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RESEARCH CENTRE

THE UNIVERSITY OF SYDNEY
BUSINESS SCHOOL

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SYDNEY

EMPLOYER SATISFACTION SURVEY

REPORT FOR THE DEPARTMENT OF EDUCATION, JUNE 2014

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EXECUTIVE SUMMARY

This report summarises the outcomes from the *Employer Satisfaction Pilot Survey* project. The project team, comprising the Workplace Research Centre at the University of Sydney, the Centre for the Study of Higher Education at the University of Melbourne, and ORC International (the consortium), was commissioned by the then Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (the department) to develop and pilot a survey to measure employers' satisfaction with the technical and generic skills of recent university graduates. The project arose out of the *Advancing Quality in Higher Education* (AQHE) initiative and is overseen by a project advisory group.

The project involved the following tasks.

- Developing a conceptual foundation for the survey, drawing on relevant frameworks focusing on graduates, curriculum, and the workplace.
- Designing a sampling approach based on surveying recent graduates (initially only Australian Graduate Survey respondents), to collect contact details of their immediate work supervisor.
- Constructing a pilot sample based on 2012 domestic bachelor degree graduates from four universities (in this report, anonymously identified as University A, University B, University C and University D). Five broad fields of education were prioritised: Natural & Physical Sciences; Engineering; Education; Management & Commerce; Society & Culture.
- Producing a draft survey instrument, based largely on the survey piloted at the University of South Australia in 2008 (Walker 2008).
- Testing the survey instrument using a small amount of sample from University A and University B, making minor changes to the survey design as a result.
- Conducting telephone interviewing of graduates and supervisors using sample from the four universities.

Fieldwork was completed for the first two universities (University A and University B) in December 2013 and conducted for the remaining two (University C and University D) between January and March 2014.

A total of 2,749 graduate interviews and 539 supervisor interviews were completed from the four participating universities. Analysis of the graduate and supervisor interviews indicates that:

- Overall, both graduate and supervisor respondents gave very positive feedback about the degree to which university qualifications prepare graduates with the range of technical and generic skills required in the graduate labour market.
- The most highly rated skills clusters were teamwork and interpersonal skills, foundation skills, and adaptive skills.
- Very consistently, supervisors rated their graduate’s qualifications even more highly than the graduates themselves, suggesting that graduates are a very reliable source of information about the quality of the qualifications they have recently completed and how well they meet labour market requirements.

However, the piloting conducted so far has also demonstrated a number of challenges remain to the survey methodology:

- Graduates were even more reluctant to provide their supervisors’ details than originally anticipated.

- The survey methodology was very time intensive and better supervisor response rates in the second phase of the pilot were only achieved at the expense of a longer period in the field and the allocation of considerably more interview hours.
- Producing robust results with accurate standard errors for reporting purposes at the level of institution by broad field of education will be difficult, requiring a full census of all graduates. Even with a full census, it may only be possible to achieve a sufficient sample size for larger institutions or by compiling results from smaller institutions over several years.
- The validity of any statistical judgments is affected by apparent non-referral bias in the supervisor surveys. However, non-referral bias appears to be mainly related to the transition achieved by the graduate (whether they have found a job that is relevant to their studies) and, apart from field of education, not underlying characteristics such as sex, whether working full-time or part-time, or the industry, sector or business size of their place of employment. This makes it more difficult to identify strategies for correcting non-referral bias.

The following recommendations are made about the potential future development and use of an Employer Satisfaction Survey:

Recommendation 1: Future use of the ESS

It is recommended that the ESS methodology be further developed to systematically gather feedback from employers on graduates' generic skills, technical skills and work readiness.

Recommendation 2: Integration with other surveys

It is recommended that any future versions of the ESS be operated as an adjunct to the Australian Graduate Survey (AGS) or in conjunction with the Beyond Graduation Survey (BGS).

Recommendation 3: Fieldwork timing

It is recommended that any future versions of the ESS take place between six and twelve months after the graduate completes his or her course.

Recommendation 4: Mode of survey delivery

It is recommended that any future versions of the ESS be conducted as a telephone survey of workplace supervisors.

Recommendation 5: Selection method

It is recommended that any future versions of the ESS be based on a full census of all respondents to the AGS.

Recommendation 6: Further development of the ESS

It is recommended that further development of items and clusters be undertaken in future administrations of the ESS survey.

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ABBREVIATIONS AND ACRONYMS

AAGLO	Assessing and Assuring Graduate Learning Outcomes
ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum Assessment and Reporting Authority
ACCI	Australian Chamber of Commerce and Industry
ACER	Australian Council for Educational Research
ADRI	Approach, Deployment, Review, Improvement quality assurance framework
AEC	Australian Education Council
AGS	Australian Graduate Survey
ALTC	Australian Learning and Teaching Council
AQF	Australian Qualifications Framework
AQHE	Advancing Quality in Higher Education
BCA	Business Council of Australia
Bradley Review	Australian Review of Higher Education
the Blueprint	Australian Blueprint for Career Development
CATI	computer assisted telephone interview
CEQ	Course Experience Questionnaire
CLA	Collegiate Learning Assessment
CSHE	Centre for the Study of Higher Education, University of Melbourne
CSfW	Core Skills for Work (CSfW)
DEEWR	Department of Education, Employment and Workplace Relations
DEST	Department of Education, Science and Training
DETYA	Department of Education, Training and Youth Affairs
DIICCSRTE	Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education
DIISRTE	Department of Industry, Innovation, Science, Research and Tertiary Education

ESS	Employer Satisfaction Survey
GCA	Graduate Careers Australia
GDS	Graduate Destination Survey
GLOs	Graduate Learning Outcomes
GOS	Graduate Outcomes Survey
HESP	Higher Education Standards Panel
LLN	language, literacy and numeracy
MCEEDYA	Ministerial Council for Education, Early Childhood Development and Youth Affairs
NCVER	National Centre for Vocational Education Research
ORC	ORC International
PAG	Project Advisory Group
Table A institutions	Institutions listed in Table A of the Schedule to the Higher Education Support Act. These comprise self-accrediting institutions.
TEQSA	Tertiary Education Quality and Standards Agency
UES	University Experience Survey
UniSA	University of South Australia
VET	Vocational Education and Training
WRC	Workplace Research Centre, University of Sydney Business School

1. INTRODUCTION

1.1. MOTIVATION AND OBJECTIVES

The motivation for this project is the Australian Government's desire to improve the range and quality of higher education performance indicators in Australia. To work efficiently, a demand-driven and performance funded system of higher education requires the provision of robust information on the quality of qualifications offered by universities and other approved higher education providers. This has been the primary motivation behind the suite of performance measurement instruments that have been or are currently being developed following the recommendations of the Advancing Quality in Higher Education (AQHE) Reference Group (2012). In particular, the AQHE Reference Group recognised the lack of data underpinning key performance outcomes, including graduate outcomes, and recommended a national survey to capture institution-level data on employer satisfaction with graduates' skills and attributes.

Since graduate employment is usually one of the main objectives of completing a higher education qualification, employer perceptions of the readiness of graduates to enter the workplace forms an essential part of the quality signals.

The Department of Education (then the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education [DIICCSRTE]) commissioned this project to canvas methodological options for a national survey of employer satisfaction with graduate attributes and to conduct a pilot of the survey.

1.2. THE CONSORTIUM

This project has been managed and led by the Workplace Research Centre (WRC) at the University of Sydney, and is supported by subcontracted expertise from:

- the Centre for the Study of Higher Education (CSHE) at the University of Melbourne; and
- ORC International (ORC).

The CSHE contributed to the development of the conceptual framework. ORC managed fieldwork operations and also contributed to questionnaire development. The WRC was involved in all stages of the project.

1.3. PROJECT GOVERNANCE

A Project Advisory Group (PAG) was formed to guide the development of the pilot survey. Membership of the PAG included representatives from the AQHE reference group, a nominee of each of the four universities participating in the pilot, and representatives from the Department of Education.

The PAG met by teleconference on 29 August 2013 to provide input on the overall project. PAG members were provided with a Project Plan and Scoping Paper (which included a draft survey instrument). PAG members were provided with a revised version of the survey instrument by email on 17 September and asked to provide feedback by email. Comments were incorporated into the next version of the questionnaire.

A second teleconference of the PAG was held on 24 March 2014 to discuss the interim report prepared by the consortium, based on the results from the first two universities. The final report incorporates feedback from the PAG, including changes to the presentation of results to make the ESS more comparable to the University Experience Survey (UES) and more reporting based on the characteristics of the graduate's employer.

1.4. INTENDED OUTCOMES

The intended outcomes of the pilot project are:

- A set of recommendations, based on the pilot outcomes, as to how a full survey of all universities could best be operationalised;
- A methodology for expanding the survey to include all universities and other Table A institutions and provide reportable data for all fields of education;
- A tested Employer Satisfaction Survey (ESS) instrument; and
- Data and reports from the pilot of the survey, to be used for research and analysis.

2. RATIONALE FOR AN EMPLOYER SURVEY

This chapter provides an overview of key initiatives in higher education, education more broadly, and the labour market that support the development of an employer satisfaction survey. Issues related to performance measures in the Australian higher education sector are explored, including the Bradley Review of Australian Higher Education, the AQHE initiative, the University Experience Survey (UES), Tertiary Education Quality and Standards Agency (TEQSA) teaching and learning standards, the Assessing and Assuring Graduate Learning Outcomes (AAGLO) Project, the University of South Australia (UniSA) Teaching Quality Indicators Pilot Project ("the UniSA survey"), the Monash University Employer Survey, the Australian Learning and Teaching Council (ALTC) graduate attribute assessment projects, and AC Neilson graduate employer satisfaction research.

2.1. PERFORMANCE MEASURES IN THE AUSTRALIAN HIGHER EDUCATION SECTOR

2.1.1. BRADLEY REVIEW OF AUSTRALIAN HIGHER EDUCATION

The Australian Government commissioned a Review of Higher Education (the Bradley Review) to "examine and report on the future direction of the higher education sector, its fitness for purpose in meeting the needs of the Australian community and economy and the options for reform" (p. ix). The Review of Australian Higher Education Final Report (Department of Education, Employment and Workplace Relations [DEEWR], 2008) recommended that "the Australian Government commission and appropriately fund work on ... a set of indicators and instruments to directly assess and compare learning outcomes; and a set of formal statements of academic standards by discipline along with processes for applying those standards" (p. 137). Recent developments regarding the suite of performance measurement instruments — including the employer satisfaction survey — may be traced to the impetus for reform provided by the Bradley Review.

2.1.2. ADVANCING QUALITY IN HIGHER EDUCATION (AQHE) INITIATIVE

The Australian Government's Advancing Quality in Higher Education (AQHE) initiative was established to "assure and strengthen the quality of teaching and learning in higher education" (DEEWR, 2011a, p. 26). The Australian Government established the AQHE Reference Group to advise on the development of higher education performance measurement instruments, including:

- the University Experience Survey (UES), which assesses university undergraduate student experience with respect to the five dimensions of learning engagement, learning resources, quality of teaching, student support and skills development;
- a Graduate Outcomes Survey (GOS), which will replace the Australian Graduate Survey (AGS) conducted by Graduate Careers Australia (GCA); and
- a survey of employer satisfaction with graduates (ESS), which forms the focus of this research project.

The AQHE Reference Group report, Development of Performance Measures (2012), recommended the development of performance measurement instruments including the UES, ESS and GOS. The report recommended discontinuation of the Collegiate Learning Assessment (CLA) instrument, noting

sector concerns regarding instrument validity and more broadly, suitability of the CLA for the purpose of cross-institutional comparisons. The report also recommended implementation of a scoping study to determine the feasibility of developing a graduate employer satisfaction survey.

2.1.3. CONTRIBUTING DISCUSSION PAPERS

The discussion papers — Development of Performance Measurement Instruments in Higher Education (DEEWR, 2011a), Review of the Australian Graduate Survey (DEEWR, 2011b) and Assessment of Generic Skills (DEEWR, 2011c) — informed the work of the AQHE Reference Group.

The Development of Performance Measurement Instruments in Higher Education Discussion Paper (DEEWR, 2011a) noted the work of the Indicator Development Group and draft indicator framework elaborated in An Indicator Framework for Higher Education Performance Funding Discussion Paper (DEEWR, 2009).[1] The Discussion Paper confirmed the centrality of the following principles for the development of performance measurement instruments: fitness for purpose, consistency, auditability, transparency and timeliness (p. 6).

The Assessment of Generic Skills Discussion Paper (DEEWR, 2011c) noted considerable difficulties associated with measuring learning outcomes and suggests that "Direct assessment of learning outcomes represents the 'holy grail' of educational measurement" (p. 8). In terms of utility, the Discussion Paper noted that "direct assessment of learning outcomes has many uses and benefits including providing assurance about the quality of higher education, encouraging continuous improvement among universities, meeting employer needs for more skilled graduates and informing student choice" (p. 8). The Discussion Paper reiterated that there is a paucity of research in this area, with the notable exceptions of the University of South Australia (UniSA) research, and the Employer Satisfaction with Graduate Skills, Research Report 99/7 (Department of Education, Training and Youth Affairs [DETYA], 2000).

With respect to the assessment of discipline specific skills and knowledge, the Discussion Paper clarified that:

> "Direct assessment of learning outcomes is designed to operate 'above curriculum content', that is, not to test discrete knowledge content, but rather to test learner's capacity to apply generic skills at the very least, and potentially beyond that, core disciplinary knowledge to solve complex and authentic problems. … An emphasis on generic skills may overshadow learning

[1] The Discussion Paper suggests that performance indicators:

- "be relevant and have 'face validity' – i.e. appear appropriate, and measure what they purport to measure;
- be statistically sound and methodologically rigorous, including in terms of construct and predictive validity;
- be derived from high quality, objective data sources, and where possible collected at 'arm's length' by an independent body, as well as not easily manipulated;
- be as simple, transparent and explicable as possible, using crude data unless there is a compelling case for statistical adjustment;
- have an explicit and consistently used definition (both in terms of what is being monitored and how it is being measured) and be able to be measured reliably over time;
- make the best possible use of existing data sources;
- be collected and analysed cost effectively and with regard to the administrative burden on universities and the burden on respondents;
- not be excessively lagged, providing information in a timely manner;
- have the potential to be disaggregated (where possible and desirable) along relevant dimensions to show differences between important population subgroups and other groupings;
- inform and encourage policy and practice at both the national and institution level, without having a perverse influence on behaviour; and
- accommodate and to the extent possible, facilitate institutional diversity" (p. 6).

> within discipline contexts and learning embedded within particular curricula (DEEWR, 2011c, p. 12). Arguably, assessments that are broader in scope will be of more benefit to inform improvement in teaching and learning at discipline level as 'the nature and level of learning outcomes in higher education depend heavily on the particular field of study and those who are expert in it' (DEEWR, 2008, p.133)".
>
> (DEEWR, 2011c)

Further, the Discussion Paper suggested that the relevance of discipline specific skills may be highest where there is a strong linkage between graduate employer outcomes and qualifications, for example in highly regulated industries such as nursing and education. Recent research confirms that this match is highest in regulated industries where professional associations contribute to curriculum design and structure (Wheelahan et al., 2012).

Finally, the Discussion Paper noted that "a key factor in securing the support and greater participation of universities would appear to be the inclusion of discipline-specific assessments within a broader assessment of generic skills. Within universities, teaching and learning of generic skills appears to be of greater relevance and utility at discipline rather than university level. Development and participation in discipline-specific assessments of generic skills would undoubtedly lead to significantly higher costs and require increased participation by students and universities to produce robust and reliable results" (DEEWR 2011c, p. 20).

2.1.4. AQHE REFERENCE GROUP RECOMMENDATIONS

The AQHE Reference Group recommended that the principles of validity and reliability, efficiency and cost effectiveness guide the development of performance measurement instruments and associated methodologies. With respect to sampling methodology of the final instruments, the AQHE Reference Group report noted, reflecting submissions received, that either a sample or census approach be utilized. This was based on pragmatic and privacy considerations relevant to the particular performance measurement instrument in question, noting that universities recommend feedback to them (at the course level) for quality improvement purposes.

With respect to generic and discipline specific skills, the AQHE Reference Group report stated that "submissions favoured the assessment of discipline specific skills", noting that "there were a number of submissions that expressed an opposing view suggesting that assessment of high level generic skills takes precedence over assessment of discipline specific skills … largely on the grounds of cost, feasibility and practicality" (p. 32).

With respect to the GOS, the AQHE Reference Group report noted that "information provided by the GDS (Graduate Destination Survey, the graduate outcomes component of the [Australian Graduate Survey]) will not be replicated by any of the new performance indicators. … Information on graduate outcomes will continue to be of value to the sector. Nonetheless, consideration should be given as to whether the GDS as currently configured is appropriate for the needs of the sector in the future" (p. 23).

With respect to the GOS, the AQHE Reference Group recommended that it be largely based on the Graduate Destinations Survey (GDS), including the Postgraduate Research Experience Questionnaire (PREQ) and Course Experience Questionnaire (CEQ), the latter at least on a transitional basis.

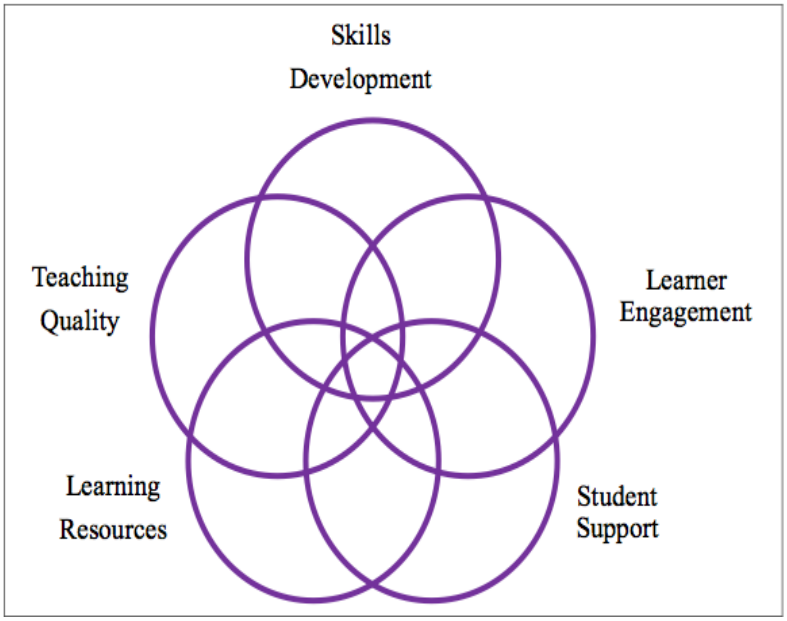
2.1.5. UNIVERSITY EXPERIENCE SURVEY (UES)

The Australian Government developed the UES as a performance measurement instrument to assess student experience. The UES "focuses on aspects of the student experience that are measurable,

linked with learning and development outcomes, and for which universities can reasonably be assumed to have responsibility" (Radloff et al., 2012, p. vi). The UES was initially introduced in 2012, with over 110,000 university student respondents from 40 Australian universities, spanning all fields of education.

The *2012 University Experience Survey National Report* (Radloff et al., 2012) recommended that the UES measure skills development, learner engagement, quality teaching, student support and learning resources, which together reflect the conceptual structure or model for the UES, as noted below.

Figure 1: UES conceptual structure



Source: 2012 UES National Report, Radloff et al., 2012, p. 26.

2.2. TEQSA TEACHING AND LEARNING STANDARDS

The Australian Government established the Higher Education Standards Panel (HESP) under the Tertiary Education Quality and Standards Agency Act 2011 to advise on the Threshold Standards of the Higher Education Standards Framework to be implemented by the regulator, TEQSA.

The Higher Education Standards Panel released the Draft Standards for Learning Outcomes (Coursework) in March, 2013, which states that:

> The learning outcomes for each course of study are informed by:
>
> a) the mastery of specific disciplinary and/or interdisciplinary knowledge and skills that characterise the field of study
> b) the generic skills and attributes required of graduates
> c) the application of generic skills and attributes in the context of the field of study including the communication skills required, and
> d) the requirements of employment related to the field of study (HESP 2013, p.1)

The draft Standards for Learning Outcomes (Coursework) represented one category within the *Participation and Attainment* topic, itself one of eight topics.[2]

[2] The other topics were Learning Environment, Teaching, Research and Research Training, Quality Assurance, Governance, Management, and Representation and Information. Source: Higher Education Standards Communique Number 8 – May 2013, p. 4.

3. CONCEPTUAL FRAMEWORKS

This chapter explores a range of different conceptual frameworks relevant to a survey of graduate generic and technical skills. It reviews a number of frameworks, including the *Australian Curriculum: General Capabilities*, the *Employability Skills Framework*, the *Core Skills for Work (CSfW) Developmental Framework* (DIICCSRTE & DEEWR, 2013), *Australian Blueprint for Career Development* (Ministerial Council for Education, Early Childhood Development and Youth Affairs [MCEECDYA], 2010) and Australian Qualifications Framework (AQF).

The conceptual frameworks have been grouped into three categories:

- Graduate focused
- Curriculum focused
- Workplace focused

At the conclusion of the chapter, a conceptual framework for the survey is presented, drawing on elements from a number of the frameworks reviewed.

3.1. GRADUATE FOCUSED FRAMEWORKS

In response to demands for a greater focus on graduate outcomes, Australian universities have developed their own frameworks for graduate attributes. Within the higher education sector, there has been considerable debate about nomenclature, the relationship between discipline-specific skills and knowledge and general graduate attributes, and how general graduate attributes can be developed and assessed by discipline experts.

The ALTC report, *Good practice report: assuring graduate outcomes* (Oliver 2011), provides the following general definition of graduate outcomes.

> "Graduate outcomes include knowledge outcomes and generic outcomes (generally referred to as graduate attributes). Often, these knowledge and generic outcomes are inseparable because generic outcomes are entwined with discipline knowledge and associated professional practice" (p. 2).

The report also provides a comprehensive guide to Australian university graduate attributes initiatives, including a literature review and overview of 54 discrete projects and fellowships. This includes a scan of Australian university graduate attributes policies, and identifies seven clusters of graduate attributes as follows:

- "written and oral communication
- critical and analytical (and sometimes creative and reflective) thinking
- problem-solving (including generating ideas and innovative solutions)
- information literacy, often associated with technology
- learning and working independently
- learning and working collaboratively
- ethical and inclusive engagement with communities, cultures and nations" (p. 2).

This report suggested that these clusters "echo" those identified in the Australian Curriculum Assessment and Reporting Authority (ACARA) Australian Curriculum *general capabilities*, the Employability Skills Framework and the Business Council of Australia's (BCA's) listing of generic

skills: communication, teamwork, problem solving, critical thinking, technology and organizational skills.

The report noted that only a few universities differentiated between "levels of achievement (standards)" (p. 2). Further, the report stated that "of particular note is the mismatch between the seven common clusters of generic outcomes – the things that most universities say are important – and the gaps in how these are measured or judged. … Measurement of these outcomes is uncommon because …. it has been found to be difficult, time-consuming or impossible" (p. 3). In terms of focus, the report found that "outcomes are best contextualized and embedded in the disciplines" (p. 3).

In conclusion, the report identified a "most pressing challenge" in identifying "increasingly rich and transparent ways of warranting graduate achievements" at the same time as ensuring that graduates themselves are assured of their capabilities" (p. 6).

The ALTC (2011) *Good practice report: assuring graduate attributes* provided a comprehensive literature review regarding Australia and international research regarding graduate attributes.

Within the Australian higher education context:

- *knowledge learning outcomes* include graduate course learning outcomes in accordance with course accreditation and review policies and processes; and in some instances, external accreditation requirements (for example, of professional accreditation organisations), encompassing inputs, outputs and delivery standards; and
- *threshold standards* defined as "the minimum learning outcomes a graduate must achieve including discipline-specific knowledge, discipline-specific skills including generic skills as applied in the discipline and discipline-specific capabilities" (ATLC, 2010); and
- *generic graduate attributes* have increasingly been explored and articulated, in addition to discipline-specific knowledge.

The review locates the literature within the *Approach, Deployment, Review, Improvement* quality assurance framework. For the purposes of this project, "deployment" (assessment) is most fundamental such that "alignment of learning outcomes with experiences and assessment is now widely regarded as fundamental to sound practice" (p. 12). The review points to research of the National Institute for Learning Outcomes Assessment[3]. However, the review suggested evidencing achievement of graduate attributes has been problematic.

3.2. CURRICULUM-FOCUSED FRAMEWORKS

Two curriculum-focused frameworks that address graduate capabilities are:

- The AQF, which covers all qualifications from the Senior Certificate to PhD; and
- The General Capabilities adopted by ACARA.

3.2.1. AUSTRALIAN QUALIFICATIONS FRAMEWORK (AQF) GENERIC SKILLS

The Australian Qualifications Framework was initially introduced in 1995 and reissued in 2013. The AQF specifies:

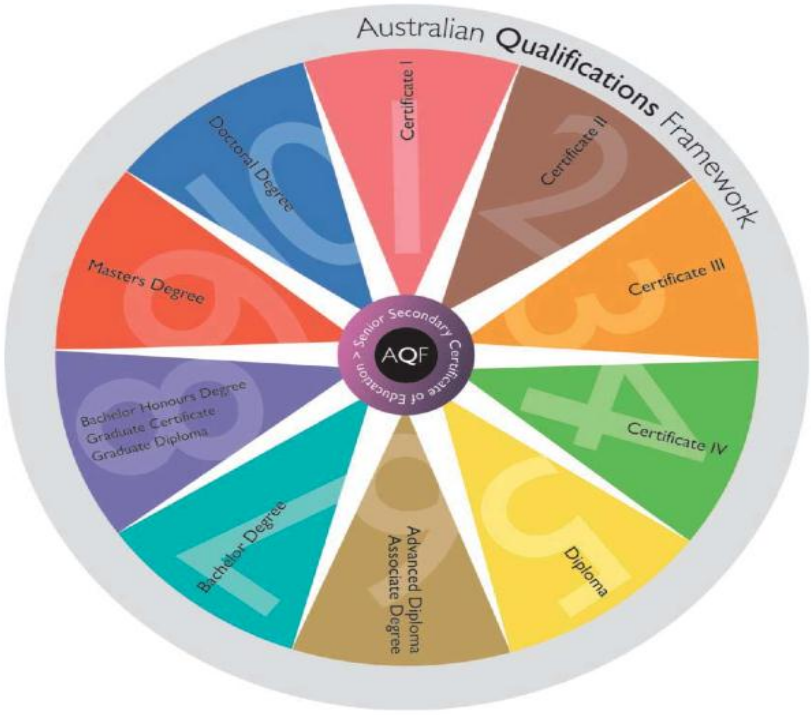
- "The learning outcomes for each AQF level and qualification type

[3] www.learningoutcomeassessment.org/index.html

- The specifications for the application of the AQF in the accreditation and development of qualifications
- The policy requirements for issuing AQF qualifications
- The policy requirements for qualification linkages and student pathways
- The policy requirements for the registers of:
    - organisations authorised to accredit AQF qualifications
    - organisations authorised to issue AQF qualifications AQF qualifications and qualification pathways
- The policy requirements for the addition or removal of qualification types in the AQF, and
- The definitions of the terminology used in the policy" (AQF Council, 2013, p. 9).

The AQF is a 10 level framework defining learning outcomes, spanning school, vocational education and training (VET) and higher education sector qualifications. Each level specifies purpose, knowledge, skills, application of knowledge and skills and volume of learning.

Figure 2: Location of AQF qualification types in the levels structure



Source: AQF Council (2013), *Australian Qualification Framework Second Edition January 2013*, 2013, p. 18.

The AQF articulates generic learning outcomes:

> "Generic learning outcomes are the transferrable, non-discipline specific skills a graduate may achieve through learning that have application in study, work and life contexts. The four broad categories of generic learning outcomes recognised in the AQF are:
>
> - fundamental skills, such as literacy and numeracy appropriate to the level and qualification type

- people skills, such as working with others and communication skills
- thinking skills, such as learning to learn, decision making and problem solving
- personal skills, such as self direction and acting with integrity" (AQF Council 2013, p. 11).

Generic learning outcomes at university-level qualifications, in particular undergraduate level qualifications, may be considered for the purposes of employer satisfaction performance measurement instruments noting that the outcomes are neither contextualized to specific disciplines, or defined in assessment terms. The AQF will be a Reference Point for the Higher Education Standards Framework, most particularly with respect to the Learning Outcomes (Coursework).

The specific learning outcomes for the AQF level 7 for the Bachelor Degree (known as the AQF level 7 criteria) specify graduates at this level will have broad and coherent knowledge and skills for professional work and/or further learning. In terms of knowledge, graduates at this level will have broad and coherent theoretical and technical knowledge with depth in one or more disciplines or areas of practice. In terms of skills, graduates at this level will have well-developed cognitive, technical and communication skills to select and apply methods and technologies to:

- Analyse and evaluate information to complete a range of activities;
- Analyse, generate and transmit solutions to unpredictable and sometimes complex problems; and
- Transmit knowledge, skills and ideas to others.

In terms of application of knowledge and skills, graduates at this level will apply knowledge and skills to demonstrate autonomy, well-developed judgement and responsibility:

- In contexts that require self-directed work and learning; and
- Within broad parameters to provide specialist advice and functions (AQF Council 2013, p. 47).

3.2.2. GENERAL CAPABILITIES (AUSTRALIAN CURRICULUM)

The ACARA Australian Curriculum *general capabilities* include:

- "literacy;
- numeracy;
- information and communication technology capability;
- critical and creative thinking;
- personal and social capability;
- ethical understanding; and
- intercultural understanding" (ACARA, 2013, p. 2).

The *general capabilities* are embedded in kindergarten (F) to year 10 Australian Curriculum, and provide an "interconnected set of knowledge, skills, behaviours and dispositions that can be developed and applied across the curriculum to help students become successful learners, confident and creative individuals and active and informed citizens" (ACARA, 2013, p. 4).

In terms of assessment of *general capabilities*, reflecting the respective authorities of the central curriculum authority and state and territory education jurisdictions, ACARA states that "Teachers are expected to teach and assess general capabilities to the extent that they are incorporated within each

learning area. State and territory school authorities will determine whether and how student learning of the general capabilities will be further assessed and reported" (ACARA, 2010, p. 4).

3.3. EMPLOYER FRAMEWORKS

3.3.1. THE MAYER COMPETENCIES AND INITIAL GENERIC SKILLS FRAMEWORKS

The origin of the current debate on generic skills can be traced back to the late 1980s, when policymakers became concerned about the large numbers of school leavers not participating in employment, education or training. Released in July 1991, *Young People's Participation in Post-Compulsory Education and Training*, (otherwise known as the Finn Report) concluded that there are certain essential things that all young people need to learn in their preparation for employment (Australian Education Council [AEC], 1991). These were referred to as 'Key Competencies', and the report recommended that steps be taken to ensure all young people were able to develop these Key Competencies, regardless of the education or training pathway they followed (AEC, 1992, p. vii). The Mayer Committee was set up in 1991 to develop the key competencies concept recommended in the Finn Report. In the following year the Mayer Committee published *Key Competencies for Effective Participation in the Emerging Patterns of Work and Work Organisation*, to advise the Australian Education Councils and Ministers of Vocational Education, Employment and Training on employment-related key competencies for post-compulsory education and training (otherwise known as the Mayer Report) (AEC, 1992).

Consistent with the approach adopted by the Finn Committee, the definition of key competencies set out in the Mayer Report was overtly employment-oriented and the report proposed a set of seven key competencies that young people were deemed to need, to be able to effectively participate in the emerging forms of work and work organisation (AEC, 1992, p. viii). The seven key competencies were: Collecting, analysing and organising information; Communicating ideas and information; Planning and organising activities; Working with others and in teams; Using mathematical ideas and techniques; Solving problems; Using technology (AEC, 1992, p. viii).

Following on from Mayer, a number of variations to the generic skills framework were produced. The National Centre for Vocational Education Research (NCVER) report *Defining general skills: At a glance* (2003) suggests that the common elements to these generic skills include:

- basic/fundamental skills;
- people-related skills;
- conceptual/thinking skills;
- personal skills and attributes;
- skills related to the business world;
- skills related to the community (p. 1).

Subsequently, NCVER concluded that there were significant gaps in the Mayer Framework. In particular, a neglect of the human factor and the cognitive processes and motivations that influence the acquisition of competencies and their integration into the work of schools and VET.

The generic skills developments have been progressed through a series of initiatives including the Karmel (1985) *Quality of Education Review Committee [the Karmel report]*, AEC (1991) *Australian Education Council Review Committee [the Finn report[*, AEC (1992) *Mayer Committee [the Mayer report]*, *Training to compete* (Allen Consulting Group, 1999, commissioned by the Australian Industry Group), and a study by the Australian Chamber of Commerce and Industry (ACCI) and BCA (ACCI &

BCA, 2002). Early initiatives in the Australian higher education sector included the *Graduate Skills Assessment Project* conducted by the Australian Council for Educational Research (ACER) in 2001, which included an assessment of university students' critical thinking, problem-solving, interpersonal understanding and communication through an essay and report based assessment (ACER, 2014).

Kearns (2001) produced a review of Australian and international evidence relating to generic skills. Although the review preceded the development of the frameworks referred to above, the Kearns generic skills clusters provide a useful starting point for thinking about how skills might be grouped and, in contrast to the core skills for work framework, how they overlap and intersect to produce autonomy, mastery and self-direction.

The framework includes 18 skills grouped into four clusters:

- **Cluster One: Work readiness and work habits**
    1) Basic skills
    2) Using technology
    3) Practicality
    4) Business orientation
    5) Planning & organising activities
    6) Self-management
- **Cluster Two: Interpersonal skills**
    1) Team skills
    2) Customer service
    3) Cultural understanding
- **Cluster Three: Enterprise, Innovation creativity skills**
    1) Enterprise
    2) Entrepreneurship
    3) Creativity
    4) Innovation
- **Cluster Four: Learning, thinking and adaptability skills**
    1) Learning
    2) Thinking
    3) Analytical capability and problem solving
    4) Systems thinking
    5) Adaptability

3.3.2. EMPLOYABILITY SKILLS FRAMEWORK

The *Employability Skills Framework* project (see ACCI & BCA 2002) developed the Employability Skills Framework, focused on "the non-technical skills and knowledge necessary for effective participation in the workforce" (Ithaca Group, 2012, p. 4).

The report conceived the relationship between employability and other skills as follows:

> "The Employability Skills Framework will encompass both employability skills and aspects of the context which impact upon an individual's ability to develop and demonstrate these skills. Technical or discipline specific skills are detailed in Training Packages and school and higher education curricula, while the core language, literacy and numeracy (LLN) skills of reading, writing, oral communication, numeracy and learning are addressed in the Australian Core Skills Framework" (Ithaca Group, 2012, p. 4).

The concept of "employability skills" gained traction with the release of *Employability Skills for the Future* (ACCI & BCA, 2002). The initial set of *Employability Skills* involved eight skills: communication, teamwork, problem solving, initiative and enterprise, planning and organizing, self-management, learning, and technology. This extended the Mayer Committee's conception of *Key Competencies* for the contemporary workforce (AEC 1992). Employability skills were conceived as "skills required not only to gain employment, but also to progress within an enterprise so as to achieve one's potential and contribute successfully to enterprise strategic directions" (Ithaca Group, 2012, p. 3). Generic skills are broader and include language, literacy and numeracy skills and other skills required to participate in society (Ithaca Group 2012, p. 2).

Employability Skills: From Framework to Practice - An Introductory Guide for Trainers and Assessors (Department of Education, Science and Training [DEST], 2006) confirmed that broadly conceived "generic skills" have received particular attention in Australia since the 1980s, with a common goal to "establish the basis for recognizing an important set of skills which support the successful accomplishment of the task-based activities central to any job role" (DEST, 2006, p. 8). Gibb (2004, cited in the guide at p. 8) identified the following common elements:

- "basic/fundamental skills: such as literacy, numeracy, using technology
- people-related skills: such as communication, interpersonal, teamwork, customer service skills
- conceptual/thinking skills: such as collecting and organizing information, problem-solving, planning and organizing, learning-to-learn skills, thinking innovatively, and creatively, systems thinking
- personal skills and attributes: such as being responsible, resourceful and flexible, being able to manage one's own time, having self-esteem
- business skills: such as innovation skills, enterprise skills
- community skills: such as civic or citizenship knowledge and skills".

Subsequently, concerns have been expressed about the variety of definitions employed, growing recognition of context-dependency, confusion regarding the capacity to transfer these skills, and issues associated with employability skill measurement and reporting. In terms of context dependency, *Employability Skills for the Future* states that "employability skills … cannot be demonstrated or assessed without understanding of recognition of the context in which the skills are being used" (ACCI & BCA, 2002, p. 11). The *Employability Skills Framework* sought to address these issues, and defined "desired work capabilities in terms of the underpinning skills and knowledge necessary for demonstrating that capability" (ACCI & BCA, 2002, p. 16).

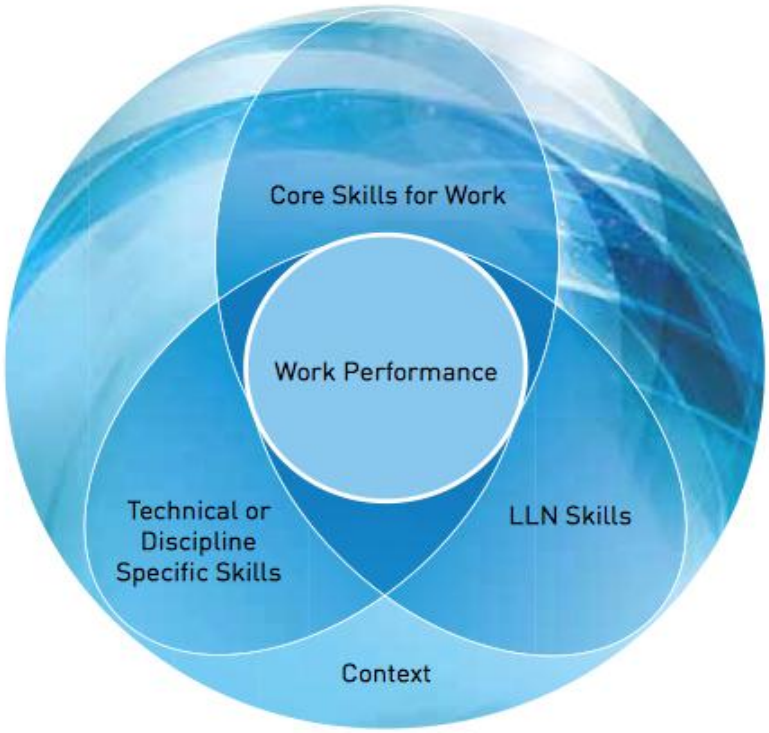
The *Employability Skills Framework* included *Skill Clusters*, each with various elements, as follows:

- navigate the world of work;
- interact with others; and
- get the work done.

The *Employability Skills Framework* is underpinned by enabling factors: workplace support; culture and values (both workplace and individual) and external factors, including attitudes and attributes (ACCI & BCA, 2002, pp. 15, 18).

The *CSfW Developmental Framework: The Framework* (DIICCSRTE & DEEWR, 2013) detailed "a set of non-technical skills, knowledge and understandings that underpin successful participation in work" (p. 1). Following the *Employability Skills for the Future*, the *CSfW Developmental Framework* contributes, in tandem with language, literacy and numeracy skills, and technical and discipline specific skills, to work performance as illustrated in Figure 3.

Figure 3: *Core Skills for Work Developmental Framework* related to LLN skills and technical/discipline specific skills



Source: DIICSRTE & DEEWR (2013) Core Skills for Work Developmental Framework, *The Framework*, p. 1.

The CSfW framework includes three Skill Clusters (Clusters 1-3, below), encompassing ten Skills areas (a, b, etc., below) spanning knowledge, understanding and skills:

- **Cluster 1 – Navigate the world of work:**
  - a) Manage career and work life
  - b) Work with roles, rights and protocols

- **Cluster 2 – Interact with others:**
    a) Communicate for work
    b) Connect and work with others
    c) Recognise and utilize diverse perspectives
- **Cluster 3 – Get the work done:**
    a) Plan and organize
    b) Make decisions
    c) Identify and solve problems
    d) Create and innovate
    e) Work in a digital world. (pp. 1-2).

The CSfW recognizes influencing factors: existing skills and knowledge, familiarity with context, complexity of tasks, nature and degree of support, level of autonomy, degree of motivation, self-belief and resilience, cultural and value-based factors and external factors.

The CSfW is intentionally not a set of standards, nor is it an assessment instrument. Rather, it is a common reference aimed at:

- "those who develop standards, curriculum, programs and learning and assessment resources to more clearly articulate the Core Skills for Work required for certain occupations or at particular points in career development
- trainers, educators and those who work with job seekers to more explicitly address the development of these skills in learners, and to assist those they work with to more clearly articulate the skills they do possess and identify those that they would like to develop" (p. 4).

The CSfW incorporates staged generic descriptions, including: a novice performer, an advanced beginner, a capable performer, a proficient performer and an expert performer.

3.3.3. AUSTRALIAN BLUEPRINT FOR CAREER DEVELOPMENT (THE BLUEPRINT)

The *Australian Blueprint for Career Development* ((MCEECDYA), 2010) (the *Blueprint*) was commissioned to provide a framework for career development. While the *Blueprint* is explicitly related to career development interventions as opposed to university graduate employer satisfaction, it identified "the skills, attitudes and knowledge that individuals need to make sound choices and to effectively manage their careers" (p. 9) and as such has relevance. Indeed the *Blueprint* clearly identified a potential use by university lecturers — "developing, implementing, evaluating and marketing career development programs or learning activities...Redesigning and enhancing existing programs" (p. 11).

The *Blueprint* identified career management competencies at different developmental phases and provides performance indicators and local standards for each competency. The phases were identified sequentially and may be applied at different education levels, for example, Phase III may be applied to students in senior secondary / post-compulsory education (or equivalent), and Phase IV may be applied with adults, noting cautionary provisions articulately in the *Blueprint* regarding the non-linear nature of learning.

The competencies include:

AREA A: Personal management

1. Build and maintain a positive self-concept
2. Interact positively and effectively with others
3. Change and grow throughout life

AREA B: Learning and work exploration

1. Participate in lifelong learning supportive of career goals
2. Locate and effectively manage career information
3. Understand the relationship between work, society and the economy

AREA C: Career building

1. Secure/create and maintain work
2. Make career-enhancing decisions
3. Maintain balanced life and work roles
4. Understand the changing nature of life and work roles
5. Understand, engage in and manage the career-building process (p. 15).

While the *Blueprint* provides another complex matrix primarily developed for career development purposes, the content provides further elaborations regarding competencies relevant to the workforce, and has been intentionally designed with learner assessment in mind.

3.4. COMMONALITIES BETWEEN THE APPROACHES AND ALIGNMENT WITH THE OBJECTIVES OF THE ESS

Although they are informed by very different motivations and philosophical underpinnings, there are similarities among the frameworks in terms of the skills (and in some cases attributes) that are identified. The frameworks have been mapped onto a single chart (see Appendix A). Five clusters of skills are apparent:

- In the first cluster are written and oral communication, problem solving, and critical analysis. The first group has been labelled “Foundation skills”.
- The second cluster mainly concerns the ability to adapt to new situations and learn self-sufficiently. It includes graduate outcomes such as “learning and working independently” and the core skill “recognising and utilising diverse perspectives”. This has been labelled “Adaptive capacity”, on the basis of recent conceptual research (see Yu et al 2012).
- The third cluster is quite narrow, being concerned with teamwork and interpersonal skills.
- The fourth cluster is focused on technology.
- The fifth cluster, termed “Employability skills” is not common to all frameworks, being found in the workplace-focused frameworks (Mayer competencies, Employability Skills for the Future and Core Skills for Work) but not any of the graduate-based or curriculum-based frameworks.

With their strong overlap across a number of different frameworks, these five clusters provide an initial starting point for determining which generic skills should be included in the survey. One aspect that none of the frameworks covers well is technical skills and discipline-specific knowledge.

The differences between the frameworks are obvious. They relate to the focus and the breadth of what is being examined. The graduate-focused frameworks are concerned with the individual, the curriculum-centred frameworks with what is being learnt, and the workplace-centred frameworks with how what has been learnt relates to jobs and employment. Graduate attributes are broadly defined, curriculum-based generic skill outcomes less so, while the workplace-based frameworks can be very narrow

It is clear, for example, that an ESS should not be seen as an appropriate means of assessing graduate attributes, in the way that they have been defined at Australian universities. At most, it could be seen to assess some common graduate attributes (such as written and oral communication), but only within a limited workplace context. Other approaches would be necessary to assess graduate attributes in a social, community or further learning context. However, the specifications for the ESS also make it clear that it should have a broader scope than the previous workplace-based frameworks, by giving greater weight to the technical skills and subject-specific knowledge capabilities of graduates.

The 'capabilities approach' is an example drawn from recent research that bridges the divide between the graduate-focused and the workplace-focused frameworks. The capabilities approach is centred on the individual (like the graduate-focused frameworks) and the conditions individuals require in order to "make choices about their lives, engage in work and progress through a career" (Wheelahan et al. 2012, p. 10). In common with the workplace-based frameworks, it is interested in how knowledge, skills and personal attributes are developed and deployed at work (especially around clusters of similar occupations and job roles, or what Wheelahan et al (2012) term 'vocational streams').

The capabilities approach also provides useful guidance on how to approach the question of generic and subject-specific skills. The capabilities approach offers a middle layer, stressing that skills and knowledge must be deployed in context to have meaning:

> "Capabilities are differentiated from generic skills, employability skills or graduate attributes because they are not 'general' or 'generic'. In the capabilities approach, the focus is on the development of the individual and on work, and consequently students need access to the knowledge, skills and capabilities they need to work in their vocational stream. While there will be some commonalities, the nature of knowledge, skills and capabilities will differ between vocational streams" (Wheelahan et al, 2012, p. 10) .

The challenge for the project is how to devise within a general survey means of asking supervisors and graduates about generic and technical skills in a way that connects with the context of the specific vocational field. Initially, domain-specific knowledge and technical skills has been grouped with use of information technology, as a way of including them within the initial conceptual framework used for developing the survey instrument.

3.5. SUMMARY

This chapter has reviewed a range of conceptual frameworks relevant to the generic and technical skills of university graduates. Despite the differences between the objectives and philosophical underpinning of the frameworks, there are a number of commonly agreed general attributes or generic skills. One aspect that existing frameworks do not deal with extensively is the question of technical skills and domain-specific knowledge. A conceptual framework for the ESS was devised that draws on the commonalities between existing frameworks while extending the consideration of technical skills and domain-specific knowledge.

The five clusters for the ESS framework were:

- Foundation skills (including oral and written communication skills, problem solving)
- Adaptive capacity (including ability to learn and work independently and recognise diverse perspectives)
- Teamwork and interpersonal skills
- Technical skills and domain-specific knowledge (including use of information technology)
- Employability skills

These clusters were used to guide the drafting of the survey instrument (described in Chapter 5).

4. POPULATION AND SAMPLING

4.1. DEFINING THE POPULATION OF SUPERVISORS AND GRADUATES

The total population of interest comprises of the pool of immediate supervisors of all graduates of university degrees completed within a given period (which may be in the previous 9-21 months or 9-33 months, depending on the average time that graduates should have spent in post-graduation employment and the desired size of the population, a relevant consideration for sampling purposes).

In order to identify the supervisors, the preferred approach nominated by DICCSRTE (the "UniSA methodology", although this methodology was not actually adopted by UniSA) was to work from a sample of university graduates, contact them and ask for their assistance in providing details about their employers. It was considered that this design would have many clear advantages over other alternative methodologies. In particular, the design would allow:

- identification of a single employer for each graduate that is included in the sample.
- identification of the employer at the level of the immediate supervisor.
- identification of graduate employers restricted to those from the previous 12 months (given contemporaneous nature of employment).
- increased capacity over time to link data from the employer responses to the graduate responses (and subject to overcoming privacy restrictions, to student administrative data held by the university, which could be particularly useful not for reporting results but to conduct tests on the representativeness of the data).

In the event of a successful pilot, large-scale replication of the same sampling methodology may then make it possible to include in an ESS all of the Table A institutions by way of using the AGS as the sampling frame. This would enable recent graduates to be contacted where details of their employment status and current employer (where provided) would be pre-populated. This would speed up the process of identifying and contacting potential supervisors, as there would only be between a six and 12 month gap in respondents completing the AGS and being contacted to participate in the ESS.

This approach was based on the assumption that permission would be granted to use contact details of AGS respondents for an employer survey. Currently graduates who completed the questionnaire were asked about their willingness to participate in further research. However, this permission was intended for the Beyond Graduation Survey and because of privacy and ethics considerations may not extend to the ESS. Further, it only included an email address.

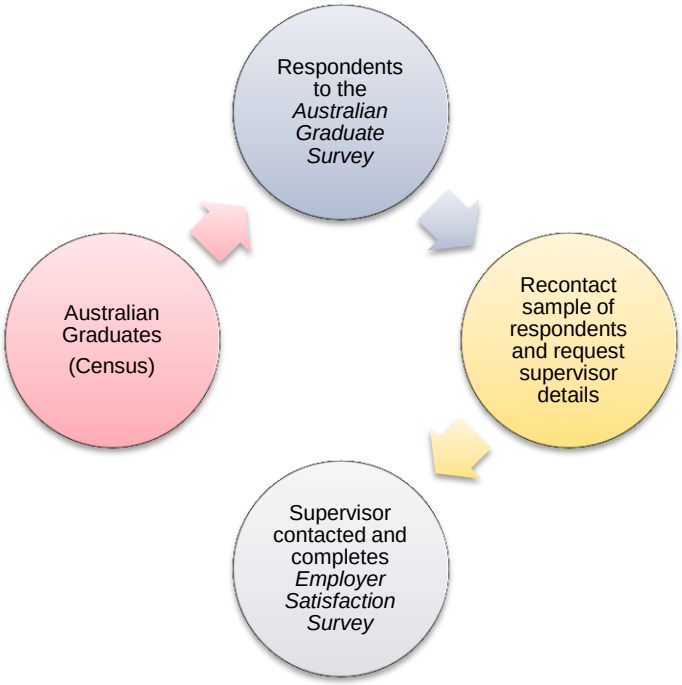
The main limitation of this design was the multiple opportunities for attrition and non-response bias to affect the sample and sample size, at the point of students responding to the AGS, attempting to re-contact respondents using contact details that were no longer current, respondents indicating whether they were happy to take part in further research, respondents who then agreed to provide details of their employers, and finally employers who responded to the ESS.

Previous studies have reported that it is extremely difficult to contact employers for a survey on graduate satisfaction without being able to refer to a specific graduate. These problems are likely to be compounded if employers employed graduates from multiple universities (the previous small studies asked for employer perceptions of graduates from a single institution only). Given the objectives of the ESS and the parameters set by DIICSRTE, the graduate-based population frame was preferred, notwithstanding the logistical and technical challenges posed by re-contacting

graduates after they would have left university by way of using contact details held by universities. The principal challenge of the pilot was to develop a survey process that effectively overcame these logistical issues.

Figure 4 summarises the sampling approach adopted for the ESS pilot.

Figure 4: Employer satisfaction survey: ESS pilot sampling approach



Source: Workplace Research Centre (2013)

4.2. PERFORMANCE AGAINST TECHNICAL SPECIFICATIONS – SURVEY METHODOLOGY

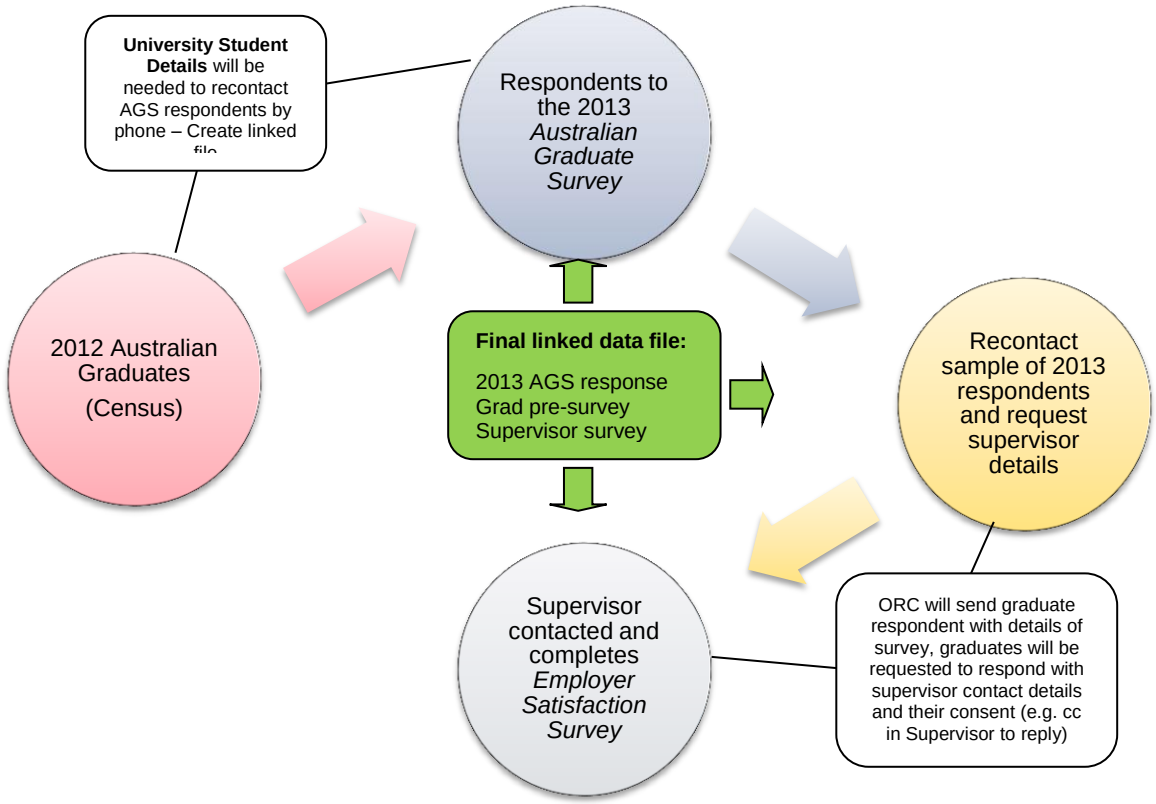
The Conditions of Grant required the methodology adopted in the pilot to give consideration to the following:

1. Ability to determine the opinions of employers with direct experience of employment/workplace supervision of graduates
2. Ability to disaggregate results by discipline (as defined by the *MyUniversity* website)
3. Ability to disaggregate results by institution
4. Ability to disaggregate results by level of education (undergraduate, postgraduate coursework, postgraduate research)
5. Maximising the survey response rate
6. Implementation of the survey on an ongoing basis.
7. Whether a sampling or census approach is most appropriate given the project requirements
8. Cost effectiveness
9. Timeliness of outputs

It was also considered desirable for the ESS to produce data with a confidence interval of plus or minus 5 percentage points (at a 95 per cent confidence level).

These specifications were assessed during the pilot and are discussed in the following sections.

Figure 5: Construction of sampling frame and conduct of interviews



Source: Workplace Research Centre (2013)

4.3. SELECTION OF PILOT UNIVERSITIES

For the purposes of the pilot study, it was recognised that the active support and involvement of universities would be required, as it would be necessary to supplement the AGS survey file with the contact details of graduates held by institutions. For this reason, the pilot was only undertaken with graduates from four universities. Working with only a small number of pilot institutions made it easier to negotiate any privacy and logistical concerns about access to their most recent survey data (the 2013 AGS).

The four universities were selected to achieve a representative cross-take of universities. The Australian higher education sector can be grouped into clusters based on a range of factors including their age, their location, the intensity of research activity, and range of courses provided. Within each cluster, university share similar attributes in terms of student background characteristics and graduate outcomes. Marginson and Considine (2000) observed that Australian public universities eventually settled into five distinct categories at the turn of the 21st Century, namely Sandstone, Redbrick, Gumtrees, Unitechs and New Universities. These five categories align fairly well with current formal networks of Australian universities: The Group of Eight (most sandstone and the three redbricks), the Australian Technology Network (Unitechs), Innovative Research Universities (Gumtrees), and the Regional Universities Network (most of the New Universities).

In collaboration with DIICCSRTE, the consortium identified four preferred institutions, taking into account the number of AGS respondents and the range of courses:

- A large, metropolitan Sandstone university (University C)
- A large, metropolitan Unitech university (University B)
- A medium-sized regional university (University A)
- A small, metropolitan Gumtree university (University D)

All four universities accepted the invitation to participate. Only University C required execution of a privacy agreement to cover the transfer of the graduate information to the consortium. A representative from each of the universities was invited to sit on the PAG.

4.4. SELECTION OF FIELDS OF EDUCATION

The consortium originally proposed grouping graduates into three broad field of education categories (namely, science, technology, engineering and health; education, society & culture, and creative arts; management and commerce). All fields of education are captured within one of these three broad categories.

After consultation with the department and the PAG, it was decided to sample at the broad field of education level, to be consistent with the current reporting groupings used on MyUniversity and elsewhere.

It was determined that four fields of education (at the 2 digit ASCED level) would be nominated as priority fields for reporting purposes. The following four fields were selected as comprising a combination of fields with a strong vocational versus a more general orientation and fields with a mix of employment outcomes.

- 03 – Engineering and related technologies (vocational orientation, above average employment outcomes)
- 07 – Education (vocational orientation, below average employment outcomes)
- 08 – Management and commerce (vocational orientation, above average employment outcomes)
- 09 – Society and culture (mixed orientation, mixed employment outcomes).

A fifth field of study was added to the scope of the pilot, to coincide with work examining the employability of science graduates:

- 01 – Natural and Physical sciences (General orientation, below average employment outcomes)

4.5. SAMPLE SIZE

An initial target of 400 joint graduate-employer interviews per pilot institution was set. This was deemed sufficient to ensure institutional reporting at the required confidence level. After the addition of natural and physical sciences to the priority fields of education, the target for the two large universities was increased to 550, for an overall target of 1900. It was initially assumed that within institutions, responses would be divided evenly among fields of education-level, resulting in a similar number of between 300-400 responses per field of education.

However, achieving the target number of interviews was always going to be subject to the methodological assumptions being tested in the pilot. The final number of actual interviews completed, average questionnaire length, sample quality and survey response rates will be discussed later in this report. However, not being able to achieve the full target was not considered to materially affect our ability to conduct the required level of analysis on the resulting pilot survey data. More detailed analysis, including disaggregation by fields of education, was going to be dependent on the fields chosen and their distribution across the four pilot institutions.

4.6. PREPARATION OF THE GRADUATE SAMPLING FRAME

To construct the sampling frame, the consortium worked with the four universities to combine the GDS response file with the contact details held by the university. GCA does not hold the names and contact details of respondents to the GDS, so it was necessary to deal directly with each of the four universities.

Initially, only respondents to the 2013 AGS were to be targeted as this allowed the consortium to pre-populate a number of fields (including employer name, industry, occupation) resulting in a more efficient conduct of the survey as well as provide additional information that would assist the investigation of non-response bias.

However, at the initial PAG, three universities indicated that they were willing to also provide details of AGS non-respondents as this would maximise the number of potential respondents and increase the chances of reaching the target number of interviews (especially in the case of the smaller universities).

The sample frame for each university was prepared according to the following process:

- All domestic, bachelor level graduates who were invited to complete the 2013 AGS (in the case of University B, AGS respondents only). All other qualification levels (e.g. masters, PhD) were excluded, as were international students. The most recent data on domestic/international status (rather than initial enrolment data) was used to determine domestic/international status.
- For University C and University B, graduates not in the priority fields of education were excluded.
- Eligible graduates were then sent an email providing them with instructions on how to opt out of participating in the study. The contact details of any graduate opting out of the study were then removed from the sample file.
- The universities then supplied the sample file to ORC International.

University A was able to complete the opt out process and provide a sample file to ORC International by 14 October 2013, allowing a small excerpt of the sample to be used for pre-testing. University B supplied its sample later in October.

University C supplied its sample after fieldwork on the first two universities had begun. Fieldwork on University C commenced on 21 January 2014. University D completed its opt out process and finalised its sample on 13 February 2014.

The diagram in Figure 6 includes how the sampling frame for the pilot ESS was constructed.

4.7. RISKS OF THE SAMPLING APPROACH

Although the sampling design best met the survey requirements set by DIICCSRTE, it did introduce multiple opportunities for attrition and selection bias that posed threats to the viability and validity of the results.

At the first stage, only respondents to the 2013 AGS were being included in the sampling frame. This resulted in a loss of approximately 40% of all respondents (response rates for all Bachelor degree respondents in 2011 were 60.7 per cent – see GCA, 2012, p. 4). Analysis of non-response to the AGS (Coates et al 2006, Guthrie & Johnson 1997) indicated that aggregated AGS responses broadly reflected the population of graduates and that there were no egregious indicators of non-response bias.

The second stage of recontacting graduates introduced a further risk of attrition and non-response bias. The *Beyond Graduation Survey* conducted by GCA also works off the AGS sampling frame. GCA recontacts graduates three years after the completion of their studies. Analysis of the 2009 *Beyond Graduation Survey* showed that the respondent profile was broadly representative of the underlying graduate population, although the respondents were more likely to be employed and earned higher median starting salaries, and were more satisfied with their course (GCA 2010). The initial *Beyond Graduation Survey* had a response rate of 19.0 per cent for the 23 institutions taking part. However, the pilot ESS re-contacted graduates after a much shorter interval (less than 12 months rather than three years) and contacted graduates by telephone rather than email.

The third stage of recruiting supervisors (with the assistance of the graduates) introduced further risks of attrition and response bias. The proportion of respondent graduates who were prepared to assist with the recruitment of their supervisors was unknown. As a result, there was a prima facie risk that only graduates who felt most confident in their work performance would recommend to their supervisor that they take part in the survey. There was also a strong risk that graduates who were not working in their field of study would perceive less value in the survey, even though such graduates and their workplaces were clearly within the scope of the study.

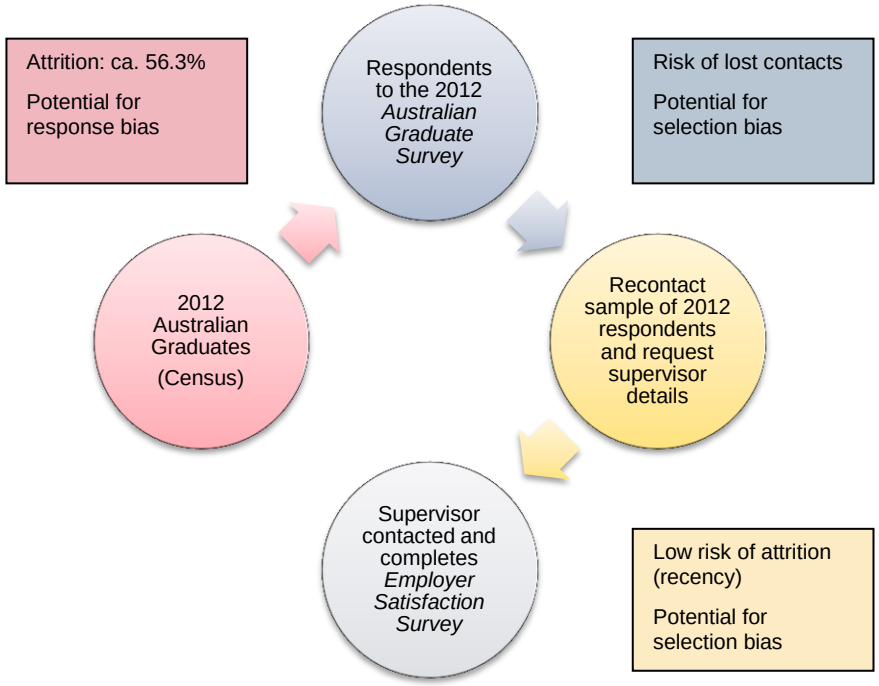
A range of strategies were adopted to maximise response rates and minimise potential response bias. In the first stage of the pilot, we worked closely with GCA and the four pilot institutions to assemble the contact lists. It also included targeting graduates who indicated a willingness to participate in further research. While this was likely to have assisted response rates it may also have introduced a degree of selection bias.

During the pre-testing stage, extensive cognitive testing was undertaken to explore how to conduct the graduate survey and the referral process in order to maximise the number of graduates who would be likely to assist. For example, this included exploring ways to ensure graduates that the survey was not intended to be an assessment of their work performance but rather an assessment of the university's role in developing graduate capabilities. In addition, we probed whether providing incentives to graduates was more likely to encourage graduates providing supervisor details.

During the first stage of the pilot survey, supervisors were rapidly followed up through information emails and phone calls to ask them to complete the survey. The timeliness of following up with supervisors was carefully balanced with the need to ensure that supervisors had given genuine consent to take part in the survey and for their contact details to be provided to the consortium.

These risks are further considered in Chapter 5.

Figure 6: Attrition and response bias risks



Source: Workplace Research Centre (2013)

5. THE INSTRUMENT

This chapter sets out details about how the Employer Satisfaction Survey (ESS) instrument was developed. It is important at this stage to highlight that despite the Australian Government having supported a GDS to track the employment and further study outcomes of university graduates for almost forty years, there remains no national survey that directly measures employers' satisfaction with the employability attributes of higher education graduates (measured down to the level of institution and field of study). There have been a number of small pilot studies, at the level of a single university (for example, ALTC, 2008; Hicks, 2009; UniSA, 2009; Nair & Mertova, 2009).

In the first section of the chapter, an overview is provided of the main existing graduate employer instruments that were drawn upon in order to develop the ESS instrument. Consideration of the UniSA Teaching Quality Indicators Pilot Project will be discussed first. This is followed by a review of the 2007 Monash University Employer Survey. The AC Nielsen Employer Satisfaction with Graduate Skills Survey is then examined. A number of other instruments from the current AQHE suite, including the AGS and the UES, are also briefly considered.

5.1. EXISTING GRADUATE EMPLOYER SURVEYS

When developing the Employer Satisfaction Survey (ESS), three existing grade employer surveys were primarily drawn upon:

- The UniSA Teaching Quality Indicators Pilot Project
- The Monash University Employer Survey; and
- The AC Nielsen Employer Satisfaction with Graduate Skills Survey.

Key aspects of the each of the above survey instruments are discussed.

5.1.1. UNIVERSITY OF SOUTH AUSTRALIA TEACHING QUALITY INDICATORS PILOT PROJECT

The UniSA conducted a pilot project to "design, trial, evaluate and report on an employer feedback tool and process in order to access feedback from key industry stakeholders and graduate employers with data collected about graduate qualities and other learning outcomes" (UniSA, 2009, p. 1). The survey instrument was designed to complement data collected through the AGS and GOS, and focus on outcomes of learning and teaching, and community/industry engagement.

The survey was designed to report on employer satisfaction with UniSA graduates in terms of relevance and importance of graduate attributes, the success of the university in meeting corporate objectives ("educating professionals", "engaging our communities"), and implementation of the UniSA's teaching and learning framework incorporating compulsory assessment of graduate attributes.

The UniSA's employer feedback tool identified the following graduate attributes:

- oral communication skills
- written communication skills
- numeracy
- effective use of technologies
- capacity to develop professional knowledge and new skills

- understands how to research and get results
- capacity to analyse and solve problems
- ability to apply professional and/or technical knowledge in the workplace
- broad background general knowledge
- capacity to understand different viewpoints
- ability to develop new innovative ideas, directions, opportunities or improvements
- ability to operate in an international and multicultural context
- understanding of fundamentals of business performance
- leadership/managerial skills
- capacity to work autonomously
- understanding of the needs, interests, protocols and perspectives of Indigenous groups
- understanding of professional ethics and social responsibility
- capacity for co-operation and teamwork
- gets on well with colleagues and co-workers
- time management skills
- ability to cope with work pressure and stress
- capacity to be flexible and adaptable
- ability to think critically, creatively and reflectively
- ability to work with initiative and enterprise (UniSA, 2009, p. 19).

The sample of graduates and employers was extracted from the UniSA alumni records, and contacts made with public and private sector graduate employers. The pilot identified a significant methodological issue for university employer satisfaction surveys; that is, the location of employer respondents in the absence of data regarding specific university graduates.

The Final Report Teaching Quality Indicators Pilot Project (UniSA, 2009) reports that "this pilot has taught much about what can be found through the development of an employer satisfaction instrument, and streamlining the gathering of this information" (p. 14). With respect to the methodology, the report suggests that "it is perceived that having a sample of graduate names to use who have identified their employer and given consent to contact them will reduce the time and resources required to contact employers, as well as the length of the survey" (p. 14).

5.1.2. MONASH UNIVERSITY EMPLOYER SURVEY (2007)

In May 2002, Monash University's report *Still Learning: The Report of our Institutional Review* observed that monitoring mechanisms lacked systematic feedback from employers about their perceptions of graduates. The report recommended that additional information be developed in the form of a survey.

The first Monash University graduate employer survey was undertaken in 2003. While the aim was to capture responses of at least 500 Monash University graduate employers, only 253 valid responses were obtained after nearly seven months of liaising with employers (Nair & Mertova, 2009). Based on

learning from conducting the 2003 survey, a second survey was carried out in 2007. The aim was to capture responses from at least 500 employers of Monash University graduates. After four months of fieldwork, 2,753 companies were contacted, and responses obtained from 464 employers in Australia. The employers were contacted by a number of means involving email, mail-outs and telephone.

The purpose of the 2007 Monash University Employer Survey was to:

- Obtain employer feedback on those graduate skills and attributes that they considered to be important;
- Obtain employer feedback on the extent to which Monash University graduates demonstrate those attributes;
- Identify areas where the development of Monash University graduate attributes could be refined; and
- Build closer relationships and goodwill between key employers and Monash University (Monash University website).

The survey instrument was based on 23 graduate attributes derived from statements of Monash University graduate attributes, key university documents, feedback from faculties and other Australian sources. Employers were asked to rate graduate attributes in terms of importance and their satisfaction with extent to which each of these attributes was demonstrated by Monash University graduates employed by the particular company. Open-ended feedback was also sought from the employers (Nair & Mertova, 2009, p. 191).

Ten detailed discipline specific reports were prepared for Art and Design; Arts, Business and Economics; Education; Engineering; Information Technology; Law; Medicine, Nursing and Health Sciences; Pharmacy and Science. The discipline specific reports are available on the Monash University website.

Relevantly, four major challenges were identified in conducting a survey of this nature:

- Building a workable database of employers;
- Finding employers that were qualified to participate in the survey;
- Establishing an appropriate contact person(s) who were able to comment authoritatively on the quality of job preparation of their employees; and
- Establishing an approach best suited to an employer to complete the survey (online or in hard copy) (Nair & Mertova, 2009).

5.1.3. AC NEILSON EMPLOYER SATISFACTION WITH GRADUATE SKILLS RESEARCH REPORT

The AC Neilson research examined the satisfaction of employers with skills held by university graduates. The research targeted businesses that self-identified as employers of university graduates. The survey instrument included 25 skill and attribute items.

The survey provided the basis for consideration of satisfaction overall, by study sector (university of vocational education and training), by field of study, by occupation, by industry, by size of workplace, by importance and level of performance for nominated skills. Specific skills examined included:

- basic competencies (literacy, numeracy, time management skills, basic computer skills)
- basic skills (interpersonal skills with other staff, leadership qualities, oral business communication skills, comprehension of business practice, teamwork)...

- academic skills (academic skills, written business communication skills, problem solving skills, project management skills, logical and orderly thinking, creativity and flair, capacity for independent and critical thinking)...
- personal attributes (enthusiasm, motivation, initiative, maturity, personal presentation and grooming, capacity to handle pressure, flexibility and adaptability, customer/client/patient focus and orientation, ability to benefit from on-the-job training)... (AC Neilson, 2000, p. 55).

The research found reasonable performance overall despite high levels of unsuitability, particular skill deficiencies in the areas of creativity and flair, oral business communications and problem solving (AC Nielson, 2000, p. ix), variation by study sector, field of study, occupation and size of business.

5.1.4. ALTERNATIVES TO SURVEYS

There are a number of other initiatives underway that have informed development of the ESS instrument. This includes the Collegiate Learning Assessment (CLA) project and the Assessing and Assuring Graduate Learning Outcomes (AAGLO) project. A brief overview of each of these two projects is set out below.

5.1.4.1. Collegiate Learning Assessment (CLA)

In the 2011-12 Budget, the Australian Government announced details of its *Advancing Quality in Higher Education* initiative (DEEWR, 2012). This included an announcement that an Australian version of the Collegiate Learning Assessment would be developed to form part of an integrated suite of performance measurement instruments during the first Compact period from 2011 to 2013 (the other components in the suite comprised of the University Experience Questionnaire and the Review of the Australian Graduate Survey) (DEEWR, 2012).

It was proposed the CLA be administered to first and final year Australian undergraduates to assess the learning outcomes they obtained during their university degree. Subject to its successful development and trial, CLA results from Australian universities were intended to be published on the *MyUniversity* website (DEEWR, 2012). It also offered the possibility of international benchmarking.

Developed and widely used in the United States, the CLA is a computer-administered, open-ended test of analytic reasoning, critical thinking, problem solving, and written communication skills (Klein, et al 2007, p. 417). The CLA was chosen by the Organisation for Economic Cooperation and Development (OECD) for use in their Assessment of Higher Education Learning Outcomes project (DEEWR, 2012). Thus, subject to successful trialling of the CLA in the Australian higher education environment, international benchmarking may have been possible.

The CLA was intentionally designed to focus on “broad abilities” because they cut across academic majors and they are mentioned in almost every (USA) college’s mission statement (Klein, et al 2007, p. 417). The CLA focuses on the institution (rather than the student or the employer) as the unit of analysis. Analyses are conducted at the school rather than the student or workplace levels. The aim is to assess whether the progress students are making in their school is better or worse than what would be expected given the progress of similarly situated students at other colleges (Klein et al, 2007, p.415). Its goal was to provide a summative assessment of the value-added by the school’s instructional and other programs (taken as a whole) with respect to certain important learning outcomes (Klein, et al 2007, p. 418). In this respect, the CLA approach does not involve waiting until the graduate enters employment and then asking their employer whether they are job ready; rather progress is measured across their duration of their enrolment.

Some of the CLA’s performance tasks are drawn from the domain of ‘real-world jobs’, emphasising written communication skills and realistic work-sample performance tasks. All the tasks are designed to be appropriate for college students across a wide range of undergraduate academic majors and

general education programs (Klein, et al 2007, p. 419). The CLA measures are given under standardized conditions across schools and raw scores are converted to scale scores that can be compared across institutions. While this type of approach allows for comparisons across institutions, it is expensive to administer and places considerable response burden on students, as they are required to actually perform cognitively demanding tasks and provide written responses. For this reason, the CLA program tests only a sample of a school's students (Klein, et al 2007, p. 423).

5.1.4.2. Assessing and Assuring Graduate Learning Outcomes (AAGLO) Project

The AAGLO project was a collaborative initiative supported by the ALTC involving the University of Sydney, University of Queensland and RMIT. Similar to the rationale behind the CLA, the AAGLO project reflects the increasing international attention being paid to assurance of the quality of learning outcomes that university students should demonstrate by the time of graduation.

The objective of the AAGLO project was to identify how assessment can provide convincing evidence of achievement of graduate learning outcomes (GLOs). The focus of the research was on two key questions about assessment:

- What types of assessment tasks are most likely to provide convincing evidence of student achievement of or progress towards graduate learning outcomes? and
- What processes best assure the quality of assessment of graduate learning outcomes? (Barrie, et al 2012, p. 16).

The projects' final report *Assessing and assuring Australian graduate learning outcomes: principles and practices within and across disciplines* (Barrie et al., 2012) identifies the key project outcomes as follows:

> The AAGLO project identified the assessment tasks in a range of disciplines that academics proposed generate convincing evidence of achievement of graduate learning outcomes. It identified the assurance process trusted by disciplines in relation to those assessments. It analysed the assessment strategies collected to identify the characteristic features of convincing assessment and assurance strategies for Graduate Learning Outcomes (GLOs). These features were summarised as a set of 'principles' for use by those interested in designing new assessments or making strategic decisions about which assessments are important in relation to GLOs. The assessment features, along with other key issues were identified from the literature, empirical data collection and consultations with other project teams and the expert reference group and were summarised in a set of 10 key issues papers" (p. 6).

The AAGLO project identified assessment tasks in a range of disciplines that academics proposed generate convincing evidence of achievement of graduate learning outcomes (GLOs) (Barrie, et al, 2012). A highly consultative approach was adopted by the AAGLO research team however it was acknowledged that until there is a shared understanding of what it is meant by the term graduate outcomes, credible assessment of these outcomes using this approach will remain elusive (Barrie, et al, 2012). By design, the AAGLO method grants institutions and disciplines considerable autonomy to develop their own measures of graduate learning outcomes. The AAGLO method is also very resource-intensive, particularly of assessors' time. These factors are not consistent with the cost-effectiveness and transparency criteria adopted by the AQHE Initiative for the development of national performance indicators.

5.2. INITIAL INSTRUMENT DRAFT

The requirements of the survey instrument are guided foremost by the terms included in the Conditions of Grant, namely that the survey instrument

1. Be based on existing research regarding which graduate attributes are claimed to be developed by higher education providers and/or are felt to be desirable by employers
2. Produce results which are both meaningful within all disciplines and which are comparable across disciplines
3. Measure both the importance of graduate attributes (including technical skills, generic skills and work readiness) to employers and their satisfaction with graduates in regard to those attributes.

Previous surveys of graduate skills provided a useful starting point. The most useful were surveys that had been designed and conducted by universities, as these matched most closely the conceptual framework developed in Chapter 3. Because the employability instruments such as the AC Nielsen Survey conducted on behalf of ACCI have often been developed in a consultative process with business (such as through focus groups of employers), they do not necessarily have a strong conceptual coherence.

5.2.1. RATINGS OF SKILLS

One limitation of existing surveys, common to those produced by universities and employer groups, was that because they are intended to emphasise the skills that are generic across all university graduates, they de-emphasise technical skills and discipline-specific knowledge that are also important determinants of an employer's satisfaction with a graduate employee.

To assist the process of developing and refining survey items, and to provide assurance that all concepts and survey requirements are being met, framework components and questionnaire items from various surveys were mapped onto a single grid (See Appendix B).

The starting point for identifying the cluster groupings were the results of principal components analysis of the UniSA survey items (Walker 2008, p. 19). This is one of the most recent university surveys of employer satisfaction with graduates and the data from the survey were available to the consortium.

Principal components analysis revealed that the 24 items from the “satisfaction with graduate skills” section grouped into five principal components (factors):

- The first component included oral communication, written communication, numeracy and problem solving.
- The second component included items on understanding different viewpoints, developing new ideas, and responding to different environments.
- The third component relates to teamwork and interpersonal skills as well as use of technology.
- The fourth component includes coping with stress, being flexible, demonstrating initiative
- The fifth component includes leadership and management skills, as well as understanding business needs

The first group we have labelled “Foundation Skills”. The second group mainly concerns the ability to adapt to new situations and learn self-sufficiently. This has been labelled “Adaptive capacity”, on the basis of recent conceptual research (Yu et al 2012). The third factor was less coherent. While there are clear connections between teamwork and interpersonal skills, the item on technology also weakly

loaded onto this factor. Conceptually, use of technology is distinct from teamwork and our initial hypothesis is that the use of technology would be more closely related to subject-specific skills and knowledge. The first three groups all cover concepts that are dealt with in graduate-based, curriculum-based and workplace-based frameworks reviewed in Chapter 3. The remaining two groups have been labelled “work readiness skills” and “enterprise skills” and conceptually there is probably a great deal of similarity and overlap between the two. Such skills feature strongly in the original Meyer, Employability Skills for the Future and Core Skills for Work list, but are largely absent from universities’ specifications of graduate attributes.

To assist in developing the questionnaire, a sixth group was added, including technical skills (including use of information technology) and domain specific knowledge. Because most of the focus to date has been on generic skills, these have been downplayed in surveys conducted to date but will be more explicitly addressed in this survey.

5.2.2. OTHER ITEMS

The survey also required items on overall satisfaction with graduates’ skills, information about the relationship of the qualification to the current job of the graduate, as well as a limited amount of background information about the graduate, his/her employment history, and his/her current employer and some information about the supervisor.

Again, previous employer surveys provided a useful starting point, as did the Australian Graduate Survey and the *Australia at Work* survey (van Wanrooy et al, 2007) for labour market items.

5.3. REVISED INSTRUMENT DRAFT

The initial draft of the survey was included in the Scoping Paper presented to the PAG on 29 August 2013 (WRC 2013). At the initial teleconference, PAG members identified the following issues with the instrument...

The follow general comments on the overall survey design were made:

- **Skills clusters:** There was strong support for retaining all six proposed skill clusters in the rating of employer satisfaction. It may be possible to remove some individual items from the clusters to reduce length.
- **Purpose of survey:** Language in the graduate survey was amended to emphasise that it is not about the graduate’s performance but about how the university has performed, to increase the willingness of graduates to participate and assist with the recruitment of their supervisors.

The following comments were made in relation to specific parts of the survey:

- **Item clarity:** Some items in the skills section were double- or triple-barrelled and that this reduced face validity and led to items loading on multiple factors.
- **Open ended questions:** Open ended questions on the usefulness of qualifications were added to both the graduate and supervisor surveys.

A revised draft and request for comments via email were provided to PAG members electronically on 17 September. Following this iteration, the following changes were made to the survey instrument:

- **Technical skills and subject-specific knowledge:** An additional item, in the form of an overall question, was inserted into both the graduate and the supervisor survey.
- **Number of response categories:** It was decided to retain an even number of response categories for the skills rating questions, but review at the end of the pilot.

This version was then used for the live pre-testing conducted by ORC.

6. PRE-PILOTING

6.1. OBJECTIVES OF PRE-PILOTING

The main objective of pre-piloting was to use live interviewing to refine the referral process by which graduates would be asked to provide details of their supervisors. Steps within the process included:

- Providing the graduate with information about the purpose of asking the supervisor to take part in the study
- Explaining to the graduate who comprised a supervisor
- Requesting the graduate provide contact details (a name, phone number and email address for their supervisor)
- Where that was provided, ensuring that ethics information about the study was provided to the supervisor by email before initiating phone contact
- Where graduates were not willing to provide their supervisor's contact details without first speaking with their supervisor, providing the graduate with additional written information about the study to share with the supervisor and arranging a callback with the graduate at a later point.

Other objectives of pre-testing were to:

- Check that the items in the graduate and supervisor surveys were clear, unambiguous, succinct and quickly understood by the participant
- Check both surveys for timing
- Test what time of day was most successful for reaching graduates and supervisors
- Gather any other feedback that participants were willing to provide about the survey

6.2. ETHICS & ABS APPROVAL

Approval to conduct the study was obtained from the University of Sydney Human Research Ethics Committee prior to commencing pre-piloting. Approval was given on 30 September 2013.

Written advice from the Australian Bureau of Statistics (ABS) was that ABS Statistical Clearinghouse Approval was not required as it did not meet the Clearinghouse's definition of a business survey.

6.3. SAMPLE

Two pieces of available sample were used for the pre-testing phase:

- 100 records from the University A sample. These records were selected from graduates who were not from the priority fields of education.
- 100 records from the University B sample. These records were creative industries graduates who had been erroneously allocated to the Society and Culture group and provided to ORC.

6.4. INTERVIEWING

Interviewing for the pre-pilot began on 16 October 2013 and concluded on 4 November 2013.

Live pre-testing of the survey began on 16 October 2013 with an initial sample of 50 graduate names from the University A, which was the first institution to provide sample to the consortium. On 28 October 2013, a further 100 excess names from the University B sample (creative arts graduates who were not from any of the priority fields of education) were released as well.

All phone numbers either resulted in a live conversation or were dialled at least six times (in the case of the University A sample, some numbers were dialled up to 15 times). In line with industry practice, interviewers did not leave messages when directed to voicemail.

Because the initial University A release of 50 names yielded such a small number of completed supervisor emails, a further 100 graduate names were released, with calls beginning on Monday 28 October.

To ensure that we preserved as much University A sample as possible for the main pilot, this was taken from the University B sample, drawing on graduates from the creative arts field of education, which had mistakenly been included in the Society & Culture field.

6.5. OUTCOMES

From an initial sample of 150 graduates, telephone calls over a three week period produced:

- 41 completed graduate interviews (23 from University A and 18 from University B)
- 3 completed supervisor interviews (3 from University A)

Overall, the pre-pliot phase demonstrated

- Universities were able to provide very good quality sample, with most graduate records having multiple telephone contact numbers, including many with mobile phone numbers.
- Graduates were usually willing to assist by completing the graduate part of the survey.
- The initial design of the graduate survey was very short.
- Graduates were much less willing to provide contact details of their supervisor. Only some of the reasons for graduates' reluctance could be addressed through changes to the survey process.

The following two flow diagrams detail the progress with the University A and University B samples at each stage, and identify some of the key issues that have arisen. In summary, however, the 150 names yielded 41 complete graduate interviews and just 3 completed supervisor interviews.

Figure 7: History of the University A pre-test sample – graduate stage

Survey stage / Active sample	Issues identified
Sample of 50 graduate names & contact details Taken from University A sample – non-target fields of education. Calls began on 16 October with two interviewers allocated.	
Of those 50 graduate names:	
• 11 Answering machine	Evenings actually appear to work best for reaching graduates at a convenient time (provided we are calling their mobile number).
• 4 Wrong number • 3 disconnected • 2 respondents away for extended unknown period	This is actually a fairly low number and indicates a relatively good sample (Though note that some graduates did not make it into the sample because they did not have telephone numbers supplied).
Of the 28 correctly identified graduates with whom contact has been made:	
• 5 refused, including one who indicated that they had chosen not to be called on the website	This is actually a very low refusal rate. The one who claimed to have already opted out indicates the importance of double checking these processes.
• 2 graduates asked to make an appointment to complete the survey at a later time	ORC will follow up these graduates.
• 23 graduates completed the survey	23 positive responses out of 28 graduates with whom contact has been made is a high response rate.
Of the 23 completed graduate interviews:	
• 9 were willing and able to provide details of their supervisors during the interview, or after a callback	Some graduates were willing to pass over the phone then and there to the supervisor. We had not really anticipated this as a possibility and are considering how it might be done.
• 2 said they did not have a supervisor	This is low – those not working may filter themselves out at earlier stages.
• 3 refused to say whether they had supervisors • 1 refused to ask supervisor to participate • 3 refused to give name of supervisor • 3 did not know supervisor email • 2 refused to give supervisor email	One piece of feedback from the interviewers is that a number of graduates were disappointed there was not more opportunity to provide feedback on their experience. This may be leading some to be suspicious of the purpose of the survey and what questions will be asked of supervisors. Graduate survey during pre-testing ran to approximately 6 minutes.

Figure 8: History of the University A pre-test sample – supervisor stage

Of the 9 supervisor details:	
• Only 3 supervisor interviews have been completed • 5 appointments or callbacks (This does not mean we have necessarily spoken to the supervisor) • 1 is away on leave, return date unknown	As only three supervisor interviews have been completed, not sufficient to provide full feedback. In relation to timing, one interview ran for just over 8 minutes, one for just over 10 minutes, and the other for 10 minutes and 35 seconds. Arranging suitable times to talk to supervisors could be more time consuming (but not necessarily more difficult) than originally anticipated. ORC is also willing to deviate from usual practice and leave messages on voicemail for supervisors.

Similar issues were experienced with the 100 graduate names from University B used during the pre-testing phase. Within the pre-testing phase, 16 graduates from University B completed the survey. Of these, only 2 provided their supervisor details within the pre-testing phase and no supervisor interviews were completed from University B during the pre-testing phase.

6.6. CHANGES FOLLOWING PRE-TESTING

Following pre-testing, the consortium recommended the following changes to the instrument and these were accepted by the department:

- Change the wording in the introduction, to make it clearer to the graduate much earlier in the survey that part of the survey would involve asking graduates to assist in recruiting their supervisors to take part in the study.
- Reordering some supervisor recruitment questions in the graduate survey to make the process more fluent and flexible
- Inserting some additional questions into the graduate interview to generate more graduate involvement and allay suspicions about the nature of the supervisor survey.
- Encouraging graduates to take a more active role in recruiting their supervisor.
- Collecting switchboard numbers to increase callback options.
- Using ORC qualitative recruitment team to obtain appointments with supervisors if normal CATI procedures prove unproductive.

The consortium also initially considered including an incentive (in the form of a donation to a nominated charity on behalf of the graduate and the supervisor). After further consideration and consultation with the department, it was determined not to include an incentive, in part because it would not be financially or logistically feasible to provide an incentive in any fully operational version of the survey.

7. PILOT OUTCOMES

7.1. THE PILOTING PROCESS

7.1.1. SAMPLE PREPARATION

Prior to interviewing commencing, the sample frame was prepared according to the following steps.

1. The universities prepared an initial population frame.
    - University A and University D included all bachelor graduates eligible to complete the 2013 AGS.
    - University B included all 2013 AGS respondents from the five priority fields of education. Due to an error, creative arts graduates were also included in the initial population. Of these, 100 were used during the pre-pilot process but none were used during the main pilot phase.
    - To maximise the number of final supervisor interviews, University C included all bachelor graduates eligible to complete the 2013 AGS from the five priority fields of education.
2. An email was sent to each graduate at the last recorded email address, informing them of the purpose of the study and inviting them to participate. Graduates who did not want to participate had the option of opting out of the study by clicking on a link embedded in the email. Their contact details were then removed from the sampling frame prior to being supplied to ORC.
3. The sample frame, with opt-outs removed, was then inspected by ORC and any records not containing a usable telephone number (either missing or overseas) were removed.
4. Pre-piloting began on 16 October 2013 at University A and 28 October 2013 at University B. Full fieldwork commenced at both institutions on 18 November 2013 and concluded on 13 December 2013.
5. Fieldwork for University C commenced on 21 January 2014 and for University D on 13 February 2014. Fieldwork concluded for these institutions on 28 March 2014.

A summary of each of these stages is included in the table over.

Table 1: Summary of population and sample response by university (including pre-testing and main pilot phases)

		University A	University B	University C	University D	Total
	Population	All Bachelor graduates eligible to complete the 2013 AGS	2013 AGS completers in the five priority fields of education (plus creative arts graduates used for pre-testing)	Bachelor graduates eligible to complete the 2013 AGS from the five priority fields of education	All Bachelor graduates eligible to complete the 2013 AGS	
A	Total population	1275	2381	4716	1420	9792
B	Number of opt-outs	67	78	215	102	462
C	Records missing telephone field	363	38	55	95	551
D	Records missing other data	209	273	0	5	487
E	Usable sample	635[#]	1992[##]	4446	1218	8291
F	Number of graduate responses	236	606	1557	350	2749
G	Graduate response rate (F/E)	37.2	30.4	35.0	28.7	33.2
H	Graduate responses as percentage of graduate population (F/A)	18.5%	25.5%	33.0%	24.6%	28.1%
I	Number of supervisor referral	62	123	392	100	677
J	Supervisor referral rate (I/F)	26.3	20.3	25.2	28.6	24.6
K	Number of supervisor responses	54	75	326	84	539
L	Supervisor conversion rate (K/I)	87.1	61.0	83.2	84.0	79.6
M	Supervisor responses as percentage of graduate population (K/B)	4.2	3.1	6.9	5.9	5.5
N	Date commenced in field	16/10/2013	28/10/2013	21/01/2014	13/02/2014	

this includes an initial release of 50 names from non-priority fields of education for the pre-pilot.

this includes 100 creative arts graduates used for the pre-pilot

7.1.2. THE GRADUATE SURVEY

Across the four universities, each telephone number was dialled at least eight times or until answered.

- Graduates were primarily contacted by mobile phone and were most reachable and amenable to participating in the survey in the evenings after regular working hours.
- In total, 2749 graduates completed the survey, including 41 from the pre-testing phase and 2708 from the main phase. The response rate for a survey of this nature was high (32.9% of all usable records for the main phase).
- Of those graduates who could be reached, only a small number (751, or 9.1% of the total number of graduates) refused to take part in the study.
- Graduate feedback on the survey was very positive, with graduates keen to provide their views on what had been useful in their qualification and what areas, with the benefit of their recent workplace experience, could be improved.

An analysis of response bias is contained in 7.2.5.

Table 2: Summary of Graduate Survey interviewing process (main pilot)

	Phase 1 (University A & University B)#	Phase 2 (University C & University D)	Total
Numbers used	2577	5664	8241
Completed	801	1907	2708
Response rate	31.1%	33.7%	32.9%
Refusals	272	479	751
Refusal rate	10.6%	8.5%	9.1%

Note: # Excludes records from pre-testing phase

7.1.3. THE REFERRAL PROCESS

The referral process was the stage where piloting was not able to reach the targets desired.

- Of the 2,713 graduates who completed the survey during the main pilot stage, only 677 (or 25.0%) provided their supervisors' details. This was substantially less than the 50 per cent that had been estimated during the survey design.
- One challenge associated with the survey methodology was that in order to obtain the views of a graduate 'linked' with their workplace supervisor, it was necessary to use the graduate to obtain the supervisor's contact details. It was expected that this part of the research process might prove challenging because some graduates might be reticent to impose a research task on their supervisor. Alternatively, in cases where there were any performance issues between the supervisor and graduate, there were concerns that the graduate may also not want their supervisor to participate.
- Ultimately, these concerns seem to have been largely validated. This is evidenced by the high proportion of graduates who willingly completed a survey themselves but subsequently did not provide a supervisor referral. In all such cases, repeated additional attempts (up to 8 separate phone calls) were made to the graduate to obtain supervisor contact details. Nonetheless, in 75.0% of cases such details were not able to be obtained.

- The reasons given for not referring were similar to the pre-pilot study. While it is not possible to know conclusively, the relative difficulty of convincing graduates who had already completed the survey to provide a referral to their supervisor, suggests that most graduates were reticent to sign up their supervisor or were nervous about getting their supervisor involved in the survey, and that these concerns could not be overcome even with reassurances being provided during the course of the graduate interview.
- The longer period in the field between Universities A and B in 2013 and Universities C and D in 2014 had only a very small difference on the referral rate, increasing from 23.1% to 25.8%. Both rates were in fact similar to that achieved during pre-piloting, suggesting that the changes to the supervisor referral process had only a small impact.

Table 3: Summary of supervisor recruitment process (main pilot)

	Phase 1 (University A & University B) #	Phase 2 (University C & University D)	Total
Graduate interviews	801	1907	2708
Supervisor referrals	185	492	677
Referral rate	23.1%	25.8%	25.0%

Note: # Excludes records from pre-testing phase

7.1.4. THE SUPERVISOR SURVEY

In total, 539 supervisor interviews were completed, including three during the pre-testing phase. During the main phase of the pilot:

- Of the 677 supervisors for whom ORC was able to collect contact details, 536 completed the survey, a response rate of 79.2%.
- All supervisor interviews were conducted by ORC's specialist qualitative recruitment team, rather than CATI interviewers. This resulted in a much higher response rate than would have likely been the case otherwise. This is partly due to the specialist skills involved in obtaining survey consent and participation, but also due to the qualitative recruitment team's ability to leave messages and take inbound calls.
- Almost all supervisor interviews were conducted on their office landlines during normal office hours on weekdays. A small proportion was conducted in the early morning (7.30am-9am) either on a mobile or home phone line.
- Most supervisors were able to be contacted and interviewed within 2 call attempts.
- During the 2013 phase of the pilot, 44 supervisors could not be reached during the window of the survey (they were travelling for work, on annual or long service leave, extended period of illness) and only 126 (out of a possible 185) supervisor interviewers were completed. This coincided with the busy period for many organisations leading up to Christmas.
- With the longer time frame, a higher proportion of supervisors were able to be reached during the 2014 phase (83.3% compared with 67.6%).
- Only 31 out of 677 supervisors (4.6%) refused to complete the survey.

When asked for their views of the survey, supervisors were in the main very positive. Some supervisors commented that it was difficult to separate what the graduate had learnt in their course from the graduate's personal attributes or previous experiences.

Table 4: Summary of Supervisor Survey interviewing process (main pilot)

	Phase 1 (University A & University B) #	Phase 2 (University C & University D)	Total
Numbers used	185	492	677
Completed	126	410	536
Conversion rate	68.1%	83.3%	79.2%
Refusals	5	26	31
Refusal rate	2.7%	5.3%	4.6%

Note: # Excludes records from pre-testing phase

7.2. CHARACTERISTICS OF GRADUATE AND SUPERVISOR RESPONDENTS

The following analysis of the survey results is provided:

- Descriptive results for the entire sample, broken down by field of study, and institution.
- For those graduates whose supervisors did participate in the survey, comparison of the ratings between supervisor and graduate.
- A short summary of the open response questions, where graduates and supervisors were invited to nominate the strengths and weaknesses of the graduate's qualification.

7.2.1. PROFILE OF GRADUATE AND SUPERVISOR RESPONDENTS

Of the 2749 respondents to the graduate stage of the survey, the responses were predominantly female (57.9% female to 42.1% male). Society and Culture was the priority field of education with the largest number of responses (827), followed by Management and Commerce (631) while Engineering and Related Technologies was the smallest (281). Because all graduates were included in the University A and University D samples (and a small number from University B during the pre-testing stage), there were also 202 graduates from outside the five priority fields of education (See table 2a).

Of the much smaller number of supervisor responses, 54 were from University A, 75 from University B, 326 from University C and 84 from University D. The field of education with the largest number of supervisor responses was Society and Culture (151) while the smallest was again Engineering and Related Technologies (65) (see table 6).

Table 5: Profile of graduate respondents

	Total	
	N	%
Sex		
Male		
University A	69	29.2
University B	280	46.2
University C	704	45.2
University D	105	30.0
Total	1158	42.1
Female		
University A	167	70.8
University B	326	53.8
University C	853	54.8
University D	245	70.0
Total	1591	57.9
Broad field of education		
01 Natural & Physical Sciences		
University A	15	6.4
University B	51	8.4
University C	314	20.2
University D	49	14.0
Total	429	15.6
03 Engineering & Related Technologies		
University A	2	0.8
University B	123	20.3
University C	156	10.0
University D	0	-
Total	281	10.2
07 Education		
University A	55	23.3
University B	118	19.5
University C	153	9.8
University D	53	15.1
Total	379	13.8
08 Management & Commerce		
University A	13	5.5
University B	150	24.8
University C	430	27.6
University D	38	10.9
Total	631	23.0
09 Society & Culture		
University A	69	29.2
University B	146	24.1
University C	504	32.4
University D	108	30.9
Total	827	30.1
All other fields of education		
University A	82	29.2
University B	18	24.1
University C	0	32.4
University D	102	30.9
Total	202	30.1
All fields of education		
University A	236	8.6
University B	606	22.0
University C	1557	56.6
University D	350	12.7
Total	2749	100.0

Table 6: Profile of supervisor respondents

	N	%
Sex		
Male	226	41.9
Female	313	58.1
University		
University A	54	10.0
University B	75	13.9
University C	326	60.5
University D	84	15.6
Total	539	100.0
Broad field of education		
01 Natural & Physical Sciences	76	14.1
03 Engineering & Related Technologies	65	12.1
07 Education	104	19.3
08 Management & Commerce	104	18.7
09 Society & Culture	151	28.0
All other fields of education	42	7.8
Total	539	100.0

7.2.2. EMPLOYMENT CHARACTERISTICS

Between two thirds and three quarters of respondents were working full-time hours, with the remainder working part-time. One in 20 respondents was self-employed, with a higher proportion of University A and University D respondents. Most respondents were working in large organisations (100 or more employees), with a higher proportion of University A graduates working in small organisations (2 to 19 employees). Half of all employee respondents from University A were working in the public or government sector while graduates from the other universities were predominantly employed in the private sector, whereas.

Table 7: Employment characteristics of respondents (%)

	University A	University B	University C	University D	Total
Working arrangements					
Employed full-time	69.9	73.3	70.1	66.9	70.4
Employed part-time	29.7	26.7	29.7	32.6	29.4
Missing, refused or cannot recall	0.4	-	0.3	0.6	0.3
Total	100	100			
Self-employed					
Yes	7.2	3.8	3.9	7.4	4.6
No	92.8	96.2	96.1	92.6	95.4
Total	100	100			
Enterprise size					
1 to 19 employees	24.2	16.2	14.8	21.4	16.7
20 to 99 employees	19.1	18.3	16.1	23.4	17.8
100 or more	55.9	64.9	68.3	54.0	64.6
Refused	-	0.2	-	-	0.0
Do not know	0.8	0.5	0.9	1.1	0.8
Total	100	100	100	100	100

	University A	University B	University C	University D	Total
Sector of employment					
Public/Government sector	51.3	30.2	25.2	35.7	29.9
Not for profit sector	9.3	5.9	6.0	7.1	6.4
Private sector	38.6	62.0	66.7	55.7	61.9
Refused	-	0.2	-	-	0.0
Do not know	0.8	1.7	2.0	1.4	1.7
Total	100	100	100	100	100
Total n	236	606	1557	350	2749

7.2.3. WHETHER QUALIFICATION IS A FORMAL REQUIREMENT

Both graduates and supervisors were asked whether the graduate's qualification was a formal requirement for the graduate's current job, and separately how relevant they thought the qualification was for the job. This is a slightly different format to the AGS, which groups both responses into one question.

Supervisors were much more likely than graduates to report that the qualification was a formal requirement for the graduate's job.

As would be expected, the proportions of graduates reporting a qualification as a formal requirement varied by field of education. Graduate respondents from Education (85.8%) and Engineering and Related Technologies (80.1%) were most likely to report that their qualification was a formal requirement, with graduate respondents from Society and Culture (36.8%) and Natural and Physical Sciences (35.0%) the least likely.

Table 8: Qualification a formal requirement for job (%)

	University A	University B	University C	University D	Total
Graduate rating: Qualification is formal requirement					
Yes	55.9	59.7	49.6	55.1	53.1
No	43.6	39.4	49.9	44.9	46.4
Don't know	0.4	0.8	0.5	-	0.5
Graduate n	236	606	1557	350	2749
Supervisor rating: Qualification is formal requirement					
Yes	72.2	70.7	50.6	58.3	56.8
No	27.8	28.0	48.5	40.5	42.3
Refused	-	-	0.6	-	0.3
Don't know	-	1.3	0.3	1.2	0.6
Supervisor n	54	75	326	84	539

Table 9: % reporting qualification is a formal requirement (graduate rating) by field of education

	University A	University B	University C	University D	Total
01 Natural & Physical Sciences	46.7	54.9	30.6	61.2	35.0
03 Engineering & Related Technologies	50.0	80.5	80.1	-	80.1
07 Education	78.2	90.7	80.4	98.1	85.8
08 Management & Commerce	46.2	48.7	57.0	36.8	53.6
09 Society & Culture	34.8	36.3	36.3	40.7	36.8
All other fields of education	62.2	11.1	-	62.7	57.9
All fields of study	55.9	59.7	49.6	55.1	53.1
Graduate n	236	606	1557	350	2749

7.2.4. RELEVANCE OF QUALIFICATION

More than two thirds of graduates considered their qualification relevant to their current job. A majority of graduate respondents thought that their qualification was very relevant to their job, while more than eight in ten thought that their qualification was either fairly relevant or very relevant to their job.

When graduates and supervisor responses are compared, supervisors were slightly more likely to agree that the qualification was very relevant to the job.

Table 10: % agreeing that qualification is very relevant or fairly relevant – graduate and supervisor responses

	University A[1]	University B[2]	University C	University D	Total
Graduates (all)	79.8	76.7	64.0	71.1	68.9
Graduates (with supervisor responses only)	88.2	84.0	72.7	72.6	75.7
Supervisors	88.5	78.4	75.6	78.6	77.7

Notes: (1) Excludes 42 graduate responses from the pre-pilot testing. The question was changed.
(2) Excludes 3 graduate responses from the pre-pilot testing

As would be expected, there are variations by field of study, with the same pattern as for whether the qualification was a formal requirement. Education (97.1%) and Engineering and Related Technologies (90.8%) recorded the highest responses and Natural and Physical Sciences (65.8%) the lowest.

Table 11: Relevance of qualification to current graduate job – supervisor responses by field of education

	% Very relevant or Fairly relevant
All universities	
01 Natural & Physical Sciences	65.8
03 Engineering & Related Technologies	90.8
07 Education	97.1
08 Management & Commerce	68.3
09 Society & Culture	69.1
All other fields of education	85.4
Total	77.7

7.2.5. COMPARISON OF GRADUATE SUPERVISOR REFERRALS AND NON-REFERRALS

Table 12 indicates the most important differences between graduates whose supervisors completed the survey and graduates whose supervisors did not.

Graduate respondents whose supervisors took part in the survey were:

- Less likely to come from Management & Commerce and more likely to come from Education
- More likely to come from smaller workplaces (< 100 employees)
- More likely to report that their qualification is a formal requirement for the job
- More likely to say that their qualification is highly relevant to their job
- Had a longer average duration in their current job
- Had spent longer on average working full-time before their current job

A number of characteristics that might be assumed to be related to non-referral were not, including:

- Sex
- Whether the graduate was working full-time or part-time
- The sector and industry of the employer

The relationship between non-referral and length of tenure, previous full-time employment experience and relevance of the graduate employment, while expected, poses methodological and practical challenges. It suggests that the referral process is biased toward graduates who have made more complete and successful transitions into the labour market, which is likely to lead to over-reporting supervisor satisfaction levels. However, as at this stage, the analysis has not demonstrated that this is based to known characteristics such as field of education, it is difficult to anticipate how if at all this could be corrected statistically.

As a practical consideration, the lower referral rate from graduates who have made a more recent transition to their current position indicates that integrating an employer satisfaction survey with the graduate destination survey, typically held within six months of graduates completing their studies, might result in an even lower referral rate.

Table 12: Comparison on graduate referrals and non-referrals (%)

	No supervisor survey	Supervisor survey	Total
Sex			
Male	42.2	41.9	42.1
Female	57.8	58.1	57.9
University			
University A	8.2	10.0	8.6
University B	24.0	13.9	22.0
University C	55.7	60.5	56.6
University D	12.0	15.6	12.7
Field of education			
01 Natural & Physical Sciences	16.0	14.1	15.6
03 Engineering & Related Technologies	9.8	12.1	10.2
07 Education	12.4	19.3	13.8
08 Management & Commerce	24.0	18.7	23.0
09 Society & Culture	30.6	28.0	30.1
All other fields of education	7.2	7.8	7.3
Working arrangement			
Full-time	70.3	70.5	70.4
Part-time	29.4	29.3	29.4
Sector			
Public/Government	30.1	29.1	29.9
Not for profit	5.4	10.8	6.4
Private	62.7	58.6	61.9
Refused			
Don't know	1.8	1.5	1.7
Employer size			
1 to 19 employees	15.9	20.0	16.7
20 to 99 employees	16.7	22.1	17.8
100 or more	66.4	57.5	64.6
Refused	-		
Do not know	1.0	0.4	0.8
Qualification a formal requirement			
Yes	51.4	59.7	53.1
No	48.1	39.7	46.4
Do not know	0.5	0.6	0.5
Relevance of overall qualification			
Not at all relevant	16.4	12.5	15.6
Not that relevant	16.4	11.8	15.5
Fairly relevant	28.8	30.6	29.2
Very relevant	38.4	45.1	39.7
Don't know	-	-	-
Refused			
Previously in full-time employment			
Yes	43.0	46.6	43.7
No	57.0	53.4	56.3
Experience and tenure			
Median tenure in current job (months)	15	19	16
Median months spent in full-time employment	24	36	27

7.2.6. ANALYSIS OF GRADUATE NON-RESPONSE

This section considers the representativeness of the final sample of supervisor responses in comparison with known characteristics of the target population. Because the target population includes a combination of AGS respondents and AGS non-respondents, the available information is restricted to university by field of education and university by sex. Overall, there was no variation by sex but there was variation by field of education, with higher overall non-response in management and commerce and less non-response in education (taking into account graduate non-response and graduate non-referral).Therefore, any future version of the ESS used for institutional reporting may need to take account of non-response bias. For reliable institution-level results, stratified sampling weighting by field of education may be advisable.

Table 13: Comparison of survey population and sample (supervisor responses only)

	Population %	Graduate sample %
University A		
01 Natural & Physical Sciences	7.3	9.3
03 Engineering & Related Technologies	0.2	.9
07 Education	22.6	31.5
08 Management & Commerce	11.6	3.7
09 Society & Culture	33.6	24.
All other fields of education	24.7	29.6
Total	100.0	00.0
Males	30.9	22.2
Females	69.1	77.8
Total		
University B		
01 Natural & Physical Sciences	9.1	5.3
03 Engineering & Related Technologies	13.3	28.0
07 Education	13.8	2.3
08 Management & Commerce	43.5	24.0
09 Society & Culture	20.4	21.3
Other - NA	0.0	
Total	100.0	100.0
Males	46.0	46.7
Females	54.0	53.3
Total	100.0	100.0
University C		
01 Natural & Physical Sciences	20.6	16.3
03 Engineering & Related Technologies	9.4	3.2
07 Education	6.9	7.2
08 Management & Commerce	27.1	23.3
09 Society & Culture	36.0	30.1
Other		-
Total	100.0	100.0
Males	43.9	46.9
Females	56.1	53.1
Total	100.0	100.0
University D		
01 Natural & Physical Sciences	13.8	6.7
03 Engineering & Related Technologies	1.5	-
07 Education	13.3	17.9
08 Management & Commerce	9.9	6.0
09 Society & Culture	32.3	28.6
All other fields of education	29.1	31.0
Total	100.0	100.0
Males	34.0	31.0
Females	66.0	69.0
Total	100.0	100.0
All pilot universities		
01 Natural & Physical Sciences	14.9	14.1
03 Engineering & Related Technologies	8.6	12.1
07 Education	11.4	19.3
08 Management & Commerce	28.1	18.7
09 Society & Culture	30.7	28.0
All other fields of education	6.3	7.8
Total (included fields of education only)	100.0	100.0
Males	41.2	41.9
Females	58.8	58.1
Total	100.0	100.0

8. FINDINGS

8.1.1. OVERALL RATING

Graduates and their supervisors were asked to provide an overall rating of the qualification completed by the graduate. The questions asked of graduates and their supervisors were quite different.

Graduates were asked:

> *Overall, how well did your qualification prepare you for your current job?*

Supervisors were asked:

> *On the basis of your experience with <the graduate>, how confident would you be recommending another graduate <with the same qualification from the same university> for a similar position in your organisation?*

The data presented here, and in the rest of the report, is based only on the scores provided by graduates whose supervisors also participated in the survey.

Supervisors gave a much more positive overall rating than graduates. Among graduates, 84.5 per cent answered that they thought their qualification prepared them well or very well for their current job. Among their supervisors, 92.4 per cent answered that they would be fairly confident or very confident in recommending someone with the same qualification for a position similar to the graduate's current role. Both the graduate and the supervision overall rating questions resulted in only a small number of "Do not know" responses or refusals.

Supervisor ratings appear higher in Universities A and B in those fields where qualifications were more likely to be a formal requirement or perceived as being more relevant, for example, engineering and education, than in fields more oriented towards generic outcomes. However, note that differences by university and field of education were not found to be statistically significant different on account of small sample sizes – see section 8.1.9 precision of estimates.

Table 14: Overall rating – graduate and supervisor responses

	Graduates who thought their qualification prepared them well or very well	Supervisors who would be fairly confident or very confident recommending a similar graduate
	%	%
University		
University A	75.9	94.4
University B	90.7	94.7
University C	70.3	92.6
University D	71.4	88.1
Total	73.8	92.4
Field of education		
01 Natural & Physical Sciences	60.5	90.8
03 Engineering & Related Technologies	78.5	93.9
07 Education	87.5	96.2
08 Management & Commerce	75.3	89.1
09 Society & Culture	66.2	92.1
All other fields of education	81.0	92.9
Total	73.8	92.4

8.1.2. TECHNICAL SKILLS

To assess the technical skills of graduates, graduates and supervisors were first asked to describe the usual tasks performed by the graduate in an ordinary day, and then rate how well the graduate's qualification prepared them to perform those tasks.

Both graduates and supervisors were given the following response options: Not at all prepared, not that well prepared, well prepared, very well prepared. These are scored one to four. Respondents who did not know or who refused were excluded. Table 15 reports the proportion of graduates and supervisors agreeing that the qualification prepared the graduate to perform the necessary tasks well or very well. To assist with comparisons between supervisors and graduates, only graduates whose supervisors also participated in the survey have been included.

In general, both graduate and supervisor respondents rated the technical skills of graduates highly. Eighty six per cent of employers expressed satisfaction with graduates' technical skills. That said, employer satisfaction with technical skills was rated lower than for other factors. Interestingly, supervisors rated their graduates' technical skills more highly than the graduates themselves. Notwithstanding the precision of sample estimates, University C and Education graduates were rated more highly by employers on technical skills. Only a very small number of respondents gave 'did not know' answers or 'refused to answer'.

Table 15: Technical skills – graduate and supervisor ratings

	Qualification prepared graduate to perform technical tasks well or very well (%)	
	Graduate	**Supervisor**
University		
University A	68.6	85.2
University B	74.7	84.0
University C	65.6	86.8
University D	66.7	85.7
Total	67.4	86.1
Field of education		
01 Natural & Physical Sciences	55.3	79.0
03 Engineering & Related Technologies	63.1	87.7
07 Education	84.6	90.4
08 Management & Commerce	71.3	86.1
09 Society & Culture	60.9	86.8
All other fields of education	66.7	83.3
Total	67.4	86.1

8.1.3. FOUNDATION SKILLS

Five questions were asked of supervisors and graduates to assess how well the graduate's qualification prepared them with the foundation skills required in the graduate workplace. The five foundation skills were:

- Oral communication skills
- Written communication skills
- Numeracy
- Capacity to develop knowledge and skills
- Capacity to analyse and solve problems

A comparison of the results in Table 16 between graduate and supervisor shows the same pattern as for technical skills: Both supervisors and graduates rated the extent to which university qualifications had provided graduates with foundation skills very highly, with supervisors rating graduates' skills more highly than the graduates themselves. This was consistent for every item.

Table 16: Foundation skills – graduate and supervisor responses

	Qualification prepared graduate well or very well (%)	
	Graduate	Supervisor
Oral communication skills	82.6	93.7
Written communication skills	90.4	93.0
Numeracy	75.9	94.0
Capacity to develop knowledge and skills	94.8	96.3
Capacity to analyse and solve problems	82.7	92.6

The supervisor ratings for all five items were combined to form a single score, with a missing value recorded for any supervisor who did not answer at least four of the five questions (or responded that the item was not applicable to the role or they did not know). The possible scores range from zero to 100. Overall, 94.9 per cent of employers were satisfied the foundation skills of graduates, rating this factor more highly than other factors. Table 17 shows the average supervisor scores, broken down by university and by field of education. Employers rated graduates in University C and science more highly on their foundation skills, though there were no statistically significant differences observed at the university or field of education level on account of the small sample sizes.

Table 17: Foundation skills score (graduate and supervisor) by field of education and institution

	Foundation skills score (/100)	
	Graduate	Supervisor
University		
University A	86.3	90.6
University B	94.7	90.4
University C	87.0	96.8
University D	91.6	93.9
Total	88.7	94.9
Field of education		
01 Natural & Physical Sciences	87.7	100
03 Engineering & Related Technologies	96.9	95.4
07 Education	93.3	93.1
08 Management & Commerce	88.1	90.7
09 Society & Culture	81.3	96.6
All other fields of education	94.9	92.7
Total	88.7	94.9

8.1.4. ADAPTIVE SKILLS

Five questions were asked of supervisors to assess how well the graduate's qualification equipped them to respond to changing circumstances. The five adaptive skills were:

- Broad background general knowledge
- Capacity to understand different viewpoints
- Capacity to work autonomously

- Ability to develop innovative ideas or new opportunities
- Ability to operate in an international or multicultural context

Graduates were asked to provide ratings on the first three items only.

As Table 18 shows, graduate and supervisor respondents rated the graduates' qualifications very highly, with the supervisors rating more highly than the graduates (but not by as much as they did for technical and foundation skills). One item was rated by a very high proportion of supervisors as not applicable to the graduate's current role: Ability to operate in an international or multicultural context (see 8.1.10).

Table 18: Adaptive skills items –graduate and supervisor responses

	Qualification prepared graduate well or very well (%)	
	Graduate	**Supervisor**
Broad background general knowledge	82.4	87.4
Capacity to understand different viewpoints	91.0	92.7
Capacity to work autonomously	90.8	85.1
Ability to develop innovative ideas or new opportunities	na	89.0
Ability to operate in an international or multicultural context	na	91.7

The supervisor ratings for all five items were combined to form a single score, with a missing value recorded for any supervisor who did not answer at least four of the five questions (or responded that the item was not applicable to the role or they did not know). The possible scores range from zero to 100. Overall, 88.9 per cent of employers were satisfied with graduates' adaptive skills, though they rated this factor slightly lower than other factors. As Table 19 shows, graduates of University C rated more highly on adaptive skills. Of the five priority fields of education, Management & Commerce received the lowest average score (83.9), with Education receiving the highest (93.2). However, there were no statistically significant differences observed in employer satisfaction with adaptive skills across universities and field of education on account of small sample size.

Table 19: Adaptive skills overall score (supervisor rating) by field of education and institution

	Adaptive skills score (/100)
	Supervisor
University	
University A	89.4
University B	86.1
University C	90.0
University D	86.8
Total	88.9
Field of education	
01 Natural & Physical Sciences	88.1
03 Engineering & Related Technologies	90.8
07 Education	93.2
08 Management & Commerce	83.9
09 Society & Culture	90.3
All other fields of education	82.9
Total	88.9

8.1.5. TEAMWORK AND INTERPERSONAL SKILLS

Three questions were asked of supervisors to assess how well the graduate's qualification prepared them with teamwork and interpersonal skills required in the graduate workplace. The three items were:

- Capacity for teamwork and cooperation
- Getting on well with colleagues and co-workers
- Collaborating effectively with colleagues to complete tasks

Graduates were asked to provide ratings on only two of the items.

Supervisors in particular rated graduates' very highly in relation to teamwork in comparison with other factors, with 96.1 per cent of employers expressing satisfaction with graduates' teamwork skills (see Table 20).

Table 20: Teamwork and interpersonal skills – graduate and supervisor responses

	Qualification prepared graduate well or very well (%)	
	Graduate	Supervisor
Capacity for teamwork and cooperation	na	96.1
Getting on well with colleagues and co-workers	83.2	95.7
Collaborating effectively with colleagues to complete tasks	86.8	94.7

The supervisor ratings for all three items were combined to form a single score, with a missing value recorded for any supervisor who did not answer at least two of the three questions (or responded that the item was not applicable to the role or they did not know). The possible scores range from zero to 100. Graduates from University C and science were rated more highly by employers in terms of their teamwork skills, though differences in teamwork skills by university and field of education were not statistically significant on account of small sample sizes (see Table 21).

Table 21: Teamwork and interpersonal skills overall score (supervisor rating) by field of education and institution

	Teamwork and interpersonal skills score (/100)
	Supervisor
University	
University A	96.2
University B	91.9
University C	97.5
University D	94.1
Total	96.1
Field of education	
01 Natural & Physical Sciences	97.3
03 Engineering & Related Technologies	95.4
07 Education	95.2
08 Management & Commerce	96.0
09 Society & Culture	96.0
All other fields of education	97.6
Total	96.1

8.1.6. DISCIPLINARY SKILLS

Four questions were asked of supervisors to assess how well the graduate's qualification prepared them with ICT skills and the skills and behaviours related to their specific discipline. The four disciplinary skills were:

- Using knowledge of concepts and principles to understand new workplace problems
- Effective use of technologies
- Applying technical skills in a workplace context
- Observing professional and general ethical standards

None of the disciplinary skills items were asked of graduates.

The results in Table 22 show that supervisors' responses to these items were, like teamwork and interpersonal skills, much more consistent than for the first two clusters. This is probed more fully with factor analysis in the psychometric analysis (See Appendix F).

Table 22: Disciplinary skills –supervisor responses

	Qualification prepared graduate well or very well (%)
	Supervisor
Using knowledge of concepts and principles to understand new workplace problems	89.0
Effective use of technologies	92.3
Applying technical skills in a workplace context	92.7
Observing professional and general ethical standards	95.8

The supervisor ratings for all three items were combined to form a single score, with a missing value recorded for any supervisor who did not answer at least two of the three questions (or responded that the item was not applicable to the role or they did not know). The possible scores range from zero to 100. Employers rated disciplinary skills of graduates more highly than other factors with 92.9 per cent of employers expressing satisfaction with graduates' disciplinary skills. As Table 23 shows, employers rated the disciplinary skills of graduates from Universities C and D and Society and Culture graduates more highly, though differences in disciplinary skills by university and field of education were not statistically significant on account of small sample sizes.

Table 23: Disciplinary skills overall score (supervisor rating) by field of education and institution

	Disciplinary skills score (/100)
	Supervisor
University	
University A	86.3
University B	92.0
University C	94.0
University D	94.0
Total	92.9
Field of education	
01 Natural & Physical Sciences	94.2
03 Engineering & Related Technologies	92.3
07 Education	89.3
08 Management & Commerce	89.1
09 Society & Culture	98.0
All other fields of education	92.5
Total	92.9

8.1.7. EMPLOYABILITY SKILLS

Three questions were asked of supervisors to assess how well the graduate's qualification prepared them with the employability skills required in the graduate workplace. The three employability skills were:

- Ability to cope with work pressure and stress
- Capacity to be flexible and adaptable
- Ability to meet deadlines

Supervisor respondents still rated graduates' qualifications quite highly in relation to these skills, with average responses ranging from 83.1 to 91.5 (see Table 24).

Table 24: Employability skills – supervisor responses

	Qualification prepared graduate well or very well (%)
	Supervisor
Ability to cope with work pressure and stress	83.1
Capacity to be flexible and adaptable	91.5
Ability to meet deadlines	90.1

The supervisor ratings for all three items were combined to form a single score, with a missing value recorded for any supervisor who did not answer at least two of the three questions (or responded that the item was not applicable to the role or they did not know). The possible scores in Table 25 range from zero to 100. Graduates from Universities A and C and science graduates were rated more highly on this factor, though differences in employability skills by university and field of education were not statistically significant on account of small sample sizes.

Table 25: Employability skills overall score (supervisor rating) by field of education and institution

	Employability skills score (/100)
	Supervisor
University	
University A	92.5
University B	82.2
University C	92.6
University D	86.9
Total	90.3
Field of education	
01 Natural & Physical Sciences	93.3
03 Engineering & Related Technologies	86.2
07 Education	88.5
08 Management & Commerce	92.0
09 Society & Culture	92.0
All other fields of education	85.7
Total	90.3

8.1.8. ENTERPRISE SKILLS

Three questions were asked of supervisors to assess how well the graduate's qualification prepared them with the employability skills required in the graduate workplace. The three employability skills were:

- Understanding how to research to get results
- Understanding the fundamentals of business performance
- Managerial and leadership skills

Table 26 shows the proportion of supervisors agreeing that the qualification prepared the graduate well or very well in this skill or attribute. Overall, these items recorded the lowest scores but also the highest number of supervisor respondents reporting that the skills were not applicable to the graduate's job role (see Section 8.1.10).

Table 26: Enterprise skills –supervisor responses

	Qualification prepared graduate well or very well (%)
	Supervisor
Understanding how to research to get results	93.6
Understanding the fundamentals of business performance	73.7
Managerial and leadership skills	64.3

The supervisor ratings for all three items were combined to form a single score, with a missing value recorded for any supervisor who did not answer at least two of the three questions (or responded that the item was not applicable to the role or they did not know). The possible scores in Table 27 range from zero to 100. Graduates from University C and Management and Commerce graduates were rated more highly for their enterprise skills by employers, though differences in enterprise skills across universities and field of education were not statistically significant on account of small sample sizes.

Table 27: Enterprise skills overall score (supervisor rating) by field of education and institution

	Enterprise skills score (/100)
	Supervisor
University	
University A	78.9
University B	65.7
University C	83.3
University D	75.3
Total	79.1
Field of education	
01 Natural & Physical Sciences	66.7
03 Engineering & Related Technologies	71.9
07 Education	80.7
08 Management & Commerce	83.3
09 Society & Culture	82.7
All other fields of education	83.3
Total	79.1

8.1.9. PRECISION OF ESTIMATES

Table 28 presents the precision of the estimates, taking into account their standard errors. Standard errors do not include a finite population adjustment, as the proportion of the population sampled did not exceed 6 per cent for any stratum (broad field of education within university).

Table 28 shows the percentage of supervisors who agreed the qualification prepared the graduate well or very well in three measures: overall rating, technical skills, and foundation skills. Where there are insufficient responses (using the existing MyUniversity benchmark of fewer than 25 responses), the cell is marked as “NA”. Otherwise a 95 per cent confidence interval is shown, with the upper and lower bounds.

As a first observation, none of the fields of education for University A and University D yielded a sufficient sample size to report at the institution by field of education level. This is despite undertaking a full census of graduates at these two institutions. Likewise, none of the fields of education within University B reached the required reporting sample size, despite being a large university. This would suggest that a partial sampling approach (such as only surveying AGS respondents) would not yield sufficient responses even for large campuses.

Only for University C, a large university where a full census of graduates from the five priority fields of education was conducted, were the response sizes sufficiently large to allow reporting at the university by broad field of education level. However, this was arrived at only at a significant cost in terms of interviewing hours.

Table 28: Precision of estimates – 95% confidence intervals (University by field of education)

	Overall rating (supervisor)			Technical skills (supervisor)			Foundation skills (supervisor)		
	%	LB	UB	%	LB	UB	%	LB	UB
University A									
01 Natural & Physical Sciences	NA			NA			NA		
03 Engineering & Related Technologies	NA			NA			NA		
07 Education	NA			NA			NA		
08 Management & Commerce	NA			NA			NA		
09 Society & Culture	NA			NA			NA		
All other fields of education	NA			NA			NA		
Total	94.4	86.5	100.0	85.2	73.8	96.6	90.6	80.8	100.0
University B									
01 Natural & Physical Sciences	NA			NA			NA		
03 Engineering & Related Technologies	NA			NA			NA		
07 Education	NA			NA			NA		
08 Management & Commerce	NA			NA			NA		
09 Society & Culture	NA			NA			NA		
All other fields of education	NA			NA			NA		
Total	94.7	88.2	100.0	84.0	74.3	93.7	90.4	82.3	98.6
University C									
01 Natural & Physical Sciences	92.5	83.4	100.0	79.2	66.4	92.1	100.0	98.0	100.0
03 Engineering & Related Technologies	93.0	83.0	100.0	95.3	86.7	100.0	97.7	90.8	100.0
07 Education	94.6	86.9	100.0	94.6	86.9	100.0	98.1	92.7	100.0
08 Management & Commerce	89.5	81.2	97.7	85.5	76.3	94.8	93.3	86.3	100.0
09 Society & Culture	93.9	88.1	99.6	83.7	75.3	92.0	96.8	92.3	100.0
All other fields of education	NA			NA			NA		
Total	92.6	89.5	95.8	86.8	82.8	90.8	96.8	94.6	99.1
University D									
01 Natural & Physical Sciences	NA			NA			NA		
03 Engineering & Related Technologies	NA			NA			NA		
07 Education	NA			NA			NA		
08 Management & Commerce	NA			NA			NA		
09 Society & Culture	NA			NA			NA		
All other fields of education	88.5	72.2	100.0	80.8	61.6	100.0	92.0	77.2	100.0
Total	88.1	80.0	96.2	85.7	77.0	94.4	93.9	87.5	100.0
All pilot universities									
01 Natural & Physical Sciences	90.8	83.0	98.6	78.9	68.4	89.5	100.0	98.6	100.0
03 Engineering & Related Technologies	93.8	86.5	100.0	87.7	78.1	97.2	95.4	88.7	100.0
07 Education	96.2	91.5	100.0	90.4	83.7	97.0	93.1	87.2	99.0
08 Management & Commerce	89.1	82.0	96.2	86.1	78.4	93.9	90.7	83.9	97.5
09 Society & Culture	92.1	87.1	97.0	86.8	80.7	92.8	96.6	93.0	100.0
All other fields of education	92.9	82.6	100.0	83.3	69.6	97.1	92.7	82.2	100.0
Total	92.4	90.0	94.8	86.1	83.0	89.2	94.8	92.8	96.9

NOTE: NA indicates that there are fewer than 25 records in the cell.

The second important observation is that even where sample sizes are sufficient for reporting (there are 25 responses or more), the confidence intervals are too wide (and the variation in scores too small) to observe statistically significant differences between categories. This can be clearly observed in Figure 9 and Figure 10. This implies a larger survey of employers would be required to detect statistically significant differences in employer satisfaction.

Figure 9 compares the supervisors' overall rating, technical skills rating, and foundation skills rating for University A and University D. These are the two universities for which all fields of education were sampled. For none of the three ratings is there a clear difference between the two universities.

Figure 10 shows the average supervisors' overall rating for each of the five priority fields of education (from across all four universities). Again there are no statistically significant differences between the five broad fields of education.

Figure 9: Comparison of supervisor ratings (University A and University D, with 95% confidence intervals)

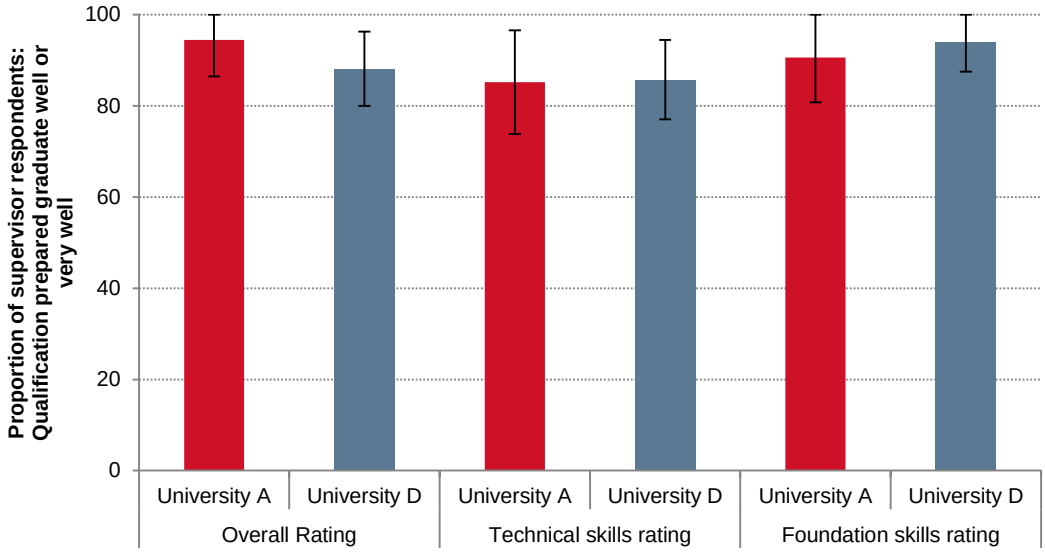
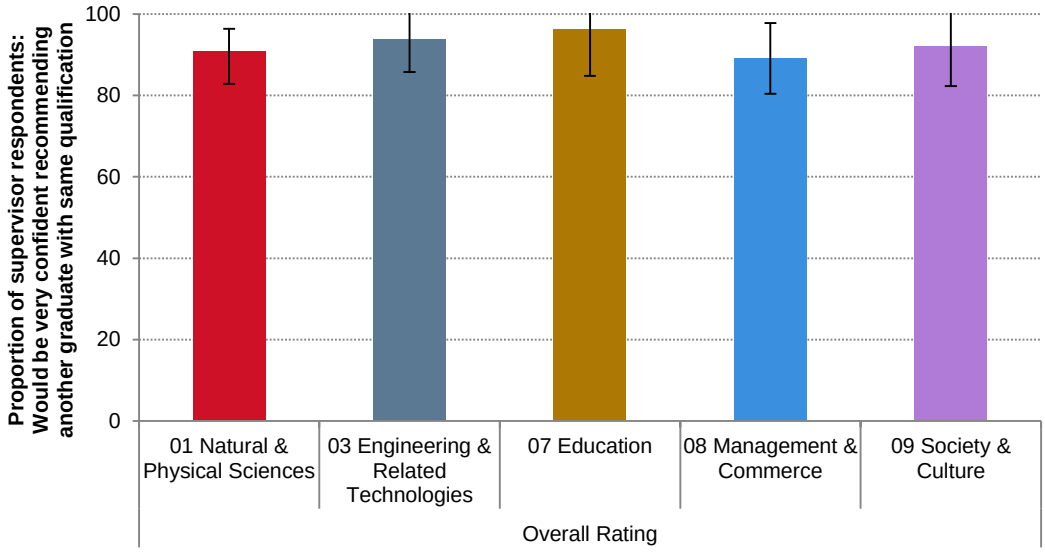


Figure 10: Comparison of supervisor ratings (by field of education, with 95% confidence intervals)



8.1.10. ITEM PERFORMANCE

In both the graduate and supervisor surveys, respondents were given the option of answering that a particular skill or attribute was "Not Applicable". Table 29 records the percentage of respondents (graduates and supervisors) giving this response for each item. Items recording a very high proportion of not applicable responses were:

- Ability to operate in an international and multicultural context (22.5%)

- Managerial and leadership skills (19.3%)
- Understanding the fundamentals of business performance (13.0%)
- Numeracy (13.0%)

Table 29: Proportion of "Not applicable" responses to skills and attributes items

Skill or attribute	Skill or attribute is not applicable to graduate's role (%)
	Supervisor
A. Foundation Skills	
Oral communication skills	2.6
Written communication skills	4.3
Numeracy	13.0
Capacity to develop knowledge and skills	0.3
Capacity to analyse and solve problems	1.7
B. Adaptive Skills and attributes	
Broad background general knowledge	2.6
Capacity to understand different viewpoints	1.5
Ability to develop innovative ideas or identify new opportunities	5.1
Ability to operate in an international and multicultural context	22.5
Capacity to work autonomously	1.9
C. Teamwork and interpersonal skills	
Capacity for co-operation and teamwork	0.9
Getting on well with colleagues and co-workers	0.7
Collaborating effectively with colleagues to complete tasks	1.5
D. Technical skills and domain-specific knowledge	
Using knowledge of concepts and principles to understand new workplace problems	3.9
Effective use of technologies	3.7
Applying technical skills in a workplace context	3.2
Observing professional and general ethical standards	2.0
E. Employability skills	
Ability to cope with work pressure and stress	2.0
Capacity to be flexible and adaptable	1.3
Ability to meet deadlines	2.4
F. Enterprise skills	
Understanding how to research to get results	7.1
Understanding the fundamentals of business performance	13.0
Managerial and leadership skills	19.3

In Appendix F, the breakdown of "Not applicable" responses by field of education is shown. This breakdown shows that the ability to operate in an international and multicultural context and managerial and leadership skills are not required by employers of many graduates across all fields of education. In contrast, numeracy is valued as a requirement of graduate jobs by over 90 per cent of all natural and physical sciences and management and commerce employers and 95 per cent of all engineering and related technologies employers.

This would suggest, based solely on the criterion of the proportion of 'not applicable' responses, that there is benefit in removing the "ability to operate in an international and multicultural context", "managerial and leadership skills", and "understanding the fundamentals of business performance" items but retaining the numeracy item.

A more extensive psychometric analysis of the items is included in Appendix F. It demonstrates that in some cases, desirably there could be a better match between the items used and the underlying concepts that the ESS aims to capture. In terms of construct validity, the strongest performing clusters are teamwork and interpersonal skills, technical skills and domain specific knowledge, and enterprise skills. The psychometric analysis suggests closer inspection and further development of other clusters, for example, the foundation skills cluster, may be warranted.

8.1.11. AREAS OF STRENGTH AND AREAS FOR IMPROVEMENT

Both graduates and supervisors were asked in open-ended questions at the end of the survey in what ways they believed the university qualification prepared the graduate well for their current role, and in what ways they believe the qualification could have been improved to better prepare the graduate.

The responses from the graduates and the supervisors were very similar. Commonly identified areas of strength were:

1) Specific knowledge and skills suitable for the field
2) Teamwork and interpersonal skills
3) Written & oral communication skills
4) Research skills
5) Autonomy, self-organisation & flexibility
6) Critical thinking and analytical skills

Table 30 provides supervisor responses by university and Table 31, supervisor responses by field of education. Specific knowledge and skills suitable for the field were most often mentioned by supervisors of graduates from Education and Management and Commerce. Written and oral communication skills were particularly mentioned by supervisors of graduates from Society and Commerce.

Table 30: Proportion of supervisor respondents nominating area as area of strength (by university)

Area of strength	University A	University B	University C	University D	Total
Specific knowledge and skills suitable for the field	59.3	49.3	47.5	50.0	49.4
Teamwork & interpersonal skills	11.1	17.3	20.6	14.3	18.2
Written & oral communication skills	13.0	9.3	18.7	20.2	17.1
Research skills	22.2	8.0	13.2	10.7	13.0
Autonomy, self-organisation & flexibility	11.1	5.3	14.7	6.0	11.7
Critical thinking and analytical skills	9.3	6.7	11.0	13.1	10.6
Broad general knowledge suitable for the field	13.0	14.7	8.6	3.6	9.1
Practical job-based skills	16.7	13.3	5.8	7.1	8.2
Time management	5.6	6.7	7.7	10.7	7.8
Problem solving	5.6	4.0	9.8	2.4	7.4
Ability to learn new skills & acquire new knowledge	9.3	6.7	7.7	6.0	7.4
Information technology skills	9.3	13.3	5.2	4.8	6.7
Work ethic	1.9	5.3	6.1	10.7	6.3
Confidence	3.7	1.3	4.9	3.6	4.1
Openness to new ideas and other points of view	-	1.3	3.4	3.6	2.8
Management & leadership skills	5.6	4.0	1.5	-	2.0
Career management skills	3.7	-	.6	-	.7
No comment	-	-	1.2	-	.7
NA - qualification not relevant	-	-	2.1	1.2	1.5
None - formal qualification only	1.9	-	.9	-	.7
Other	1.9	6.7	1.5	4.8	2.8
None - did not prepare graduate well	-	1.3	.3	1.2	.6
Refused	1.9	1.3	.3	-	.6
Don t know	3.7	10.7	4.6	9.5	6.1

Table 31: Proportion of supervisor respondents nominating area as area of strength (by field of education)

Area of strength	Field of education						
	01	03	07	08	09	Other	Total
Specific knowledge and skills suitable for the field	38.2	53.8	64.4	53.5	39.7	50.0	49.4
Teamwork & interpersonal skills	15.8	16.9	21.2	14.9	21.9	11.9	18.2
Written & oral communication skills	14.5	16.9	8.7	11.9	27.2	19.0	17.1
Research skills	9.2	9.2	10.6	12.9	17.2	16.7	13.0
Autonomy, self-organisation & flexibility	6.6	10.8	13.5	10.9	15.2	7.1	11.7
Critical thinking and analytical skills	5.3	16.9	2.9	10.9	15.2	11.9	10.6
Broad general knowledge suitable for the field	13.2	10.8	3.8	10.9	9.3	7.1	9.1
Practical job-based skills	7.9	1.5	15.4	4.0	6.6	16.7	8.2
Time management	13.2	4.6	3.8	6.9	11.3	2.4	7.8
Problem solving	11.8	16.9	1.0	9.9	6.0	-	7.4
Ability to learn new skills & acquire new knowledge	6.6	6.2	5.8	6.9	7.3	16.7	7.4
Information technology skills	3.9	18.5	11.5	5.9	2.0	-	6.7
Work ethic	3.9	6.2	5.8	7.9	6.0	9.5	6.3
Confidence	5.3	1.5	4.8	2.0	6.0	2.4	4.1
Openness to new ideas and other points of view	3.9	1.5	2.9	3.0	2.6	2.4	2.8
Management & leadership skills	1.3	3.1	3.8	2.0	1.3	-	2.0
Career management skills	-	-	1.0	1.0	.7	2.4	.7
No comment	1.3	-	-	1.0	1.3	-	.7
NA - qualification not relevant	5.3	-	-	3.0	-	2.4	1.5
None - formal qualification only	-	-	1.0	1.0	1.3	-	.7
Other	7.9	4.6	1.0	-	2.6	2.4	2.8
None - did not prepare graduate well	-	1.5	1.9	-	-	-	.6
Refused	1.3	-	-	-	.7	2.4	.6
Don t know	6.6	4.6	5.8	5.9	6.0	9.5	6.1

There was considerable overlap between the areas of strength and suggested areas for improvement. However, the most common areas for improvement (summarised in Table 32 by university and in Table 33 by field of education) were mainly restricted to specific knowledge and skills suitable for the field and practical job-based skills. Very few supervisors mentioned any of the more generic skill categories.

Table 32: Proportion of supervisor respondents nominating area as requiring improvement (by university)

Area for improvement	University A	University B	University C	University D	Total
Specific knowledge and skills suitable for the field	48.1	36.0	21.2	21.0	26.0
Practical job-based skills	25.9	37.3	19.9	30.9	24.7
Teamwork & interpersonal skills	3.7	4.0	5.0	8.6	5.3
Written & oral communication skills	3.7	4.0	4.7	2.5	4.1
Time management	-	4.0	3.4	3.7	3.2
Management & leadership skills	5.6	1.3	3.1	3.7	3.2
Autonomy, self-organisation & flexibility	-	-	3.7	3.7	2.8
Broad general knowledge suitable for the field	1.9	1.3	2.8	2.5	2.4
Information technology skills	-	2.7	2.5	1.2	2.1
Work ethic	-	1.3	1.6	2.5	1.5
Problem solving	-	1.3	1.9	-	1.3
Openness to new ideas and other points of view	-	4.0	1.2	-	1.3
Career management skills	-	-	1.6	1.2	1.1
Critical thinking and analytical skills	-	1.3	1.2	-	.9
Research skills	-	-	.6	1.2	.6
Confidence	-	-	.6	1.2	.6
Ability to learn new skills & acquire new knowledge	-	1.3	-	-	.2
No comment	31.5	18.7	13.4	11.1	15.6
NA - qualification not relevant	-	4.0	17.8	19.8	14.3
Other	-	2.7	1.9	-	1.5
None - did not prepare graduate well	-	-	.6	1.2	.6
Refused	-	4.0	2.5	-	2.1
Don t know	9.3	5.3	10.9	9.9	9.8
Specific knowledge and skills suitable for the field	48.1	36.0	21.2	21.0	26.0

Table 33: Proportion of supervisor respondents nominating area as requiring improvement (by field of education)

Area for improvement	Field of education						
	01	03	07	08	09	Other	Total
Specific knowledge and skills suitable for the field	20.0	40.6	38.2	22.0	17.3	25.0	26.0
Practical job-based skills	18.7	23.4	36.3	20.0	24.0	22.5	24.7
Teamwork & interpersonal skills	2.7	3.1	4.9	9.0	5.3	5.0	5.3
Written & oral communication skills	4.0	9.4	3.9	6.0	1.3	2.5	4.1
Time management	2.7	3.1	4.9	3.0	2.7	2.5	3.2
Management & leadership skills	1.3	4.7	5.9	3.0	2.7	-	3.2
Autonomy, self-organisation & flexibility	6.7	3.1	1.0	3.0	2.7	-	2.8
Broad general knowledge suitable for the field	1.3	4.7	2.0	1.0	4.0	-	2.4
Information technology skills	-	1.6	2.9	6.0	.7	-	2.1
Work ethic	-	1.6	2.0	1.0	1.3	5.0	1.5
Problem solving	1.3	1.6	1.0	4.0	-	-	1.3
Openness to new ideas and other points of view	-	3.1	3.9	1.0	-	-	1.3
Career management skills	1.3	1.6	-	3.0	.7	-	1.1
Critical thinking and analytical skills	-	1.6	-	3.0	.7	-	.9
Research skills	1.3	-	-	1.0	-	2.5	.6
Confidence	-	-	1.0	-	1.3	-	.6
Ability to learn new skills & acquire new knowledge	-	-	-	-	.7	-	.2
No comment	12.0	10.9	11.8	15.0	18.0	32.5	15.6
NA - qualification not relevant	21.3	10.9	6.9	21.0	15.3	5.0	14.3
Other	1.3	3.1	2.0	1.0	1.3	-	1.5
None - did not prepare graduate well	2.7	-	1.0	-	-	-	.6
Refused	2.7	3.1	3.9	1.0	1.3	-	2.1
Don t know	16.0	1.6	5.9	8.0	14.0	10.0	9.8

8.2. IMPACT OF WORK CHARACTERISTICS

In this section, the relationship between supervisor ratings and characteristics of the employing organisation, the supervisor, and the employment characteristics of the graduate is examined. Overall, the differences are small and less substantial than the variation by field of education already discussed.

8.2.1. EMPLOYMENT CHARACTERISTICS OF THE GRADUATE

Most of the differences in supervisor ratings based on the graduate's employment characteristics are very slight, with the largest variation occurring in the technical skills rating. Supervisors of graduates working part-time, graduates working in sales, machinery operators and drivers, or labouring occupations, and supervisors of graduates who were not employed in jobs relevant to their degree rated the graduates' qualifications less highly for providing the graduate with relevant technical skills. Otherwise, the overall ratings and foundation skills ratings were (with one exception) consistently above 90 per cent (see Table 34).

Table 34: Supervisor overall, technical and foundation skills ratings by graduate employment characteristics

	Supervisor rating		
	Overall	**Technical**	**Foundation**
Working hours			
Full-time (35 hours of more per week)	92.6	89.2	94.9
Part-time (less than 35 hours per week)	91.8	78.5	94.6
Total	92.4	86.1	94.8
Occupation			
Managerial or Professional	91.3	88.0	94.2
Trades & Technical, Community & Personal Services, or Clerical & Administrative	94.4	84.1	95.1
Sales, Machinery Operators & Drivers, or Labourers	96.2	75.5	98.0
Total	92.4	86.0	94.7
Relevance of qualification to job			
Not relevant/important	88.5	77.7	94.3
Fairly or very relevant/important	93.6	88.7	95.0
Total	92.4	86.0	94.8

8.2.2. SUPERVISOR CHARACTERISTICS

Supervisors who had been supervising the graduate longer tended to give a higher overall rating but a lower technical skills rating than respondents who had only been supervising the graduate for a shorter period (see Table 35).

There was no meaningful difference in ratings based on the supervisor's occupation (particularly whether or not the supervisor was in a specialist management role).

Table 35: Supervisor overall, technical and foundation skills ratings by supervisor characteristics

	Supervisor rating		
	Overall	**Technical**	**Foundation**
Duration of supervisory relationship			
Less than 3 months	84.7	96.6	91.2
At least 3 months but less than 12 months	91.3	85.2	96.6
At least 12 months	94.6	85.0	94.8
All valid durations	92.4	86.4	95.0
Supervisor occupation			
Manager	91.4	85.0	94.2
Professional	92.5	85.4	94.4
All other occupational categories	96.1	94.1	100.0
All valid occupations	92.2	86.0	94.8

8.2.3. WORKPLACE CHARACTERISTICS

Overall, the results in Table 36 show very little variation in supervisor ratings based on workplace characteristics but there are two findings worthy of comment.

Supervisors from small workplaces tended to rate graduates less highly than supervisors from larger enterprises – a result that could explain a gap between reports of CEOs' appraisal of graduate preparedness (Hare 2014) and other surveys of graduate employers that show very high levels of satisfaction with graduates (e.g. GCA 2014).

There were no differences by sector but across the three ratings (overall, technical skills and foundation skills), supervisors from the information, business, financial and property services gave the lowest average ratings.

Table 36: Supervisor overall, technical and foundation skills ratings by workplace characteristics

	Supervisor rating		
	Overall	**Technical**	**Foundation**
Enterprise size			
1 to 19 employees	87.0	82.4	91.4
20 to 99 employees	95.8	89.1	95.8
100 or more employees	92.9	86.5	95.6
All	92.4	86.1	94.8
.			
Sector			
Public/Government	93.6	86.6	95.4
Not for profit	93.1	86.2	96.4
Private	92.1	86.1	94.5
All	92.4	86.1	94.8
Industry			
Agriculture, mining, manufacturing, construction, transport, utilities, wholesale trade	95.2	88.0	96.4
Retail trade, hospitality, personal and recreation services	96.1	78.9	94.4
Information, business, financial and property services	88.7	84.0	91.8
Government administration, education, health and community services	92.9	89.3	96.3
All valid industry responses	92.5	86.1	94.8

8.3. THE GRADUATE RATINGS OF NON-REFERRALS

A very substantial proportion of graduate respondents (around three quarters) did not successfully recruit their supervisor to participate in the survey. This represents a high level of non-participation and greatly increases the risk of non-referral bias in the supervisor ratings presented in this report.

Obviously the supervisor ratings for graduates who did not refer their supervisors are unknown. However, as a guide to estimating the potential extent of non-referral bias, we can examine the graduate self-ratings of both groups (graduate referrers and graduate non-referrers). Table 37 shows that there is a gap of between five and ten percentage points between the self-ratings of graduates whose supervisors participated in the study and the ratings of graduates whose supervisors did not.

In 8.1, it was observed that for the three main rating categories (overall, technical and foundation skills), graduate ratings were generally lower than the supervisor ratings. The correlations between the graduate and supervisor ratings are not particularly strong (except for technical skills) so it is difficult to predict what the actual supervisor ratings of the non-referring graduates would be. However, there is no particular reason to assume that the gap between graduate rating and supervisor rating would be smaller. Conversely it might be reasonable to assume that the gap between graduate rating and supervisor rating for non-referrers would be greater than for referrers, if the reason for non-referral was fear or suspicion of a poor rating or that the job held by the graduate was not relevant to their qualification.

Table 37: Supervisor overall, technical and foundation skills ratings by workplace characteristics

Area of rating	Graduate rating	
	Supervisor participated in survey	Supervisor did not participate in survey
Overall rating	73.8	63.4
Technical skills rating	67.4	60.1
Foundation skills rating	88.7	80.9

9. CONCLUSIONS

9.1. CONCLUSIONS ABOUT GRADUATES' GENERIC AND TECHNICAL SKILLS

Overall, both graduate and supervisor respondents gave very positive feedback about the degree to which university qualifications prepare graduates with the range of technical and generic skills required in the graduate labour market.

The most highly rated skills clusters were teamwork and interpersonal skills, foundation skills, and adaptive skills. However, even enterprise skills (the lowest rating category) were favourably rated, while noting that a sizable proportion of supervisor respondents reporting that these skills (particularly managerial and leadership skills) were not required by graduates in their current role. These ratings are likely to be upwardly biased, as a comparison of graduate ratings between those who referred their supervisor and those who did not showed differences of between five and ten percentage points.

A striking finding is the consistent degree to which supervisors rated their graduate's qualifications even more highly than the graduates themselves, suggesting that graduates are a very reliable source of information about the quality of the qualifications they have recently completed and how well they meet labour market requirements.

9.2. CONCLUSIONS ABOUT THE SURVEY METHODOLOGY

9.2.1. APPROPRIATE USES OF THE METHODOLOGY AS PILOTED

The pilot ESS has provided very useful indicative results about the degree of satisfaction by employers with the overall level of graduates' skills and attributes. At the same time, the pilot survey has identified a number of weaknesses and shortcomings in the current methodology that require further attention to improve the robustness and validity of the results.

This report details that, despite a number of pro-active measures to reduce the anticipated risks of the methodology, the methodological approach as piloted will require further enhancement and improvement in order to provide a robust, viable and efficient method of collecting data from employers on the qualifications of graduates from all universities and all fields of education.

For example, the report has identified that the following shortcomings will need to be addressed:

- Availability of sample (in some cases, universities may not hold extensive and reliable contact details for graduates)
- Supervisor referral rates (only 25 per cent)
- Cost of data collection (14 hours of interviewer time per completed supervisor survey)
- Presence of non-referral bias (the ratings of the graduates whose supervisors did not take part in the study were between five and ten percentage points lower than those who did)
- Insufficient variation in responses to allow for discrimination between universities and/or fields of education.

An enhanced survey of graduates'' workplace supervisors from all universities and fields of education will serve very useful functions, particularly as a form of quality assurance on how well the higher education system is meeting employer needs and as a source of qualitative data on how well courses

are performing and what improvements can be made. There is therefore benefit in continuing the further development of the ESS as a national survey including all universities and fields of education.

Recommendation 1: Future use of the ESS

It is recommended that the ESS methodology be further developed to systematically gather feedback from employers on graduates' generic skills, technical skills and work readiness.

9.2.2. DEPLOYMENT AND ADMINISTRATION APPROACH

The significant costs of the ESS methodology could be partially defrayed if at least some parts of the survey were nested within existing surveys. Currently, the Australian Graduate Survey (AGS) contains an option for graduate respondents to opt in to participating in future research. At the moment, this research involves the *Beyond Graduation Survey*, conducted online by graduates three years and five years after completing their course of study. Note, that currently not all Table A institutions participate in the Beyond Graduation Survey. In future, it would be desirable that the AGS contain an option for graduate respondents to in addition opt in to participating in an ESS

Working off the AGS respondent sample would also improve the quality and consistency of the graduates' contact details, reduce the burden on individual institutions to supply sample detail and limit the privacy considerations of transferring data between multiple organisations.

Recommendation 2: Integration with other surveys

It is recommended that any future versions of the ESS be operated as an adjunct to the Australian Graduate Survey (AGS) or in conjunction with the Beyond Graduation Survey (BGS).

The first wave of the Beyond Graduation Survey takes place three years after graduation. Ideally, the workplace supervisor survey should occur sooner than that (probably not much more than 12 months after completing a qualification) if supervisor responses are to reflect an accurate appraisal of the skills and attributes a graduate displayed immediately after graduation.

Recommendation 3: Fieldwork timing

It is recommended that any future versions of the ESS take place between six and twelve months after the graduate completes his or her course.

Leveraging future versions of the ESS would remove, entirely or substantially, the cost of the graduate component of the ESS. In terms of the supervisor component, desirably this should continue to be conducted by CATI to ensure high supervisor response rates.

Recommendation 4: Mode of survey delivery

It is recommended that any future versions of the ESS be conducted as a telephone survey of workplace supervisors.

9.2.3. POPULATION AND SAMPLING

For the purposes of the pilot, it was decided to employ a mixture of student selection strategies. At the two small institutions, all domestic bachelor graduates were included. At one of the large institutions, only AGS respondents from the priority fields of education were included. At the other large institution, all domestic bachelor graduates from the priority fields of education were included.

Except for the largest institution, the survey generally failed to reach adequate numbers of responses for reporting at the institutional by field of education level. This would certainly suggest that any sampling approach less than a full census would not yield sufficient numbers to produce a worthwhile survey that could detect whether there were statistically significant differences in employer

satisfaction across institutions and fields of education. Therefore, given Recommendation 2, it would appear desirable that the population frame is based on a census of AGS respondents.

Recommendation 5: Selection method

It is recommended that any future versions of the ESS be based on a full census of all respondents to the AGS.

9.2.4. FURTHER DEVELOPMENT OF THE ESS

The pilot ESS has demonstrated that the questionnaire would benefit from further investigation and development.

The overall rating and the technical skills items performed well.

The items measuring employer perceptions of specific graduate skills and attributes and their grouping into clusters, while informed by a review of relevant literature, were mainly based on items from previous employer surveys conducted at single universities. While the factor analysis results for some clusters were good (teamwork, disciplinary skills), the results for others were less satisfactory (enterprise skills, employability skills, and adaptive skills).

The results from the ESS pilot survey indicate two areas that can be further improved. First, the results indicate that not all of items in the clusters included in the questionnaire (particularly the item in the adaptive skills and attributes cluster, 'ability to operate in an international and multicultural context) are perceived as relevant by employers of graduates from all fields of education. Second, the confirmatory factor analysis demonstrated that items in many of the clusters could be improved. For example, items in the foundation skills, adaptive skills and attributes and employability skills clusters may warrant closer scrutiny and further development for the purposes of improving measurement of those constructs.

In the interests of improving the robustness and validity of results from the, there would appear to be benefit in conducting more extensive cognitive testing of the clusters and individual items.

Recommendation 6: Further development of the ESS

It is recommended that further development of items and clusters be undertaken in future administrations of the ESS survey.

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APPENDICES

Appendix A: Commonalities between the approaches and alignment with the Objectives of the ESS

Proposed Groupings (ESS)	Assuring Graduate Outcomes (2011)	AQF Generic Skills	Australian curriculum General capabilities
A. Foundation Skills	1. Written and oral communication	Communication skills to present a clear, coherent and independent exposition of knowledge and ideas	Literacy
	2. Critical and analytical (and sometimes creative and reflective) thinking	Cognitive skills to review critically, analyse, consolidate and synthesise knowledge	Numeracy
	3. Problem-solving (including generating ideas and innovative solutions	Cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence	Critical and creative thinking
B. Adaptive capacity	5. Learning and working independently	Adapt knowledge and skills in diverse contexts	Ethical understanding
	7. Ethical and inclusive engagement with communities, cultures and nations		Intercultural understanding
C. Teamwork skills	6. Learning and working collaboratively	Responsibility and accountability for own learning and professional practice and in collaboration with others within broad parameters (PART)	Personal and social capability
D. Technical skills & domain-specific knowledge	4. Information literacy, often associated with technology	Cognitive and technical skills to demonstrate a broad understanding of knowledge with depth in some areas	Information and communication technology capability
E. Employability skills		Initiative and judgement in planning, problem solving and decision making in professional practice and skills and/or scholarship	
		Responsibility and accountability for own learning and professional practice and in collaboration with others within broad parameters (PART)	
F. Enterprise skills			

Source: ACARA, 2013; Oliver, 2011; AQF Council, 2013.

Appendix B: Proposed groupings for ESS mapped against other frameworks

Proposed Groupings (ESS)	Mayer	Employability Skills for the Future (2002)	Core Skills for Work (2012)	Australian Blueprint for Career Development
A. Foundation Skills	Communicating ideas and information	1. Communication	2a. Communicate for work	1. Build and maintain a positive self-concept
	Solving problems	3. Problem solving	3b. Make decisions	
	Collecting, analysing and organising information		3c. Identify and solve problems	
	Using mathematical ideas and techniques			
B. Adaptive capacity		7. Learning	2c. Recognise and utilise diverse perspectives	3. Change and grow throughout life — learn to respond to change that affects your wellbeing; develop strategies for responding positively to life and work changes
			3d. Create and innovate	4. Participate in lifelong/continuous learning supportive of career goals
			1b. Work with roles, rights and protocols	5. Locate and effectively use career information in the management of your career
				6. Understand the relationship between work, society and the economy — incorporate your understanding of changing economic, social and employment conditions into your career planning
C. Teamwork skills	Working with others and in teams	2. Team work	2b. Connect and work with others	2. Interact positively with and effectively with others — building positive relationships in life and work
D. Technical skills & domain-specific knowledge	Using technology	8. Technology	3e. Work in a digital world	
E. Employability skills	Planning and organising activities	4. Initiative and enterprise	1a. Manage career and work life	7. Seek, secure/create and maintain work
		5. Planning and organising	3a. Plan and organise	8. Make career-enhancing decisions
		6. Self-management		9. Maintain balanced life and work roles — understand the interrelationship of life roles, incorporate life/work balance into the career process
				10. Understand the changing nature of life and work roles — understand and seek to eliminate gender-bias and stereotypes in your career building; explore non-traditional life and work options
				11. Understand, engage in and manage the career-building process
F. Enterprise skills				

Source: ACCI & BCA, 2002; AEC 1992; DIICCSRTE & DEEWR, 2013; MCEECDYA, 2010.

Proposed Groupings (ESS)	DEETYA Employer Survey (2000)	Monash University Employer Survey (2007)	UniSA Employer Survey (2008)
A. Foundation Skills	1. Literacy	1. Oral communication skills	1. Oral communication skills
	2. Numeracy	2. Written communication skills	2. Written communication skills
	3. Time management skills	3. Numeracy	3. Numeracy
	9. Written business communication skills	5. Capacity to learn new skills	5. Capacity to develop professional knowledge and new skills
	10. Problem solving skills	7. Capacity to analyse and solve problems	7. Capacity to analyse and solve problems
	12. Logical and orderly thinking	21. Time management skills	20. Time management skills
B. Adaptive capacity	8. Academic learning	6. Capacity for enquiry and research	9. Broad background general knowledge
	13. Creativity and flair	10. Broad background general knowledge	10. Capacity to understand different viewpoints
	14. Capacity for independent/critical thinking	12. Capacity to understand different view points	11. Ability to develop new innovative ideas, directions, opportunities or improvements
	23. Ability to benefit from on-the-job training	13. Ability to operate in an international and multicultural context	12. Ability to operate in an international and multicultural context
	21. Flexibility and adaptability	15. Ability to develop professional knowledge and practice	15. Capacity to work autonomously
		17. Capacity to work autonomously	16. Understanding of the needs, interests, protocols and perspectives of Indigenous groups
		18. Understanding of professional ethics	17. Understanding of professional ethics and social responsibility
C. Teamwork skills	5. Interpersonal skills with other staff	19. Capacity for co-operation and teamwork	18. Capacity for co-operation and teamwork
	7. Teamwork	20. Interpersonal skills with colleagues and clients	19. Gets on well with colleagues and co-workers
D. Technical skills & domain-specific knowledge	4. Basic computer skills	4. Effective use of Information and Communication Technologies	4. Effective use of technologies
		8. Ability to apply knowledge in the workplace	8. Ability to apply professional and/or technical knowledge in the workplace
		9. Work skills specific to the functional area	
E. Employability skills	11. Project management skills	22. Ability to cope with work pressure and stress	21. Ability to cope with work pressure and stress
	19. Personal presentation and grooming		22. Capacity to be flexible and adaptable
	20. Capacity to handle pressure		23. Ability to think critically, creatively and reflectively
	18. Maturity		24. Ability to work with initiative and enterprise
	15. Enthusiasm		
	16. Motivation		
F. Enterprise skills	6. Comprehension of business practice	11. General business knowledge	6. Understands how to research and get results
	22. Customer focus/orientation	14. Understanding of fundamentals of business performance	13. Understanding of fundamentals of business performance
	17. Initiative	16. Leadership/Managerial skills	14. Leadership/managerial skills
			22. Capacity to be flexible and adaptable

Source: UniSA, 2009; Monash University, 2013

Proposed Groupings (ESS)	University Experience Survey (Skill Development Items)	Australian Graduate Survey (Generic Skills Scale, Graduate Qualities Scale)	Employer Satisfaction Survey (ESS) (Pilot version)
A. Foundation Skills	Written communication skills	... Sharpened my analytic skills (GSS)	1. Oral communication skills
	Spoken communication skills	... Helped my problem solving skills (GSS)	2. Written communication skills
	Ability to solve complex problems	... Improved my skills in written communication (GSS)	3. Numeracy
		... Feel confident tackling unfamiliar problems (GSS)	4. Capacity to develop knowledge and skills
			5. Capacity to analyse and solve problems
B. Adaptive capacity	Confidence to learn independently	Stimulated my enthusiasm for learning (GQS)	6. Broad background general knowledge
		Developed my confidence to investigate new ideas (GQS)	7. Capacity to understand different viewpoints
		Learn to apply principles to new situations (GQS)	8. Ability to develop innovative ideas or identify new opportunities
		Value perspectives other than my own (GQS)	9. Ability to operate in an international and multicultural context
			10. Capacity to work autonomously
C. Teamwork skills	Ability to work with others	...develop my ability to work as a team member	11. Capacity for co-operation and teamwork
			12. Getting on well with colleagues and co-workers
			13. Collaborating effectively with colleagues to complete tasks
D. Technical skills & domain-specific knowledge	Knowledge of the field(s) you are studying	Broad overview of my field of knowledge (GQS)	14. Using knowledge of concepts and principles to understand new workplace problems
			15. Effective use of technologies
			16. Applying technical skills in a workplace context
			17. Observing professional and general ethical standards
E. Employability skills	Critical thinking skills	... Ability to plan my own work (GSS)	18. Ability to cope with work pressure and stress
	Development of work-related knowledge and skills	Consider what I learned valuable for my future (GQS)	19. Capacity to be flexible and adaptable
			20. Ability to meet deadlines
F. Enterprise skills			21. Understanding how to research to get results
			22. Understanding the fundamentals of business performance
			23. Managerial and leadership skills

Source: GCA, 2012, 2013.

Appendix C: Graduate and Supervisor Questionnaires

Employer Satisfaction Study

GRADUATE SURVEY

ORC RESPONSE TYPE CATEGORIES:

Single Response	SR
Multiple Response	MR
Battery of Statements	LOOP
Open-ended Response	OE
Numeric (specify range e.g. 1-900)	NUM

QG99QUAL = LOAD QUALIFICATION NAME FROM SAMPLE
QG99UNI = LOAD UNIVERSITY NAME FROM SAMPLE
QG99NAME = LOAD GRADUATE NAME FROM SAMPLE
QG99YEAR = LOAD COMPLETION YEAR FROM SAMPLE

INTRODUCTION

Verbal Participation Information Statement

Hello. My name is **<Interviewer Name>**. I'm calling to conduct a survey on behalf of the **<QG99UNI>.** I'm calling from ORC International, a social research company in Melbourne. Am I speaking with **QG99NAME>**?

IF NO, ASK TO SPEAK TO NAMED RESPONDENT & RE-INTRODUCE

This interview relates to the **<QG99QUAL>** qualification you completed at the **<QG99UNI>** in **<QG99YEAR>**. The Australian Department of Education, and the University, would like your feedback on how well you feel your qualification has prepared you for the workplace. Your feedback will help your university and others improve their courses.

This interview is part one of a two-stage process. Part two involves getting your help to arrange a time to ask your workplace supervisor for their feedback on how your university could improve its qualifications to better prepare graduates like you for the workplace. Having feedback from both you and your supervisor will be very valuable for the university.

IF REQUIRED:
This survey aims to ensure that universities are responsive to labour market and industry needs. The questions are designed to measure how well the university has prepared graduates for the workforce, and the employer's satisfaction of the graduate's skills. The survey is not interested in the employer's satisfaction with the graduate as an individual, and the questions in the survey for the supervisor are targeted at skills and work attributes gained through university study.

(IF THEY SAY THAT THEY DO NOT HAVE A SUPERVISOR OR THEY DON'T WANT THEIR SUPERVISOR TO TAKE PART): That's okay. We are still interested in getting some feedback from you about your qualification.

Participation is voluntary and you may withdraw at any time or refuse to answer particular questions. All information you provide is confidential.

Interviews will take less than 10 minutes to complete.

IF NECESSARY: If you wish to speak to someone about the research you can contact Dr. Damian Oliver (Chief Investigator) at the Workplace Research Centre of the University of Sydney on 02 9351 5718 or damian.oliver@sydney.edu.au.

May I go ahead with the survey now?

Yes – OK now	1	Continue
Not now – but OK later	2	Arrange Call Back
Refusal	98	Thank & Close

MONITOR

ASK ALL

This call may be monitored by my supervisor for quality control or coaching purposes. If you do not want this call to be monitored please let me know.

OK to be monitored	1	Continue
Refuses to be monitored	2	

EMPLOYMENT SCREENER

ASK ALL

QG1 Employed

Do you currently have a paid job of any kind?

SR

Yes	1	CONTINUE
No	2	END SURVEY - Thank you for your assistance. The rest of this survey only relates to graduates who are currently in paid work.
Refused – DO NOT READ OUT	98	

ASK ALL

QG13 Australian

Are you working in Australia?

Yes	1	CONTINUE
No	2	END SURVEY – Thank you for your assistance. The rest of this survey only relates to graduates who are currently working in Australia.
Refused – DO NOT READ OUT	98	

ASK ALL

QG2 Hours

How many hours per week do you usually work in your job? If you are employed in more than one job, please answer only for the job you currently work the most hours in. We will call this your MAIN job.

<INTERVIEWER: MAIN JOB DEFINITION: IF MORE THAN ONE JOB: MAIN = JOB WITH MOST HOURS. IF EQUAL HOURS, MAIN = HIGHEST PAID. IF EQUAL HOURS AND EQUAL PAY: MAIN = JOB MOST RECENTLY WORKED AT.>

RECORD HOURS PER WEEK	**NUM [1-1000]**	1
Refused – DO NOT READ OUT		98
Can't Recall – DO NOT READ OUT		99

ASK ALL

QG3a Previously in full-time employment

Before starting this job, had you spent any time working in full-time paid employment?

Yes	1	GO TO QG3b
No	2	GO TO QG4

ASK IF QG3a=YES (1)

QG3b Time previously spent in full-time employment

Before this job, how many years and months had you spent working in full-time paid employment?

INTERVIEWER NOTE: FULL TIME = APPROX 35 HRS

RECORD YEARS	**NUM [0-50]**	1
RECORD MONTHS	**NUM [0-1000]**	2
Refused – DO NOT READ OUT		98
Can't Recall – DO NOT READ OUT		99

QG99EMP = LOAD EMPLOYER NAME FROM SAMPLE
QG99OCC = LOAD JOB OCCUPATION FROM SAMPLE
QG99DUT = LOAD DUTIES FROM SAMPLE
QG99IND = LOAD INDUSTRY FROM SAMPLE
QG99HRS = LOAD HOURS FROM SAMPLE

SECTION 1 - FOR PEOPLE FOR WHOM THERE ARE EMPLOYMENT DETAILS ON FILE:

ASK IF QG99EMP OR QG99IND NOT BLANK, OTHERS GO TO QG5 FILTER

QG4 Confirmation: Main Job

When you completed the Australian Graduate Survey you said that you were working at **<QG99EMP>**? Is that still your main job?

OR IF MISSING EMPLOYER NAME: In April when you completed the Australian Graduate Survey you said that you were working in the **<QG99IND>** industry. Is that still correct?

Yes	1	GO TO QG5 FILTER
No	2	GO TO QG8 FILTER
Refused – DO NOT READ OUT	98	GO TO QG8 FILTER

ASK IF QG4 = YES (1) AND QG99OCC NOT BLANK

QG5 Confirmation - Occupation

In that job, are you still working as a/an <**QG99OCC**>?

Yes	1	GO TO QG8 FILTER
No	2	GO TO QG6 FILTER
Refused – DO NOT READ OUT	98	GO TO QG6 FILTER

ASK IF QG5 = NO OR REFUSED (2 OR 98)

QG6 Occupation

What is the title of your occupation in your current job? That is, what is your job usually called?

INTERVIEWER: GET FULL TITLE. TRY TO AVOID ONE WORD ANSWERS.

FOR E.G. CHILDCARE AIDE, MATHS TEACHER, PASTRY COOK, TANNING MACHINE OPERATOR,

APPRENTICE TOOLMAKER, SHEEP AND WHEAT FARMER.
FOR PUBLIC SERVANTS, PROVIDE OFFICIAL DESIGNATION AND OCCUPATION.
FOR ARMED SERVICES PERSONNEL, PROVIDE RANK AND OCCUPATION.

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

QG7 Duties
What are the main tasks that you usually perform in your job?

INTERVIEWER: GET FULL DETAILS.

PROMPT, IF NECESSARY: What tasks do you do in a usual day?

FOR EXAMPLE: LOOKING AFTER CHILDREN AT A DAY CARE CENTRE, TEACHING SECONDARY SCHOOL STUDENTS, MAKING CAKES AND PASTRIES, OPERATING LEATHER TANNING MACHINE, LEARNING TO MAKE AND REPAIR TOOLS AND DIES, RUNNING A SHEEP AND WHEAT FARM.

FOR MANAGERS, PROVIDE MAIN ACTIVITIES MANAGED.

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

SECTION 2 - FOR PEOPLE WHO HAVE CHANGED JOBS, DID NOT HAVE AN EMPLOYER RECORDED, OR WHO WERE NOT WORKING AT THE TIME OF THE AGS:

ASK IF:
QG4 = NO OR REFUSED (2 OR 98), OR
QG99EMP AND QG99IND = BLANK
QG8 Duration
In what month and year did you start your current job?

RECORD MONTH	**NUM [1-12]**	1
RECORD YEAR	**NUM [1900-2014]**	2
Refused – DO NOT READ OUT		98
Don't know – DO NOT READ OUT		99

ASK IF: QG4 = NO OR REFUSED (2 OR 98) OR QG99OCC = BLANK
QG9 Occupation (new)
What is the full title of your occupation?

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL
QG10 Duties
What are the main tasks that you usually perform in your job?

INTERVIEWER: GET FULL DETAILS.

PROMPT, IF NECESSARY: What tasks do you do in a usual day?

FOR EXAMPLE: LOOKING AFTER CHILDREN AT A DAY CARE CENTRE, TEACHING SECONDARY SCHOOL STUDENTS, MAKING CAKES AND PASTRIES, OPERATING LEATHER TANNING MACHINE, LEARNING TO MAKE AND REPAIR TOOLS AND DIES, RUNNING A SHEEP AND WHEAT FARM.

FOR MANAGERS, PROVIDE MAIN ACTIVITIES MANAGED.

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK IF: QG4 = NO OR REFUSED (2 OR 98) OR QG99IND = BLANK
QG11 Industry
What does your workplace make or do?

INTERVIEWER: DESCRIBE AS FULLY AS POSSIBLE, USING TWO WORDS OR MORE.

FULLY PROBE: MANUFACTURING, PROCESSING, DISTRIBUTING, ETC AND MAIN GOODS PRODUCED, MATERIALS USED, WHOLESALE OR RETAIL, ETC.

FOR EXAMPLE, WHEAT AND SHEEP, BUS CHARTER HEALTH INSURANCE, PRIMARY SCHOOL EDUCATION, CIVIL ENGINEERING CONSULTANCY SERVICE, HOUSE BUILDING, STEEL PIPES.

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL
QG12 Enterprise size
Both within Australia and overseas, approximately how many people are employed in your organisation?

INTERVIEWER NOTE: THIS INCLUDES ALL EMPLOYEES, I.E. FULL-TIME, PART-TIME AND CASUAL.

1 to 19
20 to 99
100 or more
Don't know

1 to 19	1
20 to 99	2
100 or more	3
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL
QG14 Postcode

In what postcode is your employment based?

RECORD POSTCODE	**NUM [0-9999]**	1	Go to QG16

Refused – DO NOT READ OUT		98	Go to QG15
Don't know – DO NOT READ OUT		99	

ASK IF QG14 = REFUSED OR DK (98 OR 99), ELSE QG16

QG15 Suburb

What suburb is your employment based in?

RECORD SUBURB - OE	1
RECORD STATE	2
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL

QG16 Sector

Are you mainly employed in…?

SR

READ OUT CODES 1-3, DO NOT READ OUT REFUSED/DK

INTERVIEWER NOTE:

RSL CLUBS = CODE AS NOT-FOR-PROFIT

UNIVERSITIES = CODE AS PUBLIC/GOVERNMENT

PUBLIC SCHOOLS AND PUBLIC HOSPITALS = CODE AS PUBLIC/GOVERNMENT

PRIVATE SCHOOLS = IF DON'T KNOW CODE AS NOT FOR PROFIT

PRIVATE HOSPITALS = IF DON'T KNOW CODE AS PRIVATE

PUBLIC LISTED COMPANY = PRIVATE

The public/government sector	1
The not for profit sector, or	2
The private sector	3
Refused – DO NOT READ OUT	98
Don't know/unsure – DO NOT READ OUT	99

ASK ALL

QG17 Self-employed

Are you self-employed?

Yes	1
No	2
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

GO TO QG18

SECTION 3 - ANSWERED BY ALL WORKING RESPONDNENTS

ASK ALL

QG18 Formal requirement

Firstly, is <"your qualification" IF QG99QUAL = BLANK, OTHERWISE "a QG99QUAL or similar qualification"> a formal requirement to be able to do your current job?

PROMPT, IF NECESSARY: Were you only eligible to apply for and get your current job because you had that particular qualification?

SR

Yes	1
No	2
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL

QG19 Relevance of qualification

Now, how relevant is your university qualification to your current role? Is it…

READ OUT 1-4

SR

Not at all relevant	1
Not that relevant	2
Fairly relevant	3
Very relevant	4
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

ASK ALL

QG20 Overall impression of qualification (graduates)

Overall, how well did your qualification prepare you for your current job:

READ OUT 1-4

SR

Not at all prepared	1
Not that well prepared	2
Well prepared	3
Very well prepared	4
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

QG21 Technical rating

I asked you earlier about the main tasks or duties in your job: **[DISPLAY DUTIES FROM QG7]**.

How well do you think your qualification prepared you to perform these tasks, at the level your workplace requires from a recent graduate? Would you say….

READ OUT 1-4, DO NOT READ OUT REFUSED OR DK

SR

Not at all prepared	1
Not well prepared	2
Well prepared	3
Very well prepared	4
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

ASK ALL

QG22 Rating of skills

I'd now like to ask you about some specific skills that may be important in your role. For each skill or attribute, how well do you think your qualification prepared you to perform your current role?

For each skill or attribute, I'd like you to answer using the following scale…

READ OUT CODES 1-4, DO NOT READ OUT CODES 97-98

SR

Not at all prepared	1
Not well prepared	2
Well prepared	3
Very well prepared	4
Not Applicable – DO NOT READ OUT	97
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

LOOP

RANDOMISE STATEMENTS WITHIN CATEGORIES

A. Foundation Skills

1. Oral communication skills
2. Written communication skills
3. Numeracy
4. Capacity to develop knowledge and skills
5. Capacity to analyse and solve problems

B. Adaptive Skills and attributes

6. Broad background general knowledge
7. Capacity to understand different viewpoints
10. Capacity to work autonomously

C. Teamwork and interpersonal skills

12. Getting on well with colleagues and co-workers
13. Collaborating effectively with colleagues to complete tasks

ASK ALL

QG23 Open (Positive)

In what ways do you feel that the <**QG99QUAL**> from the <**QG99UNI**> prepared you well for employment in your organisation?

SR

PROBE

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

QG24 Open (Improve)

In what ways do you feel that the <**QG99QUAL**> from the <**QG99UNI**> could have better prepared you for employment in your organisation?

SR

PROBE

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

SECTION 4 – RECRUITMENT OF SUPERVISOR

As I mentioned at the beginning of the interview, the University would also like to collect some feedback about its courses from your current workplace supervisor. The information will be used to improve university courses and the questions are not in any way intended to collect data on your individual performance at work.

IF NECESSARY: We want to get the views of supervisors so that we can link their views to specific university courses in terms of how well these courses equip graduates for the workforce. Only aggregated data will be used in the survey results).

READ OUT ONLY IF PROMPTED:
By supervisor, we mean someone who has the authority to direct you to do certain tasks and who has a good idea of the work that you do in your job.
IF NECESSARY, PROMPT:
If you have more than one supervisor, it does not matter who you nominate.

ASK ALL
QR1 Supervisor
Do you have a current supervisor?

Yes	1	Continue
No	2	Go to CLOSE 1 & abort with NOT RECRUITED
Refused – DO NOT READ OUT	98	
Don't know/Unsure – DO NOT READ OUT	99	

ASK IF QR1 = YES (1), ELSE GO TO CLOSE 1
QR3 Supervisor assist
Would you be willing to talk to your supervisor and ask if they would be willing to assist us with the survey? We would be asking them about the relevance of your qualification to the work you do. The survey would take about the same length of time as this interview – around 10 minutes. The information they provide will be completely confidential.

Yes – need to check with supervisor. CALL BACK	1	GO TO QR2
Yes – no need to check with supervisor, can provide contact details straight away. CONTINUE	2	Go to QR2
Yes – supervisor willing to do survey (supervisor details not collected from graduate). CONTINUE	3	Go to QR2 then Supervisor Intro
No	4	Go to CLOSE 1 & abort with NOT RECRUITED

ASK IF QR3 = YES (1-3), ELSE GO TO CLOSE 1
QR2 Supervisor name
What is their name?

SPECIFY (RECORD) – **OE**	1	IF CODE 3 at QR3 go to Supervisor Intro, otherwise go to QR4.
Refused – DO NOT READ OUT	98	Go to CLOSE 1 & abort with NOT RECRUITED
Don't know – DO NOT READ OUT	99	

ASK IF QR3 = YES, ELSE GO TO CLOSE 1

QR4 Email (supervisor)
Is there an email address for your supervisor that I can send an information sheet about the study to? Please only supply a work email address.

INTERVIEWER: READ BACK SUPERVISOR EMAIL ADDRESS
Can I just read that back to you to check that I have recorded it correctly?

Yes – RECORD EMAIL ADDRESS	1	Go to QR5
No, do not have email address	2	
Refused – DO NOT READ OUT	98	
Don't know – DO NOT READ OUT	99	

ASK IF QR3 = YES, ELSE GO TO CLOSE
QR5 Supervisor phone
What telephone number can we contact your supervisor on? **IF CODE 1 AT QR4:** We will only telephone your supervisor after they have received information about the study.
Please only supply a work telephone number.

INTERVIEWER: RECORD PHONE NUMBER INCLUDING THE AREA CODE

Specify – RECORD PHONE NUMBER	1	Go to QR6
Refused – DO NOT READ OUT	98	Go to CLOSE 1 & abort with NOT RECRUITED
Don't know – DO NOT READ OUT	99	

QS99NAME = LOAD NAME FROM QR2
QS99EMAIL = LOAD EMAIL FROM QR4
QS99PHONE = LOAD PHONE FROM QR5

ASK IF QR5 = 1, ELSE GO TO CLOSE
QR6 Callback time
Is there a good time of day for us to call your supervisor when they are more likely to .be able to speak with us?

INTERVIEWER: RECORD DAY AND TIME

Specify – RECORD DAY AND TIME	1	Go to QR7
Refused – DO NOT READ OUT	98	Go to QR7
Don't know – DO NOT READ OUT	99	

QR7 Switchboard phone
Is there a general switchboard number for your organisation that we can call if we have any trouble reaching your supervisor?

INTERVIEWER: RECORD PHONE NUMBER INCLUDING THE AREA CODE

Specify – RECORD PHONE NUMBER	1	CONTINUE
Refused – DO NOT READ OUT	98	CONTINUE
Don't know – DO NOT READ OUT	99	

QR8 Appointment
It would be great if you could talk to your supervisor to see if you can arrange a convenient day and time for us to call them. If

you'd be willing to do that, we could call you back in the next couple of days to see how you've gone with that. Would you be willing to do that?

Yes	1	Arrange time to call back graduate
No	98	CONTINUE

QR9 Mobile number
In case we have trouble contacting you on this landline, would you mind providing a mobile phone number that we could contact you on?

INTERVIEWER: RECORD MOBIEL PHONE NUMBER

Specify – RECORD PHONE NUMBER	1	CONTINUE
Refused – DO NOT READ OUT	98	CONTINUE
Don't know – DO NOT READ OUT	99	

ASK ALL
QG21 Email (graduate)
Thank you for your assistance with this survey. We would like to provide some feedback to participants about the outcomes of the study. We anticipate finishing the survey in June 2014. If you would like to receive a brief summary of the results, what is the best email address for me to send that to?

INTERVIEWER: READ BACK GRADUATE EMAIL ADDRESS
Can I just read that back to you to check that I have recorded it correctly?

Specify – RECORD EMAIL ADDRESS	1
No email address	97
Not interested in results – DO NOT READ OUT	98

DISPLAY CLOSE 1 IF QR3 = NO OR QR5 = R OR DK (98 OR 99)

CLOSE 1 – SUPERVISOR NOT RECRUITED

Thank you once again for your time today. The researchers appreciate you sharing some of your experiences in the workplace and your views on how well your university qualification prepared you.

As a market research company, we comply with the requirements of the Privacy Act. The information you have provided is confidential and will only be used for market research purposes.

If you wish to verify our company's bona fides, please contact the Australian Market & Social Research Society's Survey Line on 1300 364 830. Should you need to contact us in relation to this survey please call us on (03) 9935 5700.

IF NECESSARY: If you wish to speak to someone about the research you can contact Dr. Damian Oliver (Chief Investigator) at the Workplace Research Centre of the University of Sydney on 02 9351 5718 or damian.oliver@sydney.edu.au.

DISPLAY CLOSE 2 IF QR3 & QR5 = YES

CLOSE 2 – SUPERVISOR RECRUITED

Thank you once again for your time today. The researchers appreciate you sharing some of your experiences in the workplace and your views on how well your university qualification prepared you.

We will be asking similar questions of your workplace supervisor if they agree to take part. The Information Sheet that I am about to email you contains more information about the questions we will be asking your supervisor and what to do if you have any concerns.

As a market research company, we comply with the requirements of the Privacy Act. The information you have provided is confidential and will only be used for market research purposes.

If you wish to verify our company's bona fides, please contact the Australian Market & Social Research Society's Survey Line on 1300 364 830. Should you need to contact us in relation to this survey please call us on (03) 9935 5700.

IF NECESSARY: If you wish to speak to someone about the research you can contact Dr. Damian Oliver (Chief Investigator) at the Workplace Research Centre of the University of Sydney on 02 9351 5718 or damian.oliver@sydney.edu.au.

Employer Satisfaction Study
SUPERVISOR SURVEY

INTRODUCTION

Verbal Participation Information Statement

Hello. My name is <Interviewer Name>. I'm calling from ORC International to conduct a survey on behalf of the Australian Department of Education and the <**QG99UNI**>. **IF NOT CODE 3 AT QR3, DISPLAY:** Am I speaking with <**QS99NAME**>?

IF NO, ASK TO SPEAK TO NAMED RESPONDENT, RE-INTRODUCE

Your colleague <**QG99NAME**> <IF NOT CODE 3 QR3 "provided us with your details and"> indicated that you may be prepared to participate in a survey of how well their qualification/degree from the <**QG99UNI**> has prepared them for their role in your organisation.

This is an important study. The Australian Department of Education wants to ensure that graduates leave university well equipped to meet the needs of organisations like yours.

IF REQUIRED:
This survey aims to ensure that universities are responsive to labour market and industry needs. The questions are designed to measure how well the university has prepared graduates for the workforce, and the employer's satisfaction of the graduate's skills. This survey provides employers and industry with an opportunity to provide feedback and input into the improvement of the quality of future university graduates.

Participation is voluntary and you may withdraw at any time or refuse to answer particular questions. All information you provide is confidential.
Interviews will take around 10 minutes to complete.

IF NECESSARY: If you wish to speak to someone about the research you can contact Dr. Damian Oliver (Chief Investigator) at the Workplace Research Centre of the University of Sydney on 02 9351 5718 or damian.oliver@sydney.edu.au.

May I go ahead with the survey now?

Yes – OK now	1	Continue
Not now – but OK later	2	Arrange Call Back
Refusal	98	Thank & Close

MONITOR

This call may be monitored by my supervisor for quality control or coaching purposes. If you do not want this call to be monitored please let me know.

OK to be monitored	1	Continue
Refuses to be monitored	2	

SECTION 1 - SUPERVISOR BACKGROUND

First I have a few questions about your own job role, so we can understand your relationship to <**QG99NAME**>.

ASK ALL

QS1 Supervisor Relationship Duration
In total how long have you been <**QG99NAME**>'s supervisor?

READ OUT ONLY IF PROMPTED:

By supervisor, we mean a person who has the authority to direct someone to do certain tasks and who has a good idea of the work that the person does in their job.

Less than a month	1
At least a month but less than three months	2
At least three months but less than a year	3
One year or more	4
Refused – DO NOT READ OUT	98
Don't know/Can't Say – DO NOT READ OUT	99

ASK ALL
QS2 Occupation
What is the title of your occupation in your current job? That is, what is your job usually called?

INTERVIEWER: GET FULL TITLE. TRY TO AVOID ONE WORD ANSWERS.

FOR E.G. CHILDCARE AIDE, MATHS TEACHER, PASTRY COOK, TANNING MACHINE OPERATOR, APPRENTICE TOOLMAKER, SHEEP AND WHEAT FARMER.

FOR PUBLIC SERVANTS, PROVIDE OFFICIAL DESIGNATION AND OCCUPATION.

FOR ARMED SERVICES PERSONNEL, PROVIDE RANK AND OCCUPATION.

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL
QS3 Duties
What are the main tasks that you usually perform in this job?

INTERVIEWER: GET FULL DETAILS.
PROMPT, IF NECESSARY: What tasks do you do in a usual day?

FOR EXAMPLE: LOOKING AFTER CHILDREN AT A DAY CARE CENTRE, TEACHING SECONDARY SCHOOL STUDENTS, MAKING CAKES AND PASTRIES, OPERATING LEATHER TANNING MACHINE, LEARNING TO MAKE AND REPAIR TOOLS AND DIES, RUNNING A SHEEP AND WHEAT FARM.
FOR MANAGERS, PROVIDE MAIN ACTIVITIES MANAGED.

SECTION 2 - MIX OF ATTRIBUTES

I'd now like to ask you about what aspects of university study and what skills and attributes you think it is important for recent graduates coming into your organisation to have. Specifically, please answer them in relation to the job currently performed by <**QG99NAME**>.

ASK ALL

QS4 Formal requirement

Firstly, is a <**QG99QUAL**> or similar qualification a formal requirement to be able to do the job currently performed by <**QG99NAME**>?

Yes	1
No	2
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

ASK ALL

QS5 Importance of qualification

Now, how important is having a <**QG99QUAL**> university qualification to being able to do the job well? Is it…

READ OUT 1-4, DO NOT READ OUT REFUSED OR DK

SR

Not at all important	1
Not that important	2
Fairly important	3
Very important	4
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

ASK ALL

QS6 Duties (graduate)

What are the main tasks or duties in <**QG99NAME**>'s job?

INTERVIEWER: GET FULL DETAILS.

PROMPT, IF NECESSARY: What tasks do they do in a usual day?

FOR EXAMPLE: LOOKING AFTER CHILDREN AT A DAY CARE CENTRE, TEACHING SECONDARY SCHOOL STUDENTS, MAKING CAKES AND PASTRIES, OPERATING LEATHER TANNING MACHINE, LEARNING TO MAKE AND REPAIR TOOLS AND DIES, RUNNING A SHEEP AND WHEAT FARM.

FOR MANAGERS, PROVIDE MAIN ACTIVITIES MANAGED.

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL

QS7 Technical rating

How well do you think <**QG99NAME**>'s qualification prepared them to perform these tasks, at the level your workplace requires from a recent graduate? Would you say….

READ OUT 1-4, DO NOT READ OUT REFUSED OR DK

SR

Not at all prepared	1
Not well prepared	2
Well prepared	3
Very well prepared	4

Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

SECTION 3 - RATING OF UNIVERSITY'S PERFORMANCE RE SKILLS

ASK ALL

QS8 Rating of skills

I'd now like to ask you about some specific skills and attributes that may be important for employees in your organisation to have. For each skill or attribute, how well do you think <**QG99NAME**>'s <**QG99QUAL**> from the <**QG99UNI**> prepared them to perform their current role, at the level your workplace requires from a recent graduate?

For each skill or attribute, I'd like you to answer using the following scale…

READ OUT CODES 1-4, DO NOT READ OUT CODES 97-98

SR

Not at all prepared	1
Not well prepared	2
Well prepared	3
Very well prepared	4
Not Applicable – DO NOT READ OUT	97
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

If the skill is not required by <**QG99NAME**> in their role, you can answer "Not applicable".

LOOP

RANDOMISE STATEMENTS WITHIN CATEGORIES

A. Foundation Skills

1. Oral communication skills
2. Written communication skills
3. Numeracy
4. Capacity to develop knowledge and skills
5. Capacity to analyse and solve problems

B. Adaptive Skills and attributes

6. Broad background general knowledge
7. Capacity to understand different viewpoints
8. Ability to develop innovative ideas or identify new opportunities
9. Ability to operate in an international and multicultural context
10. Capacity to work autonomously

C. Teamwork and interpersonal skills

11. Capacity for co-operation and teamwork
12. Getting on well with colleagues and co-workers
13. Collaborating effectively with colleagues to complete tasks

D. Technical skills and domain-specific knowledge

14. Using knowledge of concepts and principles to understand new workplace problems
15. Effective use of technologies
16. Applying technical skills in a workplace context
17. Observing professional and general ethical standards

E. Employability skills

18. Ability to cope with work pressure and stress
19. Capacity to be flexible and adaptable
20. Ability to meet deadlines

F. Enterprise skills
21. Understanding how to research to get results
22. Understanding the fundamentals of business performance
23. Managerial and leadership skills

ASK ALL
QS9 Open (Positive)
In what ways do you feel that the <**QG99QUAL**> from the <**QG99UNI**> prepared this graduate well for employment in your organisation?
SR
PROBE

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL
QS10 Open (Improve)
In what ways do you feel that the <**QG99QUAL**> from the <**QG99UNI**> could have better prepared this graduate for employment in your organisation?
SR
PROBE

SPECIFY (RECORD) – **OE**	1
Refused – DO NOT READ OUT	98
Don't know – DO NOT READ OUT	99

ASK ALL
QS11 Overall rating
On the basis of your experience with <**QG99NAME**>, how confident would you be recommending another <**QG99QUAL**> graduate from the <**QG99UNI**> for a similar position in your organisation?
Would you say…
SR
READ OUT CODES 1 TO 4, DO NOT READ OUT REUFSED OR DK

Not confident at all	1
Not that confident	2
Fairly confident	3
Very confident	4
Refused – DO NOT READ OUT	98
Don't know/Unsure – DO NOT READ OUT	99

CONCLUSION

QS12 Results Feedback
Thanks you for your assistance with this survey. We would like to provide some feedback to participants about the outcomes of the study. We anticipate finishing the survey in June 2014. Would you like to receive a one page summary of the outcomes of the study?

Yes	Go to QS13
No	Go to QS14

QS13 Supervisor Email (confirm)
What is the best email address for the research team to send the summary to?

INTERVIEWER: READ BACK SUPERVISOR EMAIL ADDRESS
Can I just read that back to you to check that I have recorded it correctly?

SPECIFY – RECORD EMAIL ADDRESS	1	Go to QS14
Refused – DO NOT READ OUT	98	
Don't know – DO NOT READ OUT	99	

Note: Provide checkbox to send Supervisor Participant Information Sheet if transferred directly from Graduate Interview.

QS14 Survey Feedback
Do you have any feedback about the conduct or design of this survey?
SR

SPECIFY – RECORD COMMENTS	1	Go to CLOSE
Refused – DO NOT READ OUT	98	
Don't know – DO NOT READ OUT	99	

CLOSE

Thank you once again for your time today.

As a market research company, we comply with the requirements of the Privacy Act. The information you have provided is confidential and will only be used for market research purposes.

If you wish to verify our company's bona fides, please contact the Australian Market & Social Research Society's Survey Line on 1300 364 830. Should you need to contact us in relation to this survey please call us on (03) 9935 5700.

IF NECESSARY: If you wish to speak to someone about the research you can contact Dr. Damian Oliver (Chief Investigator) at the Workplace Research Centre of the University of Sydney on 02 9351 5718 or damian.oliver@sydney.edu.au.

Appendix D: Construction of rating variables

A series of steps are taken to produce the focus area percentage satisfied results used in this report. A selection of the SPSS syntax used to produce these scores is presented below. These steps are identical to those carried out in the 2013 University Experience Survey (UES) report.

All relevant items (both single items and scale items) are rescaled into the conventional reporting metric. Four-point scales are recoded onto a scale that runs from 0, 33.3, 66.6 and 100. These rescaled items are denoted with an "r" suffix. The SPSS syntax to recode the ESS items to the conventional reporting metric is shown in Figure D1.

```
RECODE QG20 (1=0) (2=33.3) (3=66.6) (4=100) (ELSE=SYSMIS) INTO QG20_R.
RECODE QG21A (1=0) (2=33.3) (3=66.6) (4=100) (ELSE=SYSMIS) INTO QG21A_R.
RECODE QG22A1 (1=0) (2=33.3) (3=66.6) (4=100) (ELSE=SYSMIS) INTO QG22A1_R.
RECODE QG22A2 (1=0) (2=33.3) (3=66.6) (4=100) (ELSE=SYSMIS) INTO QG22A2_R.
RECODE QG22A3 (1=0) (2=33.3) (3=66.6) (4=100) (ELSE=SYSMIS) INTO QG22A3_R.
RECODE QG22A4 (1=0) (2=33.3) (3=66.6) (4=100) (ELSE=SYSMIS) INTO QG22A4_R.
RECODE QG22A5 (1=0) (2=33.3) (3=66.6) (4=100) (ELSE=SYSMIS) INTO QG22A5_R.
...
```

Figure D1 SPSS syntax to recode ESS items into the conventional reporting metric

Scores for each focus area are then computed as the mean of the constituent item scores. A focus area score is only computed for respondents who have a valid item score for at least

- Four out of five foundation skills items
- Four out of five adaptive skills and attributes items
- Two out of three teamwork and interpersonal skills items
- Three out of four disciplinary skills and domain-specific knowledge items
- Two out of three employability skills items
- Two out of three enterprise skills items

The SPSS syntax used to generate focus area average scores is shown in Figure D2. The recoded item scores are not retained in the analysis file.

Because the reporting metric for the pilot ESS is percentage satisfied (see Section 1.3), satisfaction variables must be created for each focus area. Percentage satisfied results reflect the percentage of students who achieve a threshold focus area score of 55 or greater. At the individual response level, satisfaction is represented by a binary variable taking the value of one if the student is satisfied with a particular facet of their higher education experience and zero otherwise. The SPSS syntax used to generate these satisfaction variables is presented in Figure 7.

```
COMPUTE FOUNDATION_G=MEAN.4(QG22A1_R, QG22A2_R, QG22A3_R, QG22A4_R, QG22A5_R).
COMPUTE FOUNDATION_S=MEAN.4(QS8A1_R, QS8A2_R, QS8A3_R, QS8A4_R, QS8A5_R).

COMPUTE ADAPTIVE_S=MEAN.4(QS8B6_R, QS8B7_R, QS8B8_R, QS8B9_R, QS8B10_R).
```

```
COMPUTE TEAMWORK_S=MEAN.2(QS8C11_R, QS8C12_R, QS8C13_R).

COMPUTE DISCIPLINARY_S=MEAN.3(QS8D14_R, QS8D15_R, QS8D16_R, QS8D17_R).

COMPUTE EMPLOY_S=MEAN.2(QS8E18_R, QS8E19_R, QS8E20_R).

COMPUTE ENTERPRISE_S=MEAN.2(QS8F21_R, QS8F22_R, QS8F23_R).
```

Figure D2 SPSS syntax used to compute ESS focus area scores

Appendix E: Summary of scores

Table E1: Supervisor responses by university

	University A		University B		University C		University D		Total	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Overall Rating (Supervisor)	94.4	(3.1)	94.7	(2.6)	92.6	(1.4)	88.1	(3.6)	92.4	(1.1)
Technical Skills Rating (Supervisor)	85.2	(4.9)	84.0	(4.3)	86.8	(1.9)	85.7	(3.8)	86.1	(1.5)
Foundation Skills Rating (Supervisor)	90.6	(4.1)	90.4	(3.5)	96.8	(1)	93.9	(2.7)	94.8	(1)
- Oral communication skills	94.2	(3.3)	93.0	(3.1)	94.4	(1.3)	91.5	(3.1)	93.7	(1.1)
- Written communication skills	94.3	(3.2)	91.9	(3.2)	92.9	(1.5)	93.8	(2.7)	93.0	(1.1)
- Numeracy	89.8	(4.4)	95.2	(2.7)	94.5	(1.3)	94.0	(2.9)	94.0	(1.1)
- Capacity to develop knowledge and skills	94.4	(3.1)	93.3	(2.9)	97.5	(0.9)	95.2	(2.4)	96.3	(0.8)
- Capacity to analyse and solve problems	92.3	(3.7)	86.5	(4)	93.8	(1.3)	93.9	(2.7)	92.6	(1.1)
Adaptive Skills Rating (Supervisor)	89.4	(4.5)	86.1	(4.1)	90.0	(1.7)	86.7	(3.7)	88.9	(1.4)
- Broad background general knowledge	88.0	(4.6)	86.3	(4.1)	86.9	(1.9)	90.1	(3.3)	87.4	(1.4)
- Capacity to understand different viewpoints	92.3	(3.7)	89.2	(3.6)	94.4	(1.3)	89.2	(3.4)	92.7	(1.1)
- Ability to develop innovative ideas or identify new opportunities	88.2	(4.6)	78.1	(4.9)	86.4	(2)	84.3	(4)	85.1	(1.6)
- Ability to operate in an international and multicultural context	79.4	(7)	86.4	(4.5)	89.4	(1.9)	94.2	(2.8)	89.0	(1.5)
- Capacity to work autonomously	94.2	(3.3)	89.2	(3.6)	92.1	(1.5)	90.5	(3.2)	91.7	(1.2)
Teamwork Skills Rating (Supervisor)	96.2	(2.6)	91.9	(3.2)	97.5	(0.9)	94.0	(2.6)	96.1	(0.8)
- Capacity for co-operation and teamwork	96.3	(2.6)	95.9	(2.3)	97.2	(0.9)	91.7	(3)	96.1	(0.8)
- Getting on well with colleagues and co-workers	98.1	(1.9)	93.2	(3)	96.3	(1)	94.0	(2.6)	95.7	(0.9)
- Collaborating effectively with colleagues to complete tasks	94.3	(3.2)	90.5	(3.4)	95.6	(1.1)	95.2	(2.3)	94.7	(1)
Disciplinary Skills Rating (Supervisor)	86.3	(4.9)	92.0	(3.2)	94.0	(1.3)	94.0	(2.6)	92.9	(1.1)
- Using knowledge of concepts and principles to understand new workplace problems	84.3	(5.1)	86.7	(4)	90.7	(1.7)	87.7	(3.7)	89.0	(1.4)
- Effective use of technologies	88.7	(4.4)	91.8	(3.2)	92.6	(1.5)	93.9	(2.7)	92.3	(1.2)
- Applying technical skills in a workplace context	90.2	(4.2)	88.0	(3.8)	94.6	(1.3)	91.6	(3.1)	92.7	(1.1)
- Observing professional and general ethical standards	90.0	(4.3)	97.3	(1.9)	95.9	(1.1)	97.6	(1.7)	95.8	(0.9)
Employability Skills Rating (Supervisor)	92.5	(3.7)	82.2	(4.5)	92.6	(1.5)	86.9	(3.7)	90.3	(1.3)
- Ability to cope with work pressure and stress	80.8	(5.5)	76.7	(5)	87.0	(1.9)	75.3	(4.8)	83.1	(1.6)
- Capacity to be flexible and adaptable	90.4	(4.1)	84.7	(4.3)	93.5	(1.4)	90.4	(3.3)	91.5	(1.2)
- Ability to meet deadlines	92.5	(3.7)	88.7	(3.8)	89.9	(1.7)	90.5	(3.2)	90.1	(1.3)
Enterprise Skills Rating (Supervisor)	78.8	(5.7)	65.7	(5.7)	83.3	(2.2)	75.3	(5.1)	79.0	(1.9)
- Understanding how to research to get results	95.9	(2.9)	91.8	(3.2)	94.6	(1.3)	90.1	(3.3)	93.6	(1.1)
- Understanding the fundamentals of business performance	74.1	(6)	58.8	(6)	78.3	(2.5)	69.6	(5.6)	73.7	(2)
- Managerial and leadership skills	63.6	(7.3)	51.6	(6.4)	66.2	(2.9)	69.7	(5.7)	64.4	(2.3)
Min n	34		59		255		66		417	

Table E2: Supervisor responses by Field of Education

	Nat & Phys Sci		Eng & Rel Tech		Education		Mgt & Com		Soc & Cult		Other		Total	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Overall Rating (Supervisor)	90.8	(3.3)	93.8	(3)	96.2	(1.9)	89.1	(3.1)	92.1	(2.2)	92.9	(4)	92.4	(1.1)
Technical Skills Rating (Supervisor)	78.9	(4.7)	87.7	(4.1)	90.4	(2.9)	86.1	(3.5)	86.8	(2.8)	83.3	(5.8)	86.1	(1.5)
Foundation Skills Rating (Supervisor)	100.0	(0)	95.4	(2.6)	93.1	(2.5)	90.7	(3)	96.6	(1.5)	92.7	(4.1)	94.8	(1)
- Oral communication skills	97.3	(1.9)	95.3	(2.7)	96.0	(2)	84.8	(3.6)	95.9	(1.6)	92.7	(4.1)	93.7	(1.1)
- Written communication skills	97.0	(2.1)	89.1	(3.9)	92.2	(2.7)	89.6	(3.1)	94.6	(1.9)	97.5	(2.5)	93.0	(1.1)
- Numeracy	97.1	(2)	98.4	(1.6)	90.2	(3.1)	94.6	(2.4)	93.1	(2.4)	91.7	(4.7)	94.0	(1.1)
- Capacity to develop knowledge and skills	96.0	(2.3)	95.4	(2.6)	98.1	(1.4)	94.1	(2.4)	98.0	(1.1)	92.7	(4.1)	96.3	(0.8)
- Capacity to analyse and solve problems	93.0	(3.1)	90.8	(3.6)	92.2	(2.7)	87.0	(3.4)	96.0	(1.6)	97.6	(2.4)	92.6	(1.1)
Adaptive Skills Rating (Supervisor)	88.1	(4)	90.8	(3.6)	93.2	(2.5)	83.9	(3.8)	90.3	(2.5)	82.9	(5.9)	88.9	(1.4)
- Broad background general knowledge	86.1	(4.1)	78.5	(5.1)	91.3	(2.8)	86.7	(3.4)	89.1	(2.6)	90.0	(4.8)	87.4	(1.4)
- Capacity to understand different viewpoints	93.2	(3)	93.8	(3)	93.3	(2.5)	91.9	(2.8)	93.3	(2)	87.8	(5.2)	92.7	(1.1)
- Ability to develop innovative ideas or identify new opportunities	81.8	(4.8)	84.4	(4.6)	93.3	(2.5)	82.1	(4)	82.8	(3.1)	85.7	(5.5)	85.1	(1.6)
- Ability to operate in an international and multicultural context	92.1	(3.4)	84.6	(5.1)	91.6	(3.1)	87.8	(3.8)	89.4	(2.9)	84.4	(6.5)	89.0	(1.5)
- Capacity to work autonomously	91.8	(3.2)	95.3	(2.7)	94.1	(2.3)	88.9	(3.2)	91.9	(2.3)	85.7	(5.5)	91.7	(1.2)
Teamwork Skills Rating (Supervisor)	97.3	(1.9)	95.4	(2.6)	95.2	(2.1)	96.0	(2)	96.0	(1.6)	97.6	(2.4)	96.1	(0.8)
- Capacity for co-operation and teamwork	98.6	(1.4)	96.9	(2.2)	95.2	(2.1)	96.0	(2)	95.3	(1.7)	95.2	(3.3)	96.1	(0.8)
- Getting on well with colleagues and co-workers	97.3	(1.9)	92.3	(3.3)	97.1	(1.6)	96.0	(2)	94.7	(1.8)	97.6	(2.4)	95.7	(0.9)
- Collaborating effectively with colleagues to complete tasks	97.3	(1.9)	95.3	(2.7)	93.3	(2.5)	93.1	(2.5)	95.2	(1.8)	95.2	(3.3)	94.7	(1)
Disciplinary Skills Rating (Supervisor)	94.2	(2.8)	92.3	(3.3)	89.3	(3.1)	89.1	(3.1)	97.9	(1.2)	92.5	(4.2)	92.9	(1.1)
- Using knowledge of concepts and principles to understand new workplace problems	89.9	(3.7)	90.6	(3.7)	91.0	(2.9)	83.2	(3.7)	93.0	(2.1)	80.5	(6.3)	89.0	(1.4)
- Effective use of technologies	95.8	(2.4)	92.2	(3.4)	91.2	(2.8)	90.0	(3)	93.0	(2.2)	92.5	(4.2)	92.3	(1.2)
- Applying technical skills in a workplace context	89.7	(3.7)	93.8	(3)	90.4	(2.9)	90.0	(3)	96.6	(1.5)	95.0	(3.5)	92.7	(1.1)
- Observing professional and general ethical standards	95.9	(2.3)	95.4	(2.6)	94.2	(2.3)	94.9	(2.2)	98.0	(1.2)	95.0	(3.5)	95.8	(0.9)
Employability Skills Rating (Supervisor)	93.3	(2.9)	86.2	(4.3)	88.5	(3.1)	92.0	(2.7)	91.9	(2.2)	85.7	(5.5)	90.3	(1.3)
- Ability to cope with work pressure and stress	84.7	(4.3)	78.5	(5.1)	81.6	(3.8)	86.0	(3.5)	83.7	(3.1)	82.9	(5.9)	83.1	(1.6)
- Capacity to be flexible and adaptable	97.3	(1.9)	84.6	(4.5)	89.3	(3.1)	89.9	(3)	94.6	(1.9)	90.5	(4.6)	91.5	(1.2)
- Ability to meet deadlines	91.9	(3.2)	90.6	(3.7)	92.2	(2.7)	84.8	(3.6)	91.8	(2.3)	87.8	(5.2)	90.1	(1.3)
Enterprise Skills Rating (Supervisor)	66.7	(6.1)	71.9	(5.7)	80.6	(4.1)	83.3	(3.8)	82.7	(3.3)	83.3	(6.3)	79.0	(1.9)
- Understanding how to research to get results	94.7	(3)	92.2	(3.4)	91.0	(2.9)	90.8	(2.9)	97.2	(1.4)	95.1	(3.4)	93.6	(1.1)
- Understanding the fundamentals of business performance	63.3	(6.3)	65.6	(6)	76.7	(4.6)	77.3	(4.3)	77.8	(3.7)	74.3	(7.5)	73.7	(2)
- Managerial and leadership skills	62.7	(6.3)	54.4	(6.7)	69.4	(5)	59.8	(5.3)	68.1	(4.3)	71.4	(8.7)	64.4	(2.3)
Min n	57		52		83		74		113		28		417	

Table E3: Graduate responses by university

	University A		University B		University C		University D		Total	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Overall Rating (Graduate)	68.6	(3)	74.1	(1.8)	61.9	(1.2)	64.3	(2.6)	65.5	(0.9)
Technical Skills Rating (Graduate)	63.4	(3.3)	67.3	(1.9)	58.9	(1.2)	62.6	(2.6)	61.6	(0.9)
Foundation Skills Rating (Graduate)	81.9	(2.7)	85.1	(1.5)	81.2	(1)	83.9	(2)	82.4	(0.7)
- Oral communication skills	75.6	(3)	82.0	(1.6)	78.0	(1.1)	83.9	(2)	79.4	(0.8)
- Written communication skills	92.0	(1.9)	88.7	(1.3)	86.1	(0.9)	88.8	(1.7)	87.5	(0.6)
- Numeracy	65.4	(3.5)	77.3	(1.8)	71.3	(1.2)	68.5	(2.7)	71.9	(0.9)
- Capacity to develop knowledge and skills	93.8	(1.7)	91.6	(1.2)	90.2	(0.8)	89.4	(1.7)	90.7	(0.6)
- Capacity to analyse and solve problems	93.0	(1.8)	90.2	(1.2)	89.0	(0.8)	90.0	(1.6)	89.7	(0.6)
Adaptive Skills										
- Broad background general knowledge	81.6	(2.7)	80.4	(1.7)	75.2	(1.1)	82.8	(2.1)	77.8	(0.8)
- Capacity to understand different viewpoints	94.3	(1.6)	88.4	(1.3)	87.6	(0.8)	90.2	(1.6)	88.6	(0.6)
- Capacity to work autonomously	92.8	(1.8)	88.7	(1.3)	88.4	(0.8)	88.7	(1.7)	88.8	(0.6)
Teamwork Skills										
- Getting on well with colleagues and co-workers	75.0	(3.1)	84.9	(1.5)	81.0	(1)	82.6	(2.1)	81.6	(0.8)
- Collaborating effectively with colleagues to complete tasks	80.2	(2.8)	89.8	(1.3)	83.5	(0.9)	83.9	(2)	84.7	(0.7)
Min n	182		546		1429		298		2455	

Table E4: Graduate responses by field of education

	Nat & Phys Sci		Eng & Rel Tech		Education		Mgt & Com		Soc & Cult		Other		Total	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Overall Rating (Graduate)	52.4	(2.4)	72.2	(2.7)	78.4	(2.1)	69.7	(1.8)	59.5	(1.7)	70.8	(3.2)	65.5	(0.9)
Technical Skills Rating (Graduate)	52.4	(2.4)	60.5	(2.9)	73.6	(2.3)	66.1	(1.9)	56.7	(1.7)	66.5	(3.7)	61.6	(0.9)
Foundation Skills Rating (Graduate)	82.5	(1.9)	91.3	(1.7)	84.4	(1.9)	82.2	(1.5)	77.4	(1.5)	89.0	(2.5)	82.4	(0.7)
- Oral communication skills	83.1	(1.8)	74.5	(2.6)	84.5	(1.9)	76.1	(1.7)	78.1	(1.5)	86.2	(2.7)	79.4	(0.8)
- Written communication skills	84.5	(1.8)	85.2	(2.1)	89.2	(1.6)	85.4	(1.4)	89.7	(1.1)	92.3	(2.1)	87.5	(0.6)
- Numeracy	78.8	(2)	94.8	(1.3)	74.7	(2.3)	81.7	(1.6)	46.6	(1.9)	78.7	(3.5)	71.9	(0.9)
- Capacity to develop knowledge and skills	87.0	(1.6)	93.2	(1.5)	92.3	(1.4)	90.9	(1.2)	89.9	(1.1)	95.5	(1.7)	90.7	(0.6)
- Capacity to analyse and solve problems	89.6	(1.5)	93.5	(1.5)	86.5	(1.8)	88.7	(1.3)	89.9	(1.1)	93.6	(2)	89.7	(0.6)
Adaptive Skills	.0	(0)	.0	(0)	.0	(0)	.0	(0)	.0	(0)	.0	(0)		
- Broad background general knowledge	73.9	(2.2)	69.8	(2.8)	80.6	(2)	76.4	(1.7)	81.2	(1.4)	83.4	(3)	77.8	(0.8)
- Capacity to understand different viewpoints	83.5	(1.8)	78.1	(2.5)	94.7	(1.2)	88.0	(1.3)	91.5	(1)	93.7	(1.9)	88.6	(0.6)
- Capacity to work autonomously	87.5	(1.6)	87.2	(2)	91.8	(1.4)	87.2	(1.3)	89.8	(1.1)	90.3	(2.4)	88.8	(0.6)
Teamwork Skills	.0	(0)	.0	(0)	.0	(0)	.0	(0)	.0	(0)	.0	(0)		
- Getting on well with colleagues and co-workers	85.2	(1.7)	88.7	(1.9)	84.3	(1.9)	82.3	(1.5)	74.8	(1.5)	85.1	(2.9)	81.6	(0.8)
- Collaborating effectively with colleagues to complete tasks	87.2	(1.6)	92.1	(1.6)	88.2	(1.7)	86.0	(1.4)	77.6	(1.5)	86.6	(2.7)	84.7	(0.7)
Min n	406		271		359		611		672		136		2455	

Appendix F: Item performance and Psychometric analysis

Table F1 shows for each item the proportion of supervisor respondents answering that the skill or attribute was not applicable to the graduate's current role:

Table F1: Proportion of "Not applicable" responses (supervisor ratings) by field of education

	Skill or attribute is not applicable to graduate's role (%)						
	01	03	Ed	M/C	SC	Oth	
A. Foundation Skills - Oral communication skills	2.6	1.5	3.8	2.0	2.6	2.4	2.6
A. Foundation Skills - Written communication skills	13.2	1.5	1.9	5.0	2.0	4.8	4.3
A. Foundation Skills - Numeracy	7.9	3.1	11.5	8.9	23.2	14.3	13.0
A. Foundation Skills - Capacity to develop knowledge and skills	1.3	0.0	0.0	0.0	0.0	2.4	0.4
A. Foundation Skills - Capacity to analyse and solve problems	6.6	0.0	1.9	1.0	0.0	2.4	1.7
B. Adaptive Skills and attributes - Broad background general knowledge	5.3	0.0	1.0	3.0	2.6	4.8	2.6
B. Adaptive Skills and attributes - Capacity to understand different viewpoints	3.9	1.5	0.0	2.0	0.7	2.4	1.5
B. Adaptive Skills and attributes - Ability to develop innovative ideas or identify new opportunities	13.2	1.5	0.0	5.9	3.3	0.0	4.1
B. Adaptive Skills and attributes - Ability to operate in an international and multicultural context	17.1	20.0	19.4	26.7	25.2	23.8	22.5
B. Adaptive Skills and attributes - Capacity to work autonomously	3.9	1.5	1.9	1.0	2.0	0.0	1.9
C. Teamwork and interpersonal skills - Capacity for co-operation and teamwork	3.9	0.0	0.0	1.0	0.7	0.0	0.9
C. Teamwork and interpersonal skills - Getting on well with colleagues and co-workers	2.6	0.0	0.0	1.0	0.7	0.0	0.7
C. Teamwork and interpersonal skills - Collaborating effectively with colleagues to complete tasks	3.9	1.5	0.0	0.0	2.6	0.0	1.5
D. Technical skills and domain-specific knowledge - Using knowledge of concepts and principles to understand new workplace problems	9.2	1.5	3.8	0.0	5.3	2.4	3.9
D. Technical skills and domain-specific knowledge - Effective use of technologies	6.6	1.5	1.9	1.0	6.0	4.8	3.7
D. Technical skills and domain-specific knowledge - Applying technical skills in a workplace context	10.5	0.0	0.0	1.0	4.0	4.8	3.2
D. Technical skills and domain-specific knowledge - Observing professional and general ethical standards	3.9	0.0	0.0	3.0	2.0	4.8	2.0
E. Employability skills - Ability to cope with work pressure and stress	5.3	0.0	1.0	1.0	2.6	2.4	2.0
E. Employability skills - Capacity to be flexible and adaptable	2.6	0.0	1.0	2.0	1.3	0.0	1.3
E. Employability skills - Ability to meet deadlines	2.6	1.5	1.9	2.0	3.3	2.4	2.4
F. Enterprise skills - Understanding how to research to get results	25.0	1.5	3.8	3.0	6.6	2.4	7.1
F. Enterprise skills - Understanding the fundamentals of business performance	21.1	1.5	16.5	4.0	16.6	16.7	13.0
F. Enterprise skills - Managerial and leadership skills	22.4	12.3	18.3	13.9	21.2	33.3	19.3

Psychometric analysis

As the items used in the questionnaire were drawn mainly from previous surveys, two procedures were conducted to test the construct validity of the items against the assumed conceptual clusters:

- Reliability analysis
- Confirmatory factor analysis

Construct validation

Cronbach's alpha is a measure of how closely related a set of items are as a group, where a high alpha value provides evidence that the items measure an underlying construct. It is an increasing function of the number of test items, and also of the average inter-correlation between items. Generally, a value of 0.7 or above is regarded as acceptable.

Table F2 below shows that for 539 supervisor responses, the reliability coefficient is highest in the area of teamwork and interpersonal skills, followed by technical skills and domain specific knowledge. The areas which might be characterised as being more difficult to operationalise (adaptive skills, employability skills, and enterprise skills) all saw significantly lower reliability coefficients. This suggests that further work could be undertaken to better capture these underlying constructs. Perhaps more surprisingly, foundational skills also had a low alpha, however it is conceivable for example that ratings for a graduate's preparedness in numeracy skills (as required by different workplaces) might only have weak links to oral communication skills. Note from earlier in section 8.1.10 that the numeracy item was rated as less applicable in the Education and Society and Culture fields of education. While from a technical viewpoint, there may be grounds for omitting the numeracy item as a means of improving the measure of the foundation skills construct, from a face validity point of view, employers and institutions of Engineering and Related Technologies, Natural and Physical Sciences and Management and Commerce graduates are likely to retain a keen interest in their numeracy skills. On balance, therefore, it would appear sensible to retain the numeracy item and undertake further investigation of developing a more robust measure of the foundation skills construct.

Table F2: Cronbach's alpha values for supervisor ratings

Skill group	Number of items	Cronbach's alpha
Foundational skills	5	0.357
Adaptive skills and attributes	5	0.342
Teamwork and interpersonal Skills	3	0.723
Technical skills and domain-specific knowledge	4	0.637
Employability skills	3	0.389
Enterprise skills	3	0.580

The reliability coefficients were generally higher for the 2708 graduate responses, as shown in Table F3.

Table F3: Cronbach's alpha values for graduate ratings

Skill group	Number of items	Cronbach's alpha
Foundational skills	5	0.621
Adaptive skills and attributes	3	0.700
Teamwork and interpersonal Skills	2	0.703

A principal-components analysis was also conducted for each of the six conceptual areas, extracting a single factor for each. The results shown in Table 3 can be used to reduce the number of items if desired, by eliminating items with low component scores. Table 3 shows that the single factor explained 30.85 percent of the variance of the foundation skill items, and oral and written communication skills represented the highest weightings. The teamwork and interpersonal skills factor explained the greatest proportion of variance arising from its constituent items (65.28%), with all three items contributing strongly.

TableF4 Confirmatory Factor analysis results (by cluster)

Scale	Item	Component score	Variance explained by single factor
Foundation Skills	Oral communication skills	.643	30.85%
	Written communication skills	.775	
	Numeracy	.492	
	Capacity to develop knowledge and skills	-.083	
	Capacity to analyse and solve problems	.528	
Adaptive Skills and attributes	Broad background general knowledge	.506	32.42%
	Capacity to understand different viewpoints	.714	
	Ability to develop innovative ideas or identify new opportunities	.670	
	Ability to operate in an international and multicultural context	.356	
	Capacity to work autonomously	.528	
Teamwork and interpersonal skills	Capacity for co-operation and teamwork	.780	65.28%
	Getting on well with colleagues and co-workers	.815	
	Collaborating effectively with colleagues to complete tasks	.828	
Technical skills and domain-specific knowledge	Using knowledge of concepts and principles to understand new workplace problems	.614	48.52%
	Effective use of technologies	.733	
	Applying technical skills in a workplace context	.812	
	Observing professional and general ethical standards	.606	
Employability skills	Ability to cope with work pressure and stress	.663	45.56%
	Capacity to be flexible and adaptable	.720	
	Ability to meet deadlines	.640	
Enterprise skills	Understanding how to research to get results	.648	54.77%
	Understanding the fundamentals of business performance	.802	
	Managerial and leadership skills	.761	

MORE INFORMATION

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