by the literature, and sought to elicit the thoughts, beliefs and opinions of the stakeholder groups regarding the following key questions:

1. What knowledge, skills, and attitudes do you think employers want in graduates?

2. How are employability skills developed in the curriculum?
3. How are employability skills developed elsewhere?
4. How can undergraduates further enhance their employability skills throughout their time at university?

A summary of participants is shown in Table 1.

Table 1 Summary of participant numbers (n)

	Engineering	ICT	Life sciences	Media and comms	Psychology	Other	n
Industry	10	12	8	9	10		49
Students	20	20	6	3	6		55
Academics and professional staff	3	4	3	5	12	11	38
Graduates	4	6	5	2	7		24
Short story participants	3	1	0	4	5	2	15
National forum							106
Total							287

Focus groups with employers, academics and students were run with open and frank discussion on real-world problems, issues and practices (Krueger & Casey 2009). This data collection method was adopted in order to tap into the naturally occurring synergies generated within homogenous collectives to identify and articulate embedded norms and normative assumptions (Kamberelis & Dimitriadis 2005).

Industry and professional bodies participated in five focus groups at the industry roundtable event. Participants were drawn from local employers, industry sector professional bodies and university program advisory committees, ensuring that a balance of small to medium-size enterprises as well as large companies was maintained. All participants were invited by email. At the roundtable, participants joined their relevant discipline-specific focus groups. Each one-hour focus group was facilitated by a project team member from the relevant discipline.

Some interviews were also held with employers, where numbers at the roundtable event were neither sufficient nor representative (psychology).

Student focus group sessions were run with groups of students from each discipline. Focus groups were held for engineering, life sciences, and media and communications students at RMIT only. Focus groups were held at RMIT and Monash University (two campuses: Caulfield and Clayton) for ICT students, and at RMIT and USQ (two campuses: Springfield and Toowoomba) for psychology students. Students were drawn from the penultimate and final years of relevant programs. Participants were recruited by email. Each one-hour focus group was facilitated by a project or research team member who was not involved in teaching the students. In total 13 student focus groups were held.

Graduate perspectives from each discipline were explored in one-to-one phone interviews. Participants were recruited by email. Participants were recent graduates (six months to one year since graduation) and established graduates (one to three years since graduation). The interviews were 20 to 30 minutes in duration. Interviews focused on recruitment, the nature and context of their current work, any successes and difficulties experienced, the strategies they employ to succeed and the role of their university experiences in their current work environments.

Academic views from each discipline were explored through workshops run by the project lead. Participants were recruited by email. Academic staff responsible for curriculum design were invited. Each workshop served as a forum to discuss the perspectives of academics on employability and the efficacy of their current curriculum. In total seven workshops were run, one per discipline, except for psychology, for which three were run at three campuses (RMIT Bundoora; USQ Springfield and Toowoomba).

Short stories were documented in response to one-to-one interviews conducted over the phone or in person. Participants were recruited by email from a wide range of disciplines. Participants were selected from national and institution award winners for teaching with an employability focus, as well as experts in industry and university careers, and on the personal recommendation of a project or research team member. The interviews, of approximately 60 minutes in duration, were recorded. The short stories were drafted by the senior project officer and approved by the participant.

2.2.2 Data analysis

The industry and student focus groups, academic workshops and graduate interviews were recorded and transcribed verbatim. The short story interviews were recorded and field notes developed. The stories were developed from interview notes. QSR NVivo was used to analyse the transcriptions and short stories and notes thematically. Data analysis was carried out by a research team member and reviewed by project team members.

Thematic data emerging from the transcriptions and short stories were coded against the CareerEDGE model of employability (Dacre Pool & Sewell 2007). Details of the CareerEDGE framework are given in Table 2. Sub-categories that emerged but were not present in the framework were initially coded as ‘other’. These were later analysed by three members of the research team and allocated to an appropriate category.

Table 2 Adapted CareerEDGE framework with new sub-categories (*)

Category	Sub-categories
Career development learning	career decisions, knowledge of job market, networking, passion and interests, recruitment processes and preparation, business acumen* , networking* , professionalism*
Experience (E) – work and life	<i>none provided</i>
Degree subject knowledge, understanding and skills (D)	grades
Generic skills (G)	adaptability, communication, critical thinking, entrepreneurship, imagination and creativity, lifelong learning, managing others, numeracy, planning, problem solving, teamwork, time management, using ICT, work ethic, working under pressure, ethics*
Emotional intelligence (E)	self-awareness, self-management, awareness of others, managing others, motivation (Goleman 1998)

Source: Dacre Pool & Sewell 2007

2.2.3 Professional development

A set of professional development workshops was run with team members and their peers in the five studied disciplines. Prior to the workshops, the team members were trained in clarificative and impact evaluation using a program logic approach by project advisor Dr Lesley Jolly. A program logic approach was used to examine the academics’ current approaches to developing their students’ employability. Program logic is a form of causal thinking that links curricula to outcomes. The learning process is modelled as a sequence of components such as inputs (resources), activities/processes (teaching, learning activities), outputs (assessments, artefacts) and lastly outcomes (longer-term impacts and consequences such as behaviour change). The sequence of components is presented in the form of tables and flowcharts (Owen 2007). This process was used to discuss the workshop participants’ current approaches to teaching

employability. Alignment between resources and activities, learning outcomes and impacts on graduate employability was identified. Some exemplar practices in teaching employability were revealed during this process. These then became part of the collection of short stories on innovative approaches to employability.

2.3 Process barriers and enablers

The multidisciplinary project team adopted a collaborative approach that realised significant synergies. This streamlined data analysis, optimised dissemination, and facilitated opportunities for professional body representatives to share ideas and strategies.

The three OLT commissioned projects on employability worked closely together with the project evaluator. 'Cluster' meetings were held quarterly, rotating the location between RMIT, ACER and Bond University. The agenda covered progress and plans. Research design, approaches and questions were discussed. This allowed the projects to follow their own paths, but in a coordinated way.

Access to shared computer drives was discussed on a number of occasions, but never resolved. The OLT could play a useful role by providing access to common drives for the duration of commissioned projects.

3. Project impact

The project has substantial potential impact for staff and students at the partner institutions, as well as for academic and careers staff at other universities. A detailed table of project impacts is provided in Appendix E. The most significant impacts are outlined in this section.

3.1 Resources and outputs

3.1.1 Publications

Four conference publications were published and three journal publications were drafted at the time of writing (Appendix D). Further journal and conference publications were planned for 2015 and 2016.

A booklet of best practice, *Short stories: innovative approaches to developing employability in our students*, was published (Appendix F). The booklet includes 16 short stories from 13 stakeholders. The stakeholders, covering multiple disciplines, include academics, careers staff and an industry graduate coach.

3.1.2 New knowledge

The new knowledge from the study has been documented in a series of journal and conference papers (Appendix D).

Many frameworks have been developed for employability in recent years, primarily from the employer perspective. As the definition of employability is contested, there is no consensus on the best framework. Many have become outdated as notions of employability evolve over time. The CareerEDGE framework (Dacre Pool & Sewell 2007) was selected for this study, as it is one of the more systematic, comprehensive and adaptable frameworks.

Some limitations in the CareerEDGE framework were overcome by the addition of a number of new sub-categories that emerged from the data in this study: business acumen, networking, professionalism and ethics. The enhanced CareerEDGE framework was then used to map discipline differences in stakeholder conceptions of employability. Detailed definitions for the new sub-categories are given in Appendix C Table 6.

From stakeholder perspectives, an overarching framework was developed that describes the characteristics of programs that enhance graduate employability. The best programs integrate employability seamlessly with discipline curriculum, and go beyond that to develop a shared professional identity between all stakeholders.

Some teaching resources for employability are available, but they lack a systematic approach, are not as readily available as discipline-specific resources, and there is a paucity of evidence about their effectiveness. To address the shortage of high-quality employability teaching resources, this study collected good practice case studies that include evidence of impact and effectiveness. These have been published in *Short stories: innovative approaches to developing employability in our students* (Appendix F).

3.1.3 Disciplinary and interdisciplinary linkages

The publication *Short stories: innovative approaches to developing employability in our students* includes innovative approaches from various disciplines (Appendix F). The categorisation of the approaches in terms of employability enables these stories to transcend discipline boundaries to become interdisciplinary resources.

The employer bodies represented on the reference group (EA and ASM) met and connected for the first time through reference group meetings. They also worked together to co-chair a roundtable on 'Partnerships with professional bodies' at the OLT National Forum, held on 27 November 2014 in Melbourne (Appendix E).

As an example of institutional impact, a new course has been developed for chemical engineering final year (50 students). In this course development of a full range of employability skills and attitudes is integrated into the curriculum. A project-based learning approach is used with an authentic project in a simulated work environment. This will extend to two other engineering disciplines, and 450 students, in 2016.

3.1.4 Critical success factors

The following factors contributed significantly to the overall success of the project:

- The five disciplines selected for this study were very different. This enabled a broad range of data to be collected on perspectives of stakeholders, leading to more generalisable outcomes.
- The three institutions represented very different demographics, with one Australian Technology Network (ATN) university, one Group of Eight and one with a rural/distance education focus. This allowed us to collect data from a diverse range of students, academics and graduates, ensuring the outcomes are broadly applicable.
- Excellent project management strategies supported the project. Two dedicated project officers and a research assistant were appointed on part-time contracts. One project officer had extensive event management experience; the other had outstanding research and research management experience.
- Journal publications were developed through ongoing collaborative Writing circle meetings were held, with external partners participating through phone conferencing.

One difficulty was recruiting graduate participants. The response rate was higher to the initial approach of their former lecturers than to follow-up contact made by the project officer. Only 22 interviews were carried out, although 30 had been planned.

3.1.5 Broad systemic implementation

The project's institutional partners have a key focus on employability in 2015, and outcomes of this project will inform policy and practice and future research.

RMIT has three broad areas of focus in 2015, one being to integrate employability curriculum into all programs. The outcomes of this project will influence curriculum renewal at RMIT through ongoing collaboration of the project leader with reference group member Ms Leoni Russell, Senior Education Advisor in the Office of the Dean, Learning and Teaching. Leoni is responsible for developing employability policy and staff professional development at RMIT.

Project team member Associate Professor Angela Carbone is Director of Educational Excellence, Office of Vice-Provost Learning and Teaching, Monash University. The outcomes of the project will influence the approach to developing employability at Monash University, as she was invited to present to Monash's Employability Working Group on graduate perceptions of employability. She is also piloting a professional development module for academics titled 'Improving your students' employability'. In the module each academic will look at employment outcomes for their students, then redevelop one student learning task to focus more effectively on employability. In 2015 approximately 30 staff are expected to undertake the pilot program.

3.1.5 Links with other projects

The project team worked closely with the other two OLT commissioned projects on employability, led by Professor Dawn Bennett from Curtin University and Associate Professor Shelley Kinash from Bond University. The impact of each project was amplified by presenting together at a number of conferences and public seminars, to date:

- Bond Graduate Employability Symposium, Bond University, Gold Coast, 17–18 October 2014
- OLT National Forum on Graduate Employability, RMIT, Melbourne, 27 November 2014
- Australasian Association for Research in Education 2014, Queensland University of Technology, Brisbane, 30 November–4 December 2014
- Western Australia Teaching and Learning Forum, University of Western Australia, Perth, 29–30 January 2015

At the time of writing, future joint workshops are planned to be held at the Higher Education Research and Development Society of Australasia (HERDSA) annual conference (6–9 July 2015, Melbourne) and the International Society for the Scholarship of Teaching and Learning (ISSOTL) annual conference (26–30 October 2015, Melbourne).

4. Discussion and conclusions

4.1 Outcomes of the project

Key findings of the project include:

1. Many employability frameworks have become outdated as the notions of graduate employability evolve over time. A systematic, comprehensive and adaptable framework like the CareerEDGE framework is a useful tool to analyse differences between stakeholders and disciplines. It is easy to adapt as new themes emerge.
2. Conceptions of employability were remarkably similar among disciplines and stakeholders. It was notable that students' understandings of employability were much broader than just subject knowledge and skills. Students' conceptions varied in level of sophistication, with descriptions of employability varying from simple to more nuanced.
3. Some gaps were found between employer perceptions of employability and the perceptions of other stakeholders. A major gap concerns the importance of work experience. Employers took a much broader view that experience in general was more valuable than just work experience.

4.1.1 Key issues and challenges

Conversations with multiple stakeholders from a wide variety of disciplines revealed a number of gaps between their views of developing graduate employability. Gaps between employer perceptions of employability, and those of students and teaching staff, do exist. A major gap concerned the importance of work experience.

Contrary to the popular idea that work experience is the best way to develop graduate employability, employers in this study had a much broader view of experience, indicating that experience in general was more valuable than just work experience. Employer comments included, 'I'd say in publishing, in particular our postgraduate students, they're usually got a track record of, you know, internships or volunteer work, and if they've been volunteering at Melbourne Drama Festival or something like that' (media and communications employer 2014) and 'One of the things that I particularly look for is [...] engagement in the broader life ... so if they've [...] never had a job [...], like even a job at the supermarket' (life sciences employer 2014).

The conversations with employers were dominated by their desire to see generic skills and emotional intelligence in graduates. One employer commented, 'If they can't work in a team, they don't get through the door' (life sciences employer 2014). This is consistent with national data collected by Graduate Careers Australia (GCA 2014b, p. 27), showing employers ranked

work experience just fifth out of 10 criteria, after generic skills and emotional intelligence attributes (first to third) and calibre of academic results (fourth).

4.1.2 Framework development

Staff should use an employability framework to undertake a systematic and comprehensive curriculum renewal (Anderson et al. 2014). However, there is no consensus on the best framework to use. Existing frameworks have gaps and generalities; none identifies depth of understanding of employability issues and none has a sequential hierarchy of categories to scaffold learning outcomes.

The CareerEDGE framework shares some of these limitations. However, its gaps are easily closed by addition of new sub-categories and its generalities can be overcome by using other studies to define any ill-defined sub-categories (Appendix C Table 6). The CareerEDGE framework was enhanced in this study by addition of four new sub-categories (as outlined in section 3.1.2).

4.1.3 Stakeholder perspectives (similarities, differences and gaps)

The study found that the conceptions of employability were very similar among disciplines and stakeholders (Appendix C Table 7).

Stakeholders from all disciplines readily identified a similar broad range of concepts relevant to employability. Interestingly, the students' understandings of employability were much broader than just subject knowledge and skills. However, students in programs focused on postgraduate study (such as life sciences and psychology) were aware of their lack knowledge of the industry and job market. Graduates in the same two disciplines had slightly broader conceptions of employability than expected by employers, perhaps reflecting perceptions of employers that there is a narrow range of job opportunities for these graduates.

Furthermore, students' conceptions varied in level of sophistication, with descriptions of employability varying from simple to more nuanced. Students from programs with project- or industry-based approaches showed more sophisticated understandings. They could readily identify complex interactions and apply multiple employability concepts to a work scenario.

When asked about gaps in employability of current graduates, employers from all disciplines acknowledged these gaps exist. They voiced a broad range of concerns spanning a wide range of employability skills and attitudes. The dominant concern varied between disciplines. Lack of work experience was the dominant concern for psychologists, while engineering, ICT and media and communications employers were more concerned about gaps in generic skills and emotional intelligence. Life sciences employers were most concerned about gaps in discipline knowledge and skills.

As outlined in section 4.1.1, generally other stakeholders rated work experience more highly than employers did. Life sciences employers identified a much narrower list of concepts than did other employers and even life sciences students. This may reflect a narrower range of job opportunities for new life sciences graduates.

Professional body representatives generally shared the same views as employers. This perhaps reflects that professional bodies comprise members who are employers, graduates, and in the case of EA, students. The professional bodies also employ graduates.

Academics expressed a similar level of conceptual knowledge of employability to other stakeholders. Interestingly, the life sciences and psychology staff had a broader view of graduate employability than their discipline's employers. Academics' perceptions also varied in sophistication, with descriptions of employability ranging from simple to more nuanced, as for students. Some disciplines showed a more sophisticated understanding than others; in particular, media and communications and psychology staff were expansive in their discussions of where, how and why students develop employability skills in their programs. In contrast, for example, engineering academics did not report undertaking any activities to encourage and promote extra-curricular activities; one life sciences academic commented that it was a waste of time for students to put extra-curricular activities on their résumés.

4.1.4 Staff capacity to develop curriculum

Staff from disciplines in the participating institutions undertook a mapping exercise using a program logic approach. The staff identified where they develop graduate employability in their programs, and evaluated alignment between resources, assessment, student learning outcomes and longer-term impact. Actions were planned for any areas of misalignment.

During this process, two examples of innovative approaches to graduate employability development were identified (in media and communications and psychology). Staff using these approaches then contributed to the collection of short stories (Appendix F).

A main outcome of this stage was characterisation of approaches to employability that enhance development of graduate employability. This characterisation was developed into an overarching framework (Table 3).

Table 3 Overarching framework – how to enhance employability learning

Curriculum	<p>Employability is integrated into a designed curriculum in terms of career development learning, generic skills and emotional intelligence</p> <p>Extra-curricular activities are systematically endorsed and promoted</p> <p>Content is authentic in every subject (e.g. authentic projects)</p> <p>Designed for work of today and tomorrow</p>
Context	<p>Some student learning takes place in a professional environment e.g. field visits, simulated work environment</p>
Teaching staff	<p>Share a professional identity with students, graduates and industry</p> <p>Have industry experience</p> <p>Believe it is their role to jointly develop employability</p> <p>Have professional development (PD) focused on employability routinely</p> <p>Work in collaborative teams</p> <p>Use student-focused pedagogies (e.g. project-based learning, industry-based learning) and draw on own and students' experience in class</p> <p>Invite guest lectures who are experts in careers</p> <p>Invite guest lectures who are discipline experts, to also talk about their careers</p>
Students	<p>Have a sound set of degree subject knowledge, skills and attitudes (learnt and assessed)</p> <p>Have a well-developed set of generic skills (demonstrated and assessed) through curricular and extra-curricular activities (e.g. group work, badging)</p> <p>Have a well-developed emotional intelligence (demonstrated and assessed) through curricular and extra-curricular activities (e.g. group work, volunteering)</p> <p>Share a professional identity with staff, graduates and industry</p> <p>Meet requirements for experience (e.g. 12 weeks professional work)</p>
Graduates	<p>Remain connected to the discipline through social media</p> <p>Participate in curriculum development, developing projects, casual or part-time teaching, assessment and mentoring</p>

Employers and clients	Participate in program advisory committees, curriculum development, developing projects, casual or part-time teaching, assessment and mentoring
Evidence of quality is that	<p>Programs are recognised as outstanding by peers</p> <p>Course experience questionnaire (CEQ) exceeds national average for the field</p> <p>Employment outcomes are above national average</p> <p>Objective evidence is collected to show effectiveness of employability learning</p>

4.1.5 Key challenges for staff in developing curriculum

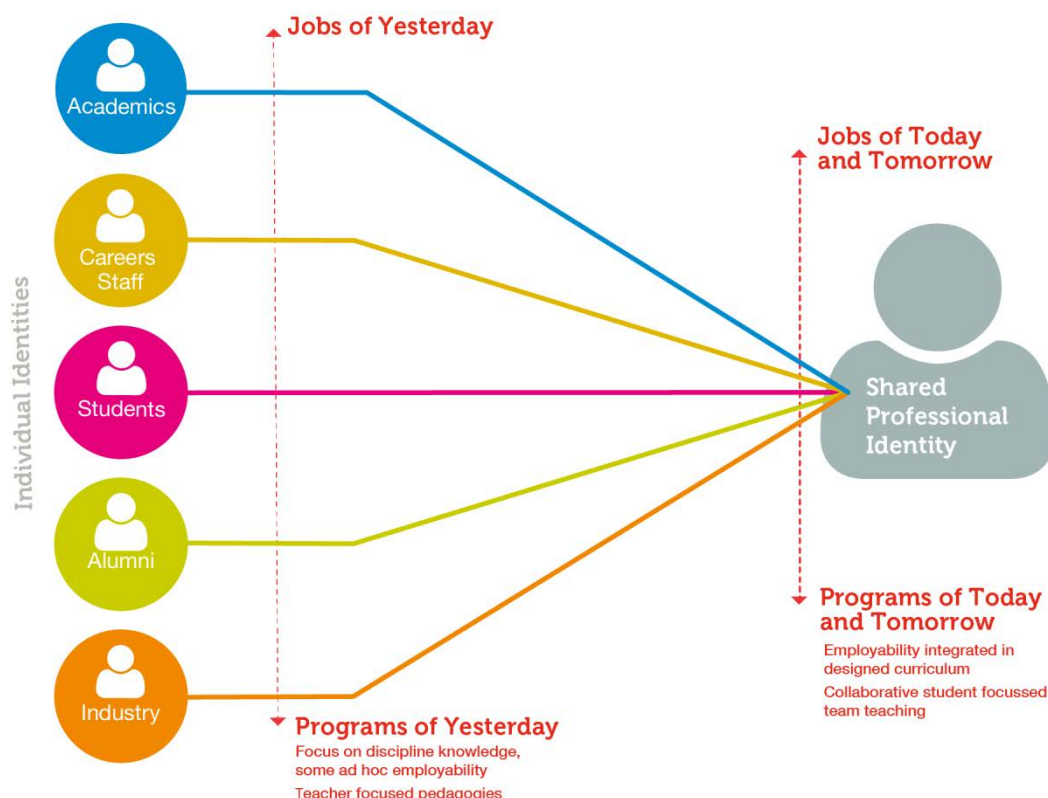
There is a shortage of good quality employability teaching resources (Smith, Ferns & Russell 2014). To address this key issue for staff, the project team interviewed teaching award winners and employability experts about how they develop employability in their students. Each was asked about their motivation, resources, approach, student activities, assessment and evidence of impact or effectiveness. These interviews were published as *Short stories: innovative approaches to developing employability in our students* (Appendix F). The stories were also categorised using the CareerEDGE framework. This categorisation was designed to facilitate curriculum renewal. A short quiz was devised to help the reader to identify their program's needs for improvement, and hence the most relevant short stories (Appendix C Table 9).

Further, an overarching framework was devised to help overcome the challenges for staff in developing new curriculum for employability skills. Ideally, educators should plan to develop students' employability systematically from the beginning to the end of their studies. The silo approach of the traditional program, with academics working in isolation, industry at arm's length and minimal contact with students or graduates, is unlikely to achieve good employability outcomes for students. Programs with effective learning affordances for employability must be carefully designed to achieve that goal. The most effective programs were found to integrate employability seamlessly with discipline curriculum. Staff, students, graduates and industry shared a professional identity, developed through constant flow of ideas through collaborative teaching, student-focused pedagogy, authentic projects, guest seminars, and part-time staff positions for practitioners.

The framework highlights the characteristics of programs that develop employability most effectively; in summary (Figure 2):

- stakeholders share a professional identity
- employability is integrated into a designed curriculum
- collaborative teaching teams use a student-focused pedagogy
- programs are designed for work of today and tomorrow

Figure 2 Programs of yesterday, today and tomorrow



4.2 Conclusions and recommendations

Gaps exist between employers' and other stakeholders' conceptions and understandings of graduate employability. Major cultural change is required to address this.

An employability framework is useful if it identifies learning objectives for renewal of curriculum for employability. It must be coherent, systematic, detailed and adaptable. The CareerEDGE framework has all these characteristics, and can be readily adapted as the concept of employability evolves.

However, existing frameworks, including the CareerEDGE framework, fail to promote a deep understanding of employability issues and fail to facilitate development of sequenced curriculum for different year levels. A new framework should be developed that has taxonomic categories which sequence skill development along a continuum of level of sophistication of understanding; for example, from remember, understand and apply, to analyse, evaluate and create (Anderson et al. 2014) or from precursor to complement, translate and enable (Barrie 2004). This would

assist staff to identify scaffolded learning objectives suitable for different year levels in different disciplines.

More high-quality teaching resources are needed to assist staff to adopt and adapt good practice to foster their students' learning for employability. Better organisation and easier access to resources are needed. More evidence of effective practice is needed to ensure practices promoted for adoption are indeed effective.

Educators should plan to develop students' employability systematically from the beginning to the end of their studies. However, a major change in workplace culture is needed to achieve this. Staff also need PD to achieve this. The silo approach of the traditional program, with academics working in isolation, industry at arm's length and minimal contact with students or graduates, is unlikely to achieve good employability outcomes for students. The characteristics of programs with effective learning affordances for employability have been identified (Table 3). They integrate employability seamlessly with discipline curriculum. Staff, students and industry share a professional identity, developed through constant flow of ideas through collaborative teaching, student-focused pedagogy, authentic projects, guest seminars, and part-time staff positions for practitioners.

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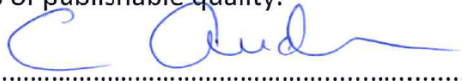
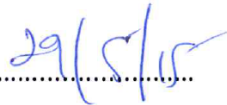
Wilson, A, Åkerlind, G, Walsh, B, Stevens, B, Turner, B & Shield, A 2013,. 'Making "professionalism" meaningful to students in higher education', *Studies in Higher Education*, vol. 38, no. 8, pp. 1222–1238.

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Appendix A Certification

Certification by Deputy Vice-Chancellor

I certify that all parts of the final report for this OLT grant provide an accurate representation of the implementation, impact and findings of the project, and that the report is of publishable quality.

Name:  Date: 

Dr Craig Anderson

Acting Deputy Vice-Chancellor Academic

Appendix B External evaluation report

By Dr Grace Lynch, 20 May 2015

Background

This project aimed to develop a shared understanding of the perceptions of employability of students, graduates, academics, industry and professional bodies across five disciplines (communications, computer science, engineering, life sciences and psychology). These were chosen to represent a range of disciplines with high and low employment outcomes. Furthermore the project attempted to identify successful teaching practice and supportive institutional context that contribute to employability of graduates. A framework was constructed modelling how employability is understood by students, graduates, educational institutions and employers and how this contributes to graduate employment outcomes.

The intended outcomes were to be good practice guides that identified the:

- key issues and challenges that influence graduate employability from the viewpoint of a wide range of stakeholders across a variety of disciplines;
- gap between industry expectations and student/academic perspectives of graduate employability;

in order to:

- build staff capacity to develop curriculum and learning affordances that promote student acquisition of employability skills, knowledge and attributes; and
- identify the key challenges for staff in developing curriculum for employability skills in students.

The guiding focus of the evaluation was to determine if the project's aims were achieved and outcomes delivered within budget and on time.

Evidence

The first interactions between the Project and Evaluation Teams were at the OLT workshop in April 2014 for all 2013 Strategic Commissioned Projects. Within the Graduate Employability Cluster area there were three different project teams including this one lead by RMIT University, Associate Professor Margaret Jollands with partner institutions of Monash University and University of Southern Queensland.

In order to identify that the project's aims were achieved and outcomes delivered both formative and summative evaluation strategies were utilised. The Evaluation team was

included in all project team and Reference Group communications. In addition a member of the evaluation team was a participant in virtual and face to face project team, reference group meetings and cluster meetings and was able to provide input and advice throughout the lifecycle of the project the evaluation team provided input and advice.

The Evaluator found several key factors that contributed to the successful achievement of the aim and goals. These factors include:

- Regular meetings of the project team with the Evaluator and Reference Group from the beginning of the project, which were well supported by project plan updates and reports on activities. This ensured that the team were provided formative feedback to further enhance the proposed project outcomes.
- Active and sustained communications between the partner institutions.
- Regular meetings with the three project teams in this graduate employability cluster area.
- Strong project management, as demonstrated in extensive and appropriate documentation.
- Writing circles to develop several publications arising from this project
- Individual meetings with the Project Lead and External Evaluator on regular touch points during the project.
- Strong institutional support ensuring that the activities undertaken related to institutional strategies.

Project Management

It has been documented that effective project management has the following elements:

- Identifying requirements,
- Establishing clear and achievable outcomes,
- Balancing the competing demands for quality, scope, time and cost,
- Managing the expectations of various stakeholders, and
- Adapting plans to overcome challenges.

From a Project Management perspective, the project was well managed and all stakeholder groups were involved. There was effective and significant communication with all members of the project team and effective involvement of the reference group assisted with achievement of outcomes. There were two dedicated project officers and a research assistant appointed specifically to work on this project which enabled the Project Lead and Institutional partners to focus on the data collection, research and outcomes.

This project team worked closely with the project evaluator and the two other OLT commissioned projects on employability. 'Cluster' meetings were held quarterly, rotating the location between RMIT, Curtin (at ACER in Melbourne) and Bond University. The agenda reviewed what was new, what was planned and discussed research design, approaches and questions. This allowed the three projects to follow their own paths, but in a coordinated way. The impact of presentations was amplified by presenting together at a number of conferences and public seminars.

From the outset it was evident that this was an energetic, enthusiastic and well-led project with clear project goals and strategies. The strong leadership from Associate Professor Margaret Jollands along with Associate Professor John Smith and Shelia Thomas and Catherine Pocknee as Project Officers were key factors in the success of this project, in addition to the strong input and guidance from Associate Professor Angela Carbone, Monash University. They all demonstrated strong professional and positive commitment and kept everything and everyone on track. As mentioned above a member of the evaluation team provided formative evaluation and input throughout the project and was warmly welcomed as a member of the team.

Achievement of Outcomes

This key summative evaluation questions centred on whether the project was able to clearly identify key issues and challenges that influence graduate employability from the viewpoint of a wide range of stakeholders and any gaps between industry expectations and student/academic perspectives of graduate employability. Input was gathered from 287 stakeholders from the five disciplines chosen to be investigated – engineering, ICT, life sciences media and communications and psychology. These stakeholders were broken down as follows:

- consultation with 49 individuals representing employers and professional bodies
- workshops with 38 academic and professional staff, discussing curriculum design and employability
- focus groups engaging 55 students, gauging their understanding of employability and how it is currently being developed through their studies and other activities
- interviews with 24 graduates to gather their recent experiences in gaining employment
- interviews with 15 academic or industry experts, to explore best practice case studies
- dissemination and roundtable workshops on future directions with 106 individuals representing employers, professional bodies, academics, professional staff, students and graduates

Sixteen short stories on innovative approaches to developing employability in students were published. To date there have been four conference publications and three journal articles drafted for submission at this time. Further journal and conference publications are planned for 2015 and 2016.

A key institutional impact that was not intended has been the development of a new course for chemical engineering final year (50 students) at RMIT University. In this course development of a full range of employability skills and attitudes is integrated into the curriculum. A project based learning approach is used with an authentic project in a simulated work environment. This will extend to two other engineering disciplines, and 450 students, in 2016. Another institutional impact is a new professional development module for academics on 'Improving your students' employability' is being piloted at Monash University.

Summary

The project activities ensured that a large number of stakeholders (employer bodies, academics and students) were not only consulted in developing the findings, but were also engaged with the critical question of how to increase employability outcomes for students. Two of the institutions involved RMIT University and Monash University have employability as key focus for 2015.

On the whole it was a pleasure to work with this well led team that achieved not only its project outcomes but also extended impact in a number of areas. The relationships formed during this project will continue in the future.

Appendix C Project materials and resources

The project materials and resources in this appendix include:

- Appendix C Table 4 Research questions
-

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- Appendix C Table 5 Adapted CareerEDGE framework with new sub-categories (*)
- Appendix C Table 6 New CareerEDGE framework sub-category definitions
- Appendix C Table 7 Comparisons of stakeholders' conceptions of employability
- Appendix C Table 8 Overarching framework — how to enhance employability learning
- Appendix C Table 9 Quiz to assess your program's approach to developing employability in students

The project materials and resources cover the research questions that informed focus groups, workshops and interviews, given in Appendix C Table 4.

Developments to the CareerEDGE framework are given in

Appendix C Table 5 and Appendix C Table 6.

Key results of the project are given in Appendix C Table 7 to Appendix C Table 9.

Appendix C Table 4 Research questions

Employers	<ol style="list-style-type: none">1. Can you tell me a little about your company/organisation, your role and your connection to employing/supervising graduates?2. How many graduates do you employ and what type of roles do they fill?3. What are the key issues that currently affect the total number of graduates you recruit each year?4. What are the key generic skills or abilities you are looking for when employing a graduate?5. Are there any characteristics you don't want to see in graduate applicants?6. What skills and abilities do you feel are missing in current graduate applicants? What are the gaps?7. Can you describe the ideal graduate employee? How would he/she need to behave and perform in your workplace?8. How do you think universities could help graduates acquire these skills and abilities?9. What would you like to see more of in university courses?10. This is a blue sky question. How can universities help students become more employable in your profession?
Undergraduates	<ol style="list-style-type: none">1. Can we move around the table and ask people to tell us their name, the course or program they are undertaking, and their current year level?2. Can people tell me why they chose their particular course?3. Was future employment or getting a job an issue?4. Who is planning on working after completion?5. Does anyone know what the official employment outcomes are for their field of study?6. What skills and abilities do you think will you need to have to gain employment in your field?7. Most universities have graduate attributes (written and oral communication, critical and analytical thinking, problem solving, information literacy, learning and working independently, learning and working collaboratively, ethical and inclusive engagement with community). Have you heard of them and how relevant do you feel they are to graduate employability?

	<p>8. What aspects of your degree are developing your skills for employment?</p> <p>9. What do you think are the best way to learn these skills and abilities?</p> <p>10. What are people doing inside/outside the classroom to enhance their employability?</p> <p>11. How could your degree be changed to improve your skills for employment?</p> <p>12. This is a blue sky question. How should learning and the workplace be tied together?</p>
Graduates	<p>1. Can you tell me about the course/program you have recently completed at university and whether you have found graduate employment in your field?</p> <p>2. What achievements, skills, understandings and personal attributes were/have employer/s been looking for?</p> <p>3. What skills and attributes do you think graduates need to become more employable?</p> <p>4. Is there a difference between performing in the selection process and performing in the job?</p> <p>5. Most universities have graduate attributes (written and oral communication, critical and analytical thinking, problem solving, information literacy, learning and working independently, learning and working collaboratively, ethical and inclusive engagement with community). How relevant do you feel they are to graduate employability?</p> <p>6. Did your experiences at university prepare you for the selection process?</p> <p>7. What do you feel were the best aspects of your degree in developing your skills for employment?</p> <p>8. How could the degree you completed be changed to improve your skills for employment?</p> <p>9. How should learning and the workplace be tied together?</p> <p>10. This is a 'blue sky' question. If you could start your course again what would you want to learn?</p>
Academics	<p>1. Can you tell me a little about your discipline, the program/course you work in?</p> <p>2. Where do graduates find work in your discipline?</p> <p>3. How does your course relate to industry?</p>

-
4. Have you previously worked on employability issues within your curriculum/program/course?
 5. How do you address graduate attributes and employability skills in your course/program?
 6. How do you know if students have achieved or acquired them?
 7. What learning and teaching methods do you use?
 8. What are the barriers to using these methods?
 9. How do you know if students have acquired these graduate attributes or improved their employability skills?
 10. What is industry's role in developing graduate attributes and employability skills?
 11. What do you think students want/expect from the curriculum regarding employability, and what skills do they see as important?
 12. This is a blue sky question. How can universities help students become more employable in your profession?
-

Appendix C Table 5 Adapted CareerEDGE framework with new sub-categories (*)

Category	Sub-categories
Career development learning	career decisions, knowledge of job market, networking, passion and interests, recruitment processes and preparation, business acumen* , networking* , professionalism*
Experience (E) – work and life	<i>none provided</i>
Degree subject knowledge, understanding and skills (D)	grades
Generic skills (G)	adaptability, communication, critical thinking, entrepreneurship, imagination and creativity, lifelong learning, managing others, numeracy, planning, problem solving, teamwork, time management, using ICT, work ethic, working under pressure, ethics*
Emotional intelligence (E)	self-awareness, self-management, awareness of others, managing others, motivation (Goleman 1998)

Source: Dacre Pool & Sewell 2007

Appendix C Table 6 New CareerEDGE framework sub-category definitions

Business acumen was allocated to Career development. It reflects comments about skill in making correct decisions in a business context. Employer comments included , ‘It’s almost a basic requirement for a designer to understand the business strategy and how design fits into it’ (media and communications employer 2014). Student comments included, ‘you kind of set your own wage most of the time but you don’t know how to handle those conversations. Or how to ask for more ...’ (media and communications student 2014).

Networking can be defined in this context as the cultivation of productive relationships for employment or business. An employer comment was, ‘So your engineering career ... or your career is starting while you’re at university. So the connections. You know all the projects that you sort of work on’ (engineering employer 2014). A student comment was, ‘In the past I’ve almost never got a job from applying for it, it’s all been by referral’ (life sciences student 2014).

Professionalism was allocated to Career development. It is a broad concept that includes exercising specialist knowledge and skills with judgement, identifying as a member of a community based on shared practices and values, and having a sense of responsibility and service (Wilson et al. 2013) that also might fit in either Career development or Generic skills. Employer comments included, ‘well, it’s kind of how do you behave professionally’ (engineering employer 2014). Student comments included, ‘They’re going to get stuck with commitment and responsibility and nine to five work hours at the very least’ (life sciences student 2014) and ‘we did have a course that was meant to be focused on professional ... well, core professional practice that was meant to help us prepare for the industry’ (media and communications student 2014).

Ethics was allocated to Generic skills. It is included in many frameworks but is omitted from the CareerEDGE framework. Employer comments included, ‘You know what do you do out on a project when you don’t think something is right and you know whoever it is the client, the contractor, the bank, you know whoever it might be is telling you you’re talking rubbish and to go away and just ignore it type of thing, what do you do in that situation’ (engineering employer 2014). Student comments included, ‘They had a few courses and like ethical issues and legal issues’ (life sciences student 2014) and ‘if anything the attitude is that it’s already unethical and it’s just about working round ethics, especially if you’re going to work with the media company’ (media and communications student 2014).

Appendix C Table 7 Comparisons of stakeholders' conceptions of employability

Category	Sub-category	Engineering	ICT	Life sciences	Media and comms	Psychology
Career development learning	Business acumen*		X 😊 ■ Ω	X 😊	X 😊 ■	X 😊
	Career planning	X 😊 ■	X 😊	X 😊 Ω	X 😊 Ω	X 😊 ■ Ω
	Knowledge of industry and job market	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 Ω	X ■ Ω	X 😊 ■ Ω
	Networking*	X 😊 ■	X 😊 Ω	X 😊	X 😊 Ω	X 😊 Ω
	Passions and interests	X 😊 ■	X 😊 ■	X 😊	X 😊 ■ Ω	X 😊
	Professionalism *	😊 ■ Ω	X 😊 ■ Ω	X 😊 Ω	X 😊 Ω	X 😊 ■ Ω
	Recruitment processes preparation	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 Ω	X 😊 ■ Ω	X 😊 Ω
Experience		X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω
Degree subject knowledge, understanding and skills		X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω
Generic skills	Adaptability	😊	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 Ω
	Communication	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω
	Critical thinking	■ Ω	X 😊 ■ Ω	😊 ■ Ω	X 😊 Ω	X 😊 ■ Ω
	Entrepreneurship	X ■ Ω	X 😊 Ω	Ω	😊 ■ Ω	😊

Category	Sub-category	Engineering	ICT	Life sciences	Media and comms	Psychology
	Ethics*	X ■ Ω	X 😊 Ω	X 😊 Ω	X	X 😊 ■ Ω
	Innovation and creativity	■	X ■	X	X Ω	
	Managing others	X 😊 Ω	X	X	😊	😊 Ω
	Lifelong learning	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 Ω
	Numeracy	X		Ω		😊 Ω
	Problem solving	X 😊 Ω	X 😊 ■	Ω	X ■ Ω	X 😊 Ω
	Teamwork	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 ■ Ω
	Time management	X ■ Ω	X 😊	X 😊 Ω	X 😊 ■	X 😊
	Work ethic	X ■ Ω	X 😊 ■	X 😊 Ω	X 😊 ■ Ω	😊
	Working under pressure	😊 ■	X 😊 ■	X ■ Ω	X 😊	X ■ Ω
Emotional intelligence	Self-awareness	X 😊 ■ Ω	X ■ Ω	■	X 😊 ■ Ω	X 😊 ■ Ω
	Self-management	X 😊 ■	X 😊 ■	X 😊 ■ Ω	X 😊 ■	X 😊 ■ Ω
	Awareness of others	X	X 😊 ■ Ω	X 😊 ■	■	■ Ω
	Managing others	X 😊 ■ Ω	X 😊 ■ Ω	X 😊 Ω	X 😊 ■ Ω	X 😊 ■ Ω

Key:

Students X

Graduates 😊

Employers ■

Academics Ω

Appendix C Table 8 Overarching framework — how to enhance employability learning

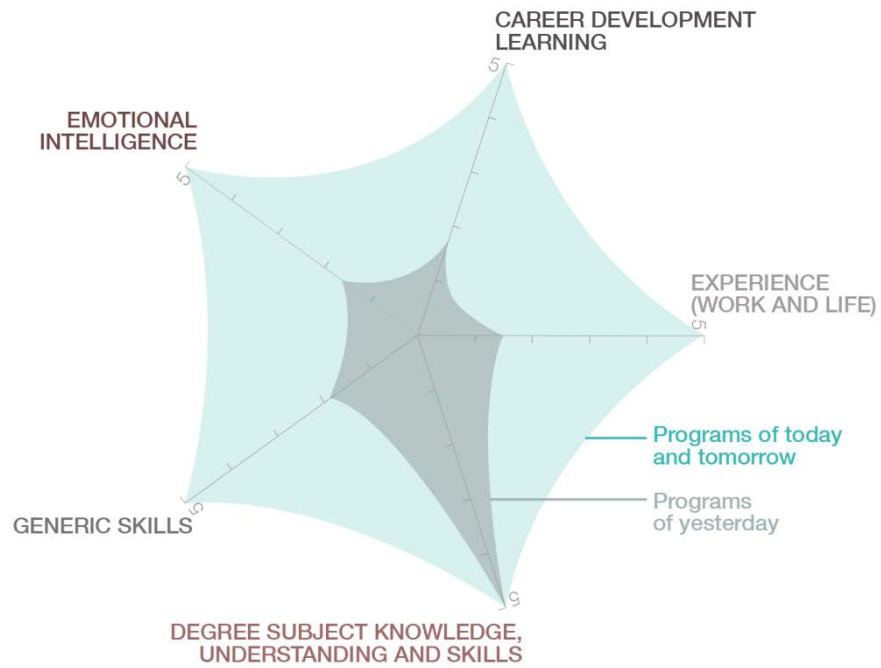
Curriculum	<p>Employability is integrated into a designed curriculum in terms of career development learning, generic skills and emotional intelligence</p> <p>Extra-curricular activities are systematically endorsed and promoted</p> <p>Content is authentic in every subject (e.g. authentic projects)</p> <p>Designed for work of today and tomorrow</p>
Context	<p>Some student learning takes place in a professional environment e.g. field visits, simulated work environment</p>
Teaching staff	<p>Share a professional identity with students, graduates and industry</p> <p>Have industry experience</p> <p>Believe it is their role to jointly develop employability</p> <p>Have professional development (PD) focused on employability routinely</p> <p>Work in collaborative teams</p> <p>Use student-focused pedagogies (e.g. project-based learning, industry-based learning) and draw on own and students' experience in class</p> <p>Invite guest lectures who are experts in careers</p> <p>Invite guest lectures who are discipline experts, to also talk about their careers</p>
Students	<p>Have a sound set of degree subject knowledge, skills and attitudes (learnt and assessed)</p> <p>Have a well-developed set of generic skills (demonstrated and assessed) through curricular and extra-curricular activities (e.g. group work, badging)</p> <p>Have a well-developed emotional intelligence (demonstrated and assessed) through curricular and extra-curricular activities (e.g. group work, volunteering)</p>

	Share a professional identity with staff, graduates and industry
	Meet requirements for experience (e.g. 12 weeks professional work)
Graduates	Remain connected to the discipline through social media
	Participate in curriculum development, developing projects, casual or part-time teaching, assessment and mentoring
Employers and clients	Participate in program advisory committees, curriculum development, developing projects, casual or part-time teaching, assessment and mentoring
Evidence of quality is that	<p>Programs are recognised as outstanding by peers</p> <p>Course experience questionnaire (CEQ) exceeds national average for the field</p> <p>Employment outcomes are above national average</p> <p>Objective evidence is collected to show effectiveness of employability learning</p>

Appendix C Table 9 Quiz to assess your program's approach to developing employability in students

Assess your program's approach to developing employability in students.

Area	To what extent:	Lo	Hi
Careers	is developing a professional identity a part of every course (subject) (learnt and assessed)?	1	2 3 4 5
Experience	does every graduate have at least 12 weeks/400 hours of relevant work experience?	1	2 3 4 5
Degree	does every graduate have a sound set of degree subject knowledge, skills and attitudes (learnt and assessed)?	1	2 3 4 5
Generic	does every graduate have a well-developed set of generic skills (demonstrated and assessed)?	1	2 3 4 5
Emotional intelligence	does every graduate have a well-developed emotional intelligence (demonstrated and Intelligence: assessed)?	1	2 3 4 5



Appendix D Journal and conference papers

Journal papers in draft/under review

Jollands M, Burton L, Carbone A, Clarke B, Grando D, Hamilton M, Smith J, Xenos S, Brodie M & Pocknee C, 'Why I'll get a job: The Australian students' perspective of employability', in progress.

Jollands, M, Burton, L, Carbone, A, Clarke, B, Grando, D, Hamilton, M, Smith, J, Xenos, S, Brodie, M & Pocknee, C, 'What's wrong with our graduates: the employer's perspective of employability', in preparation.

Jollands, M, Burton, L, Carbone, A, Clarke, B, Grando, D, Hamilton, M, Smith, J, Xenos, S, Brodie, M & Pocknee, C, 'What are academics doing to develop students' graduate employability skills?', in preparation.

Conference papers

Smith J & Jollands M 2014, 'Employability of engineers relative to other graduates', in *Proceedings of the 25th Annual Conference of the Australasian Association for Engineering Education (AAEE 2014)*, Wellington, New Zealand, 8–10 December 2014.

Hamilton M, Carbone A, Gonzalez C & Jollands M 2015, 'Breakfast with ICT employers: what do they want to see in our graduates?' in D D'Souza and K Falkner (eds), *Proceedings of the 17th Australasian Computing Education Conference (ACE 2015)*, Conferences in Research and Practice in Information Technology, 160, Australian Computer Society, Sydney, pp. 29–36.

Araujo, N, Wilson, R & Clarke, B 2015, 'Student engagement for employability: a Belonging Project case study', in *Proceedings of the Higher Education Research and Development Society of Australia Conference (HERDSA 2015)*, Melbourne, 6–9 July 2015.

Jollands M 2015, A framework for graduate employability adapted for discipline differences, in *Proceedings of the Higher Education Research and Development Society of Australia Conference (HERDSA 2015)*, Melbourne, 6–9 July 2015.

Other planned conference papers

Carbone, A, Hamilton, M, Pocknee, C & Jollands, M 2015, 'The future of learning and teaching based on Australian ICT students' view of employability', paper to be presented to the 12th annual conference of the International Society for the Scholarship of Teaching and Learning (ISSOTL 2015), Melbourne, October 27–30.

Jollands, M & Smith, J 2015, 'The future of learning and teaching based on Australian engineering students' view of employability', paper to be presented to the 12th annual conference of the International Society for the Scholarship of Teaching and Learning (ISSOTL 2015), Melbourne, October 27–30.

Carbone, A, Hamilton, M, & Jollands, M 2015, 'Moving towards the future of teaching pedagogies and learning paradigms: Addressing the 21st century employability challenges in ICT', paper to be presented to the 9th International Conference on Researching Work and Learning RCL2015, Singapore, December 9 – 11.

Appendix E Impact summary

Table 10 Impact Summary

	Project completion	+ 6 months	+ 12 months	+ 24 months
Team members	Four conference papers delivered/accepted Collaboration on three journal papers	Three conference papers planned Collaboration on three more journal papers	One book drafted	One book published
Immediate students	55 students participated in focus groups from three institutions and five campuses			

	Project completion	+ 6 months	+ 12 months	+ 24 months
Spreading the word	<p>Panellist, Bond Grad Empl Sym Oct 2014</p> <p>Chair, RMIT OLT National Forum Nov 2014</p> <p>CADAD 24 Oct 2014 (on behalf of AC)</p> <p>AARE 30 Nov–3 Dec, cluster workshop</p> <p>RMIT SEH L&T Forum 2 Dec 2014</p> <p>NAGCAS 2 Dec 2014 (J Kay on behalf of M Jollands)</p> <p>WA T&L Forum 29–30 Jan 2015</p> <p>Invited speaker, Annual Ed Tech Conf 16–17 Feb 2015</p> <p>Invited speaker, Joint Victorian Chemical Engineering Committee Seminar 18 Mar 2015</p> <p>Host visit of K Levinsohn, Head of Dept, UNITEC NZ</p>	<p>HERDSA Conf 6–9 July 2015, cluster workshop, two paper presentations</p> <p>ISSOTL 26–30 Oct 2015, cluster workshop, three paper presentations</p> <p>AAEE Conf 6–9 Dec 2015, two paper presentations</p> <p>three journal papers published</p>	<p>ACE Jan 2016, one paper presentation</p> <p>three more journal papers published</p>	

	Project completion	+ 6 months	+ 12 months	+ 24 months
Narrow opportunistic adoption	<p>PROC2114 Research Project, 25 students, authentic project in simulated work environment</p> <p>PROC2088 Process Systems Design, 70 students, career development added</p> <p>CIVE1185 Engineering Practice 1, 300 students, career talk added</p>	CHem Eng Program Renewal – systematic integration of employability learning objectives, 300 students	PROC2114, repeat survey	
Narrow systemic adoption	Team working with RMIT Careers to integrate employability into Engineering first year, 300 students		<p>CIVE1250 Research Project Part 2, 300 students, employability self-report survey</p> <p>OENG 1096 Workplace Project 1, 50 students, employability self-report</p>	

	Project completion	+ 6 months	+ 12 months	+ 24 months
Broad opportunistic adoption	<p>D Mitchell, RMIT SteIR application, employability to be compared between Denmark and Australia, unsuccessful</p> <p>OLT seed grant SD14-4262 <i>Internationalising engineering degrees: the challenge of multiple accreditations</i> with A Kootsookos, \$50k</p> <p>OLT EOI <i>Supporting academics to prepare their students as global citizens for future careers</i>, Monash, RMIT, others, unsuccessful</p>	<p>UQ Tony Howes Program Renewal all Eng BE/ME programs, discussions ongoing</p> <p>OLT seed grant application for 2016, collaboration on evaluation of PROC2114 authentic v. simulated WIL, \$40k</p>	ACED presentations	
Broad systemic adoption		<p>RMIT University, top three goal for 2015, to integrate employability curriculum into all programs at RMIT</p> <p>Monash University, PD pilot module on employability</p>		

Appendix F Short stories: Innovative approaches to developing employability in our students

Published separately as:

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Australian Government Office for Learning and Teaching

1 June 2015

M Jollands and C Pocknee 2015

Please refer to link : <http://www.olt.gov.au/project-developing-graduate-employability-through-partnerships-industry-and-professional-association>