

# Employer Satisfaction with ICT Graduates

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## Abstract

As part of a study of the teaching of Information and Communications Technology in Australian universities, employers were surveyed in 2001 to find out how satisfied they were with graduates of ICT university courses, and what shortcomings they saw in their education. This paper reports on the findings of that survey. The willingness of employers to employ university graduates depended very much on the size of the company. Graduates were seen as generally deficient in a couple of areas (much the same areas in which employers have been reported as being dissatisfied with graduates from all disciplines, not specifically ICT), but this had little effect on their employability.

*Keywords:* graduate outcomes, employer satisfaction.

## 1 Introduction

In 2001, an investigation was undertaken into learning outcomes and curriculum development in major disciplines in Information and Communications Technology in Australian universities. The study had three major aspects:

- finding out how universities were responding to changing demands, and discovering examples of innovation and good practice in teaching in this area;
- interviewing graduates to see how they felt about how and what they had been taught; and
- surveying potential employers about their needs and their satisfaction with employees who had recently graduated from ICT university courses.

This paper reports on the survey of potential employers. A literature survey was first performed to find what had already been published on this topic. A largely quantitative survey was then devised and administered to many companies that might be expected to employ ICT graduates. Both those who do employ graduates from ICT courses and those who do not employ them were asked to respond to the survey. Respondents were from every state in Australia and a wide range of industries. The sizes of their companies ranged from less than six employees to more than 100. The researchers received over 500 usable responses, a response rate of about 14%.

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This was a lower response rate than the researchers had hoped for, but it is possible to see some interesting trends in the data collected.

## 2 Background

Generally speaking, there is a perceived conflict between the requirements of industry for graduates trained in the specific tools and methodologies that they are currently using, and the desire of universities to teach students in a broader, more theoretical way in order to equip them to deal with what is likely to be used in the future as well as what is current. This must be taken into account when evaluating results of employer surveys.

ICT education is seen as "the dominant engine for productivity improvement and business opportunities" and "a key factor for generating future employment" in Australia (Academy of Technological Sciences and Engineering 1997). Several government initiatives have aimed at producing enough graduates in the ICT discipline to satisfy the needs of industry, most recently the IT&T Skills Task Force (Alston and Kemp 2000). A survey by the IT&T Skills Task Force (2000) indicated a strong growth in most areas in the ICT industry, and an anticipated difficulty in finding enough suitably qualified graduates in the future. In spite of the fact that the number of ICT university graduates has increased dramatically in the last few years, employers continue to complain of skill shortages. However, the employment situation has steadily deteriorated since then.

A survey commissioned by the Australian Computer Society in 2002 showed an unemployment rate among ICT professionals of 11.9%, contradicting official government figures (ACS 2003a). The Australian Computer Society's 2003 Remuneration Survey of computing professionals shows a continued decline in demand for ICT skills, with 31% of respondents having been retrenched at some point in their working lives, and 5.4% being retrenched during the survey period (ACS 2003b). With these unemployment rates for skilled and experienced professionals, it is no wonder that the unemployment rates for new graduates are much higher, or that the preferences among new university students for ICT degrees dropped dramatically in 2003.

At the time of the project, the most recent relevant study was the Employer Satisfaction with Graduate Skills survey, conducted by ACNielsen Research Services for the Department of Education, Training and Youth Affairs (DETYA 2000). The report relates to graduates from university and TAFE sectors, from all discipline areas. Employers rated creativity and flair, enthusiasm and the

capacity for independent and critical thinking as the most important qualities of new graduates. Graduates from all backgrounds were reported as performing poorly in the areas of creativity and flair, and independent and critical thinking. However, in the qualitative responses, employers stated that what they looked for most in graduates was academic achievement, which they used as an indicator of other things such as motivation, problem solving ability, and learning capacity. When isolating graduates in particular discipline areas, those from an ICT course were rated as performing comparatively highly in time management skills, understanding of business practice, and academic learning. They were rated as performing comparatively poorly in the areas of ability to benefit from on-the-job training, written and oral business communication skills, initiative, leadership qualities, personal presentation, numeracy, and problem solving skills. 76% of job applicants overall were reported to be unsuitable for any position in the organisation. University graduates received higher ratings than graduates from TAFE (i.e., Technical And Further Education) institutions across 24 of the 25 skills considered.

From this survey, it was difficult to extrapolate a sense of overall satisfaction with graduates from ICT courses. There are many kinds of ICT courses, including Information Management and Systems, Multimedia, Computer Science, Software Engineering, Computing, and Information Technology. The Nielsen survey, when referring to graduates in the ICT area, used the term "Computer Science", and this may have affected the results to some extent, as some graduates may have been reluctant to classify themselves as in Computer Science if they had done some other computing-related degree such as Information Systems. However, since there are no figures provided for any other computing-related degrees, it appears that the term "Computer Science" is intended to cover them all.

Table 1 shows the figures currently available from the Grad Files, the summary of the findings of the Graduate Careers Council of Australia (Graduate Careers Council of Australia 2003). It is clear that it became much more difficult over the period 1999 - 2002 for new graduates to find full time employment in the ICT industry.

Year degree completed	In full-time employment	Seeking full-time employment, not working	Seeking full-time employment, working part-time
2001	70.5	16.4	13.1
2000	81	12.4	6.7
1999	88.2	7.6	4.2
1998	86.6	8.2	5.3

**Table 1: Computer Science Graduate success in finding employment (from Graduate Careers Council of Australia reports 1999 - 2002)**

### 3 The survey

The Graduate Careers Council of Australia figures (Graduate Careers Council of Australia 2003) also show that, of ICT graduates who were employed in 2002, 76% were employed in private industry.

The project group designed a survey of potential employers of recent university ICT graduates that was intended to capture data from not only those who did employ these kinds of graduates but also from those who did not. It was designed to collect data that would provide information about:

- what attributes employers value in ICT graduates
- how these attributes rank in importance
- how well graduates match up to these expectations
- overall satisfaction with graduates
- likelihood of employers to continue to employ graduates
- employer perceptions of the responsiveness of universities to the needs of industry

If an employer did not currently employ recent university ICT graduates, he was asked whether he ever had done so, whether he expected to do so in the future, and why he was not currently employing them.

The instrument was designed for this study and had not been used before. Survey forms were mailed out to employers whose names were obtained not only from membership lists of professional organisations in the ICT field, but also from a search of the telephone directory for businesses involved in ICT-related activities.

Of the approximately 3500 surveys sent out, about 14% returned usable responses. An unsolicited survey in which respondents are offered no reward is generally expected to generate this level of response.

Of the employers who responded to the survey, about 40% did currently employ recent university ICT graduates, and about 60% did not.

### 4 Survey respondents

Half of the respondents who currently employ recent ICT graduates were from large organizations with 100 or more employees. Only 8% were from small organizations employing less than 6 employees. 83% were from capital cities, which is consistent with Australian demographics. 85% of these respondents had a university degree or higher degree.

Half of the employers who do not currently employ recent ICT graduates were from organizations with less than 6 employees, and another quarter were from organizations with between 6 and 20 employees. A disproportionate number of these employers were from Western Australia, and many were from regional areas. 62% of these respondents had a university degree or higher degree, and a higher proportion than the other group had diploma or certificate level qualifications.

## 5 Employers who do employ recent ICT graduates

These respondents indicated that they were generally satisfied with their graduate employees. 64% of these respondents said that they were highly likely to continue to recruit graduates in the future.

The main areas in which they appeared to be dissatisfied were project management and understanding of business processes. Other areas with a lower level of dissatisfaction were ability to communicate with clients, and written communication skills. However, the dissatisfaction of respondents in these areas did not affect the likelihood that they would continue to employ graduates. There was a relatively strong relationship between the employers' overall satisfaction with graduates, and their perception of the responsiveness of universities to the needs of industry. Large companies tended to have much more interaction with universities than small businesses, in the areas of research, industrial experience, consultation and committees.

It seems that large companies have a range of needs that are generally satisfied by ICT graduates. The areas in which their level of satisfaction is low are the same as have been reported in other studies, about graduates from all disciplines. For example, the 2000 Employer Satisfaction with Graduate Skills Report stated that employers found graduates deficient in the areas of communication, understanding of business processes, and problem solving skills (ACNielsen 2000).

## 6 Employers who do not employ recent ICT graduates

Employers who do not employ recent ICT graduates were asked to explain why. Many did explain, and their replies often fell into more than one of the categories in Table 2.

Reason	%
Not required	35
Business too small	25
Need experienced people	14
Outsource ICT work	8
Could not afford graduates	7
Prefer other qualifications	6
Could not attract graduates	4

**Table 2: Reasons for not employing graduates**

The reason most often cited, "Not required", had a significant overlap with other categories that provided more detail. For example, some respondents said that they did not require graduates because their businesses were too small, or because they did not need the skill levels of a university graduate.

Similarly, the second most common reason, "Business too small", was often accompanied by an explanation that showed that the real reason was something related to

being a small business, e.g. they outsourced their ICT work, or they employed only experienced staff.

Half of the respondents who do not employ graduates had less than 6 employees. The small size of the company meant that they could not afford to train someone or to take the risk of an inexperienced person, and could not offer a career path to a new graduate.

Six percent of respondents indicated that they preferred employees with qualifications other than university degrees. This was often accompanied by comments that the skills of university graduates were outdated or were not exactly what the company needed at the time. This relates to the conflict between the employers' desire for graduates with skills specific to their needs at the time, and the universities' wish to provide students with a broad background and understanding that will enable them to adapt to new situations as required.

Respondents who said that they could not attract graduates usually cited their rural or remote location as the reason for this.

## 7 Suggestions for improvement

Respondents who employ graduates were asked to suggest ways in which universities could better prepare their graduates for work in industry. Suggestions were in the following categories:

- Work experience. 30% of respondents thought that universities should provide students with more work experience. This agrees with findings of other surveys, for example a government review of computing studies which stated that employers preferred graduates who, in addition to being competent technically, had transferable skills and had completed an industry placement (DEET 1992). Comments from our respondents included:

"Work experience is the best training."

"More double degrees, more sandwich courses, more industry lecturers."

"Real life projects. Broad non-computing electives."

- Industry consultation. 17% of respondents thought that there should be more channels for communication between universities and employers, e.g. that industry should play a greater role in course and curriculum design, that there could be more use of industry lecturers, and that university lecturers should stay in touch with what is happening in industry in the sense of current methodologies, etc.
- Industry awareness. 14% suggested that students should be made aware of what to expect in industry.
- Generic skills. 14% suggested that students should be given a more thorough training in written and oral communication skills, teamwork and problem solving. Comments included:

“Give a stronger emphasis to key competencies, such as interpersonal communication & teamwork, etc.”

“Communication skills – being able to articulate & also listen. Customer skills – how to deal with difficult customers & keep them informed and happy.”

- Business skills/knowledge. 7% of respondents stated that students needed a much better understanding of business processes.
- Technical skills. 9% of respondents thought that students should be given more training in specific technical areas. These areas varied.

On the issue of theory versus practice, or generality versus specific skills, opinion was divided. Comments included:

“Less theory; it’s people that count not technology.”

“Less theory: more pragmatic.”

“Don’t neglect the basics. A surprising number of graduates interviewed weren’t familiar with the systems development life cycle.”

“Understand the fundamentals that can be applied to any language & not just learn how to code in a particular language.”

“Focus on practicalities – Groundings in computer theory are good from a historical context but doesn’t help me if they can’t configure components or OS’s.”

“Courses can sometimes be too theoretical & not concentrate on the practical applications side.”

Similarly, opinions were divided about which programming languages and applications should be taught. Comments included:

“There tends to be a negative attitude towards COBOL and Legacy systems. The fact is we still depend on these. COBOL will be around for a long time yet.”

“Train graduates for existing platforms, not future platforms. Although html and java are exciting & interesting, the majority of enterprise systems and business are in SAP or similar products.”

“Train them in the latest programming languages & software.”

“This will always be difficult – find the right balance between current practical skills, and future methods and thinking.”

## 8 Conclusions

In spite of the fact that the number of responses to the survey was much smaller than the researchers had hoped for, the level of consistency in the responses encourages us to think that we can make some general statements about the employment prospects of graduates.

Since Australian industry is dominated by small business, and since, according to the survey, small businesses tend not to employ recent ICT graduates and are pessimistic about the likelihood of their employing them in the future, employment prospects for new graduates in the near future are not good. More research is needed to be able to understand the rate of expansion of small businesses and the typical job life span of their employees.

However, 64% of employers who do currently employ graduates said that they were highly likely to continue to do so. This implies that there is a market for graduates, and that it does not seem to be dependent upon what universities are teaching their students. The boom in enrolments in ICT courses that peaked in 2001, followed only two years later by a severe drop, shows how easily fluctuations in the market affect this industry. Universities need to continue to focus on broad knowledge and understanding rather than specific skills and applications, in order to prepare students to be flexible enough to learn new technologies as needed. Universities should also cultivate closer links with industry representatives, in order to improve their chances of finding the right balance between current technology and future directions in their teaching.

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