

# **ACCESSING THE STUDENT VOICE**

Using *CEQuery* to identify what retains students and promotes engagement in productive learning in Australian higher education

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## EXECUTIVE SUMMARY

*Although there is a steady interest in the exploitation of textual data in the human and social sciences, the tools and techniques used are still, to a large part, not readily applicable to the domain of large-scale surveys and database research... The inclusion of open-response questions in such studies offers the potential for the identification of responses falling outside the researchers' preconceived framework and the development of truly constructive proposals. The problems of exploiting data of this type, however, tend to mean that they are poorly utilised, either being totally ignored, analysed non-systematically, or treated as an aside.*

Bolden and Moscarola, 2000: 450

This report is among the first in the world to explore systematically an enormous database of open-ended comments made by university graduates on their tertiary experience. It uses a unique qualitative data analysis system which is IT-enabled and specifically calibrated for use in post-secondary and higher education.

### Background

There is increasing interest in both proving and improving the quality of Australian higher education. As part of this trend a range of tracking systems has been developed, using data from an array of sources.

The Course Experience Questionnaire (CEQ), based on the work of Ramsden and Entwistle (1981 and 1983) and Biggs (1987, 1992), is the only nationally generated source of evaluative data on a common set of tertiary study questions currently available from graduates. Over the past decade it has been distributed to every graduate of an Australian university approximately four months after the successful completion of their course.

Respondents not only rate a set of course experience items on the CEQ but are also invited to write open-ended comments on the best aspects (BA) of their university course experience and those most needing improvement (NI). It is estimated that at least 300,000 students have written over half a million 'best aspects' and 'needs improvement' comments on the CEQ since it was first distributed in the early 1990s, yet no systematic analysis of what graduates have said has been undertaken. This study used a database of the 168,376 comments made by 94,835 graduates from a representative sample of 14 Australian universities between 2001–2004 to address this research gap. As these graduates often refer to more than one aspect of their course experience in their comments, the final scored database produced some 285,906 hits on the many components of university life that students encounter.

### Opportunity

This study has been made possible by the development of a new IT-enabled qualitative analysis tool—*CEQuery*. The analytical software was developed and tested through a partnership of 10 Australian universities in 2003 and distributed free, with a user manual and training, to all Australian universities in 2004 and 2005. *CEQuery* automatically classifies comments into 5 main domains (Outcomes, Staff, Course Design, Assessment, and Support) and 26 subdomains using a custom-tailored dictionary which has been further

enhanced during the current project. The domains and subdomains are outlined in Table 1 (below), with further explanatory details of each subdomain provided in Attachment 1.

**Table 1. *CEQuery* domains and subdomains**

Outcomes	Staff	Course design	Assessment	Support
* Intellectual	* Accessibility and responsiveness	* Practical-theory links	* Relevance	* Library
* Work application /career	* Teaching skills	* Relevance (to work/ life/discipline)	* Marking	* Learning resources
* Further learning	* Practical experience (current)	* Flexibility/ responsiveness	* Expectations	* Infrastructure /environment
* Personal	* Quality and attitude	* Methods of learning and teaching	* Feedback/return	* Student administration
* Interpersonal		* Structure and expectations	* Standards	* Student services
* Knowledge/skills				* Social affinity/ support

(See Attachment 1 for full details)

The literature review and conceptual framework (Chapters 1 and 2) give the underpinning rationale for the selection of these domains and subdomains and identify the range of issues pursued as the *CEQuery* results were analysed.

*CEQuery* 'scores' comments by looking for key words or combinations of words from its dictionaries for each of the subdomains that are in proximity to each other. When these are found, the relevant section of the comment is placed into the count for that subdomain. This is called a 'hit'. This means that, when a comment covers more than one subdomain, this overlap is picked up. In order to test the veracity of *CEQuery*'s scoring, the analyst can click on the *CEQuery* results for any domain or subdomain and the comments allocated to it are then presented for checking, with the dictionary words used to allocate them to that subdomain highlighted.

*CEQuery* is particularly flexible. Users can undertake a wide range of customised analyses against any of the variables gathered in the CEQ (university, field of education (FOE), award, fees, sex, age, mode of attendance, type of attendance, year in which the CEQ data were gathered, residence and Aboriginal & Torres Strait Islander [ATSI] status) as well as CEQ quantitative results. There is also a custom search facility which was used in the present study when a detailed analysis of the types of methods cited in the 'Course Design: methods' subdomain was undertaken. Finally, the dictionary itself can be modified.

## Need

Why bother undertaking a qualitative analysis of this enormous database of best aspects (BA) and needs improvement (NI) comments on the CEQ? The reasons are compelling.

The Australian higher education sector is beset by a wide range of local, national and international pressures for change. They include the need to secure new sources of income,

to manage increasing competition, to deal with a growing student consumer rights movement and associated expectations and demands, to respond to much closer scrutiny, and keep up with rapid, ongoing developments in IT. These pressures are mutually reinforcing and make it important for each university to optimise the quality of every student's experience in order to remain sustainable. It is particularly important in such a context, therefore, for universities not only to gain but to retain students—morally, in order to develop the total social, intellectual and cultural capital of Australia and to optimise the life chances of those who are first in their family to attend university, but also financially.

It is anticipated that what emerges from the analysis of the comments made by the 95,000 graduates involved in the present study will throw some sharper light on what universities might best do to address these compelling learning and teaching quality agenda in our universities, not just in overall terms but in specific fields of education (FOE).

The study's findings have been compared with an extensive review of recent research and writing on learning and teaching in higher education from a wide range of other sources. In doing this it is anticipated that those responsible for assuring the quality of learning and teaching at universities will be helped in directing their scarce resources and development efforts more precisely to what students identify as counting most in their learning.

### **Project objectives**

To analyse 2001–2004 CEQ comments from a range of Australian universities using *CEQuery* in order:

- (a) to identify those components of their university experience that students identify as most engaging them in productive learning, both overall and then in different fields of tertiary education; and
- (b) to produce a framework to enable the use of these findings to improve the quality of learning design, course delivery, student support and assessment in university learning programs along with their associated support services, administrative systems and infrastructure.

### **Participants**

Fourteen Australian universities participated in the project. They were:

New South Wales:	University of NSW; Macquarie University; Southern Cross University; University of Technology, Sydney; University of Western Sydney.
Victoria:	Monash University; RMIT University; Deakin University.
Queensland:	Griffith University; Central Queensland University; Queensland University of Technology.
Western Australia:	Curtin University of Technology
Tasmania:	University of Tasmania
South Australia:	University of South Australia

This sample of universities is generally representative of the Australian higher education sector on the following variables: size, type, mode of operation (for example, from single to multi-campus delivery); location (state, country and city) and stage of development.

### **A collaborative approach to evaluating the *CEQuery* results**

When the database was scored and the initial analyses were completed a series of workshops were undertaken around Australia with more than 100 key staff from the 14 partner universities. Participants included Pro Vice-Chancellors, Associate Deans (Learning & Teaching), Directors of Higher Education Learning and Development Centres, Survey Managers, institutional researchers and other interested parties. In addition a workshop on the results was included in the November 2005 Graduate Careers Australia Survey Forum involving 30 local and international institutional researchers and directors. Discussions of the project were also undertaken with senior staff from 18 South African and four Canadian universities as part of an International Higher Education Development and Benchmarking Project led by Professor Geoff Scott, UWS, in late 2005.

The focus in these workshops was to critically appraise the veracity of the analysis and to look collectively at the implications and use of the results, after taking into account any limitations identified.

### **Key findings**

This project has produced a set of quality assurance checkpoints for optimising student retention and ensuring that student learning in higher education is engaging and productive<sup>1</sup>. It has sought to identify the relative importance of these factors, noting how this varies by Field of Education. It has then identified via a series of workshops across Australia a range of ways in which these findings can be applied to enhance the quality of Australian higher education in different Fields of Education.

#### *The total experience counts*

The study confirms that it is students' total experience of university—not just what happens in the traditional classroom—that shapes their judgments of quality, promotes retention and engages them in productive learning.

Consider, for example, the combination of the twelve *CEQuery* subdomains which attracted the highest percentage of hits in the study (areas which are then, presumably, important to students). They were, in rank order (highest first):

- Course Design: learning methods (14.2% share of the 285,000 hits)
- Staff: quality and attitude (10.8%)
- Staff: accessibility (8.2%)
- Course Design: flexibility & responsiveness (8.2%)
- Course Design: structure & expectations (6.7%)
- Course Design: practical theory links (5.9%)
- Course Design: relevance (5.6%)
- Staff: teaching skills (5.4%)
- Support: social affinity (3.8%)

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<sup>1</sup> See Chapter 1.2 for the definitions used in this study for each of these terms.

- Outcomes: knowledge/skills (3.8%)
- Support: learning resources (3.5%)
- Support: infrastructure & learning environment (3.4%)

The comparative percentage of total hits in the above list attracted by

- Course Design (40.6%)
- Staff (24.4%)
- Support (10.7%)
- Outcomes: knowledge/skills (3.8%)

gives a preliminary indication of their relative weight in shaping students' judgments of quality and explaining what motivates their engagement.

Full details can be found in Table 6 in Chapter 4.

#### *Key 'hot spots'*

The study has identified three areas that warrant an intensified focus (Table 6, Chapter 4). These are areas where the odds of a 'best aspect' comment are low and a 'needs improvement' comment is high. The key areas are:

- Assessment (standards, marking, expectations, management and feedback);
- Student Administration and Support; and
- Course Structure and Expectations.

#### *Learning methods that engage*

As the *CEQuery* subdomain 'Course Design: learning methods' attracted the greatest number of hits of all 26 *CEQuery* subdomains, it was decided to undertake a more detailed analysis of what particular methods were being consistently identified as a best aspect overall and in different Fields of Education.

In all, some 60 different learning methods were identified by our students as a best aspect of their studies. They were found to fall into five clusters:

- those associated with traditional university *face-to-face* learning and teaching, with a focus on interactive rather than passive learning strategies (16 methods, ranging from the use of buzz groups, debates, discussions, panels, lectures, to the use of mentoring, peer-support, seminar presentations, small group/team projects, symposiums, tutorials and workshops);
- those concerned with *independent study and negotiated learning* (7 strategies including learning from essays, quizzes, self-teaching packages and distance education materials, writing portfolios and theses);
- those which focus upon *practice-oriented and problem-based learning* (20 learning methods ranging from artistic productions, camps, the use of 'real world' case studies, field placements, practicum and clinical placements, to the use of key practitioners as guest lecturers or mentors, site visits, service learning and travel to other universities or overseas study exchanges) ;
- those which use *simulated environments and laboratory methods* (6 learning methods ranging from the use of university-based experiments, simulations,



- discovery learning, educational games and experiments, to the use of hypotheticals, mock trials, role plays and simulated interviews); and
- a range of *CIT-enabled learning* methods and resources (11 options ranging from the use of audio-tapes and CDs, email, one-on-one phone contact with staff or students, teleconferences, the use of digital images to TV broadcasts, DVDs, online access to quality assured and searchable databases and web-based learning).

The analysis revealed that practice-oriented and interactive, face-to-face learning methods attracted by far the largest number of ‘best aspect’ comments. It also revealed considerable variation in the types of methods most likely to attract a ‘best aspect’ comment in each of the five aggregated Fields of Education investigated (Science and Built Environment; Health; Education; Management and Commerce; Society, Culture and Creative Arts). Full details of this analysis are given in Chapter 4 and Attachment 10. This suggests that there may be considerable room for exploring ways of using the preferred methods identified in one Field of Education in *another* field, where their application would be feasible but currently they are little used. A good example of this finding is the extensive mention of the use of team projects in Management and Commerce, and in Science—but not in Health, Education or Society, Culture and Creative Arts. Similarly, various forms of work placement and clinical practice were far more widely cited as a ‘best aspect’ in areas like Education and Health than they were, for example, in Management and Commerce.

Practice-oriented methods were found to be much more highly regarded (at a significance level of  $p < 0.001$ ) by respondents employed at the time of the survey than those who were unemployed, unavailable for work or undertaking full-time study. Similarly, face-to-face methods were much more highly regarded by those who were unemployed or studying full time than those who were employed ( $p < 0.001$ ).

The fact that students give more attention in their ‘best aspects’ comments on this subdomain to interactive, practice-oriented, problem-based learning methods and resources than they do to the more usual ‘sage on the stage’, knowledge-transmission methods associated with traditional lecturing indicates the importance of shifting the focus from teacher-centred to student-centred approaches to course design. The fact that the subdomain Course Design: methods attracted more hits (14.2 per cent of the total) than the subdomain Staff: teaching (5.4 per cent) adds some further weight to this interpretation, especially as there are specific triggering items on teaching in the CEQ.

#### *CIT-enabled methods*

Comparatively little mention of CIT-enabled methods as a ‘best aspect’ was made by these students. This finding warrants follow-up as this is an area of major investment at the moment. This was discussed at the workshops which were held around Australia on the study’s overall results with staff from the 14 partner universities. A range of potentially relevant explanations was offered—for example, there are no CEQ items on the area and it may be that students were, as a result, not triggered to make comment, or they may not have experienced many of the strategies now available, or perhaps CIT is now so taken for granted that respondents do not think to mention it. It was also noted that these data are for students who completed their studies in 2003 and that there have been rapid developments in the IT-enabled learning field since then. An analysis of the “needs improvement” comments for this area identified that, in some cases, CIT methods were being used in a very limited way and in other cases that they were being implemented ineffectively or inconsistently (Chapter 4.9 gives details). A closer study of student comments on this area

revealed that students generally see CIT as being just one component of what supports effective learning, and that it is no substitute for interactive, face-to-face methods of the types identified above. For this group of 95,000 students, learning remains a profoundly social experience. The paucity of robust empirical research on which approaches to IT-enabled learning best engage students in productive learning, especially in different Fields of Education, was noted.

*Relationship between the CEQ's demographic variables and the odds of a 'best aspect' (BA) comment on CEQuery*

A logistic regression analysis explored the effect of various CEQ variables (university, Field of Education, award, fees, sex, age, mode of attendance, type of attendance, year in which the CEQ data were gathered, residence and Aboriginal & Torres Strait Islander [ATSI] status) on the odds of a 'best aspect' comment occurring in each *CEQuery* domain.

The results of this analysis revealed that Field of Education was always very significant, as was University. In each model, these variables had p-values down to  $< 0.001$ , indicating that there were real differences between fields of study and between universities for each *CEQuery* domain. Most other variables were significant in some cases and not in others, with the exception of Sex and ATSI status, which were never significant. In the case of ATSI status this result may be due to a comparatively low incidence of respondents (731 records, or 0.5 per cent of the sample). Award was significant by itself for Course Design and Staff and in interaction for Assessment and Support. Fees was significant for Assessment, Outcomes and Staff; Age was significant for all domains except Staff. Surprisingly, Year in which the CEQ data were collected was significant for Course Design, Outcomes and Staff. Attendance type was significant for Course Design and Outcomes, and Attendance mode was significant for all domains except Assessment. Residency status was significant for all domains except Support.

A parallel analysis of the effects of the CEQ variables on each *CEQuery* subdomain is ongoing.

These findings suggest that there is considerable room for benchmarking between those universities which attract much higher odds of a 'best aspect' comment in a particular *CEQuery* domain or subdomain and those which do not. This process of using difference to assist 'benchmarking for improvement' would be especially useful when undertaken for a shared Field of Education and between universities with similar missions, profiles and resources. A good example of how this is being carried out in conjunction with the present study is the Australian Technology Network (ATN) of five universities sharing and benchmarking their individual members' results for mutual improvement.

*Relationship between the CEQuery domains and the CEQ scales*

Two types of regression analysis between the *CEQuery* domains and the CEQ scales were undertaken.

Firstly, a logistic regression looked at changes in the ratios of 'Best Aspect' to 'Needs Improvement' comments within each *CEQuery* domain depending on the CEQ scale scores. This analysis found, for example, that the odds of a positive rather than a negative comment in each domain were significantly and positively associated with Overall Satisfaction. This means, for instance, that in the *CEQuery* Outcomes Domain, positive rather than negative comments were 40% more likely for each step up on the five point

Overall Satisfaction Item (1 – low to 5 – high). In the other domains this increase in the likelihood of positive rather than negative comments for each step up on the Overall Satisfaction Item was: Assessment – 22%; Course Design – 34%; Staff – 21%; and Support – 21%.

Secondly, a multiple regression analysis examined the extent to which ratings on each of the CEQ scales could be predicted by a three point score on the *CEQuery* domains (-1, 0, 1 representing the ‘Needs Improvement’, ‘No Comment’ and ‘Best Aspect’ responses). This analysis confirmed that there was a positive and significant relationship between ratings on the CEQ scales and comments on the *CEQuery* domains and subdomains. It found that all five domains were significantly associated with almost all the CEQ scales in the expected way – positive comments predicting higher scale scores, negative comments predicting lower scores, and absence of comments predicting intermediate scores. The Good Teaching scale, Overall Satisfaction Item, and Clear Goals and Standards scale in this order demonstrated the strongest overall relationships with each of the *CEQuery* domains.

The Course Experience Questionnaire’s Good Teaching scale has a particularly strong association with all the *CEQuery* domains. This means that positive comments in each domain reliably predict high ratings on this scale and negative comments predict low ratings. The *CEQuery*’s Staff domain was found to have the strongest relationship with nine of the 11 CEQ scales studied. This is the main message from this regression analysis. It means that positive comments on staff reliably predict high ratings on the majority of the CEQ scales and negative comments predict low ratings. This finding can be explained in a number of ways. For example:

- The staff really make a principal difference in almost all aspects of the course.
- The staff make such a strong positive or negative impression that this affects what respondents say about other components of their course.
- Some CEQ scales that are not supposed to relate to the staff still contain the word ‘staff’, and thus may trigger staff-related comments.

It should be emphasised that students are not restricting their comments to the issues canvassed in the original 25 CEQ questions, although the study shows that CEQ questions do often appear to trigger comments in the areas covered (see Chapter 4.7). For example, our analysis shows that, of all the scales examined, the Appropriate Assessment scale has the weakest association with the five *CEQuery* Assessment subdomains. Graduates seem to have more important assessment issues to comment on than the aspects of memory-focused assessment covered by the three corresponding CEQ items. As the three CEQ Assessment questions ask about the same concept, it is no surprise that they formed a distinct scale when factor analyses were conducted during the instrument’s development<sup>2</sup>. What this finding raises, however, are issues about the scale’s focus and validity, at least from the perspective of what students see as being important via their *CEQuery* comments. As the *CEQuery* Assessment subdomain counts show (Chapter 4.1), respondents have a lot more to say about the issue of assessment than about what is covered in the CEQ Assessment scale.

Overall, the regression analyses undertaken in this Study show that:

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<sup>2</sup> GCCA (2003): Course Experience Questionnaire 2002, GCCA, Melbourne: pp 68-69.

- there are significant links between the *CEQuery* domains and the majority of the CEQ scales;
- the relationships between the *CEQuery* domains and subdomains and the CEQ scales range from strong to relatively weak; and that, because of this,
- the two instruments serve to complement each other as together they cover a broader range of student views on their university experience than each covers separately. As the project's statistical consultant concluded "the data are a lot richer even than what we are presently analysing and on further investigation are likely to identify reasons for the statistical results (on the CEQ) which may be quite different from what people assume".

A further analysis found evidence that CEQ items may precondition student comments (see Chapter 4.7). This suggests that it may be desirable to put the open-ended 'best aspects' (BA) and 'needs improvement' (NI) questions *before* students rate the CEQ items rather than *after* them.

### **Key implications and outcomes of the study**

When taken in combination, these findings and the outcomes of the sector workshops and international reviews which discussed their veracity and implications align well with the detailed review of the research on higher education retention, engagement and productive learning undertaken as part of this report (Chapter 1). The study's conceptual framework was also found to successfully accommodate and indicate the relationships between the findings on each domain and subdomain (Chapter 2).

The study has identified and confirmed a set of quality management issues and themes which need to be taken into account if the total learning experience of students is to optimise productive and engaged learning and, through this, retention. It has found that there are real differences on all *CEQuery* domains, both by Field of Education and between the universities which participated in the study.

The feedback workshops, involving more than 100 key staff from the 14 universities participating in the study, endorsed the use of *CEQuery* as a useful complement to the other tracking and improvement systems already being used across Australia. This has been confirmed in a *CEQuery* user survey undertaken by Graduate Careers Australia at the end of 2005. The tool was seen as enabling those responsible for quality assurance and improvement for learning and teaching in higher education to have convenient access to the hundreds of thousands of comments made by students which, hitherto, have been difficult to sort and make sense of. The results generated by *CEQuery* (see Chapter 4) were reviewed at these workshops. Their general veracity was also reviewed and was found to be satisfactory. A number of caveats have been noted by the report writers. These are outlined in the Methodology chapter of this report at Section 3.3, and need to be taken into account when interpreting the findings of the study.

The propositions that the total number of hits (BA + NI) for each domain and subdomain is a proxy measure of importance and that the odds of a 'best aspect' comment is a proxy measure of perceived quality were generally endorsed.

The key implications of the study for enhancing quality identified at the partner workshops are summarised below; details of each point are given in Chapter 5.

*Using the study's framework to foster productive engagement in learning*

Participants in the workshops confirmed the study's finding that it is the total experience of a university that shapes students' judgments of quality, motivates their engagement in productive learning and optimises their retention. They confirmed that what is most telling is the appropriate and consistent combination of:

- a sound, responsive, flexible, relevant, clear and mutually reinforcing course design—a design that uses an appropriate variety of interactive, practice-oriented and problem-based learning methods;
- capable, committed, accessible and responsive staff being in place to deliver and improve the design during implementation;
- efficient and responsive administrative, IT, library and student support systems actively working together to support its operation; and
- relevant, consistent and integrated assessment of a university standard that the course's design, learning methods and resources specifically enable students to complete.

The study's conceptual framework (see Chapter 2) accommodates this outcome and shows how this notion of mutual and consistent reinforcement operates.

The study's findings align with the outcomes of parallel research on what motivates students to engage in and stick with learning—that is, what motivates them to persevere with identifying gaps in and developing their capabilities in the profession or discipline concerned (Chapter 1). It shows that what counts for students is their perception that what is being put forward is:

- relevant (e.g. to any one or a mix of the following: their career, further study plans, their general interests and a range of social as well as intellectual needs);
- desirable (e.g. consistent with their general values);
- distinctive (e.g. has potential to give them 'the edge' in a highly competitive market); and, most importantly:
- achievable (that is, they can feasibly manage what is being asked of them, given other life demands and their particular background, abilities and experience).

These motivators have been found to have both an extrinsic and an intrinsic component.

The concept of 'relevance' was seen in the partner workshops as involving far more than purely instrumental or vocational relevance. Research-led teaching, introducing students to new concepts and ideas they may not have thought of, was identified as having an important role to play in a university education by a number of participants. Simply giving students what they want could mean, said participants, that ideas that were innovative, cutting edge, revolutionary would not be pursued simply because students are unaware of their existence. As one participant put it, 'Sometimes relevance can only be seen in hindsight. Universities must be careful not to become places primarily driven by customer ratings'.

In discussing how best to manage the relevance issue, participants in these workshops acknowledged a key dilemma now faced by many universities: how best to balance mission (producing graduates who are critical, creative, sharp thinkers with key components of

emotional intelligence necessary to work productively with a diverse range of people) with sustaining market share (giving students ‘what they want’ in a purely instrumental, skills-focused sense in order to attract and retain them). This was seen as having important implications for universities as they seek to define exactly how they are different from vocational training colleges.

Parallel research on what engages higher education staff in successful change management shows that exactly the same tests are applied by academics when they are invited to engage in and stick with a change effort. This is because all change requires people to learn gaps in their capability, because learning is change and change is learning (Scott, 1999, 2004).

*Using a wide variety of interactive and practice-oriented learning methods*

As noted earlier, the study has found that students identify more than 60 learning methods as a best aspect of their experience of university. It has found that traditional face-to-face, one way, transmission forms of delivery do have a place but that what students respond best to are those methods that involve interactive learning, link theory with practice, are practice oriented and problem focused. Considerable variation in the learning methods most commonly identified as a best aspect in different fields of education was also found (Chapter 4.8). This raised several key issues for participants in the partner workshops: Is there room to use methods found to be very popular in one FOE in another where they are little used? Is there sufficient variety in their use? How appropriate is this use? And so on.

Participants’ responses to the relatively limited mention of CIT-enabled learning as a best aspect by the 95,000 students involved in this study have already been noted. As Coates (2005:68) observes:

In many respects, staff and institutions do not appear to have considered how (online) learning management systems affect the way their students learn. Instead, there seems to have been a tacit reliance on serendipity to produce patterns of use constructive for learning. This is surprising, given the resources invested in these potentially powerful learning technologies and the increasing recognition that the dynamics of student engagement are often central to the quality of university education.

Another workshop participant noted: ‘People who say “let’s put it on the web” need to recognise that information is not learning’.

*The importance of managing expectations*

What also emerges from this study is how important it is to be consistently alert to students’ expectations right from the moment of their first contact with a university, then during orientation and finally in each class as the course gets under way. Key expectation hot spots identified in the study include clarifying expectations for assessment, making explicit what services are and are not available, noting the key university rules affecting student progress and life at the institution, when staff can and cannot be accessed, providing sound academic advice and informing students about what to do when something goes wrong.

### *Course Design*

Course Design emerges as a key area for quality management. The study suggests that a range of design elements discussed at the sector workshops must be managed effectively and consistently if productive engagement in learning and enhanced retention are to result. This involves, as courses are designed, taking into account the nature of the students, the university's desired graduate attributes, the capabilities required in the profession or discipline concerned along with available resources and then figuring out how best to address each of the following 'productive engagement' checkpoints in a way that is relevant, desirable, distinctive and feasible:

- provide flexible learning pathways for students—including majors, submajors and the option to take electives—consistent both with their interests and the general course concerned;
- optimise ease of access by seeking to match the most appropriate combination of learning times and locations to the profile of the group concerned (fixed semesters and times may be appropriate for some groups but not all);
- explicitly check that the learning methods and resources being used specifically link to the assessment tasks to be completed and that they promote active, practice-oriented, integrated problem-based learning whenever possible;
- provide a clear sense of program coherence and direction;
- base what is to be learnt on explicit and up-to-date research on the capabilities that will be most needed in the early years of practice in the specific discipline or profession concerned;
- ensure that what is to be learnt is “digestible” and that the learning and assessment workloads between subjects are equivalent;
- ensure that there is minimal overlap in content between subjects and in the submission dates for assessment items across subjects in the same learning program;
- enable students to “learn in their own time” by providing clear self-study materials that identify the integrated assessment tasks they must complete, give details of how these will be graded and provide a clear indication of how the various learning resources and strategies built into the subject will enable them to complete these tasks.

### *Quality management for assessment*

The study, and the workshops that discussed its results, have reconfirmed how important quality management is for assessment in the current operating context of universities. The Assessment domain attracted the lowest odds of a 'best aspect' comment of all the *CEQuery* domains (Chapter 4.1). Although the relative number of hits was also comparatively low, it was agreed at the partner workshops that the following are key issues for quality management of assessment in the current context:

- There must be an understanding that, for university students, assessment is typically a key starting point and driver for learning.
- Assessment must focus on what counts for early career success in the profession or discipline concerned (the so-called 'relevance' test).
- Grading criteria and processes must be constantly checked to ensure that what is being assessed is at a university level and focuses on the development of those key capabilities known to count most for effective performance in a graduate's early

career or further study. In this regard, tests of memory (a common area for ‘needs improvement’ comments in this study) need to be avoided.

- It is important to assess less by the use of integrated, problem-based assessment tasks but to assess better by ensuring that students receive prompt and constructive feedback on where they are progressing well and, in those cases where improvement is needed, by telling them exactly how this might be achieved.
- Assessment needs to be moderated to ensure consistency and transparency in marking. Assessment of group work emerges in this study as being a particularly problematic area.
- There must be explicit management of student expectations at the outset of each course about what will be assessed and exactly how different levels of grade will be determined.
- There needs to be coordination between different subjects to ensure that continuous assessment tasks are not all due on the same day. This puts unfair pressure not only on students but support facilities like IT labs.
- Assessment items in similar study areas over different years must build on and not duplicate each other.

### *Staff*

As the study’s conceptual framework suggests (Chapter 2), it is not only course design and assessment issues like those outlined above that are important. The results confirm that a sound design is only as good as the staff who are to implement it.

The study has confirmed that the staff who best engage students in productive learning are:

- committed to and enthusiastic about their area of teaching and research;
- accessible and responsive to their students and genuinely interested in their progress;
- actively interested in receiving student feedback on how the course is going, and promptly make necessary adjustments and improvements to its delivery in the light of this feedback;
- highly skilled in the area taught and have up-to-date links to and knowledge of current professional and disciplinary developments that they consistently draw upon to illustrate and give focus to the key points they want to make; and that they are
- skilled adult educators—people who understand that they are designers of active learning experiences rather than just transmitters of knowledge.

The Staff domain attracted comparatively even odds of a ‘best aspect’ comment. This indicates considerable patchiness on attributes like those above across different Fields of Education, and within and between universities. Participants in the partner workshops said that the key challenge here is to increase the consistency of staff who have the attributes identified in this and parallel studies. A detailed analysis of comments in the Staff domain indicated that students in the same course will often praise one staff member highly while expressing significant concerns about another.

### *Context counts*

The final aspect of the student experience identified in the study’s conceptual framework (Chapter 2) concerns the contribution made by the many underpinning services, staff, systems, environmental factors and areas of infrastructure set up by universities to support



learning. The importance of this area is strongly confirmed in the *CEQuery* findings as well as in a wide range of other studies identified in the Report's literature review (Chapter 1). It is clear that, for these 95,000 students, 'context counts'; that, as noted at the outset of this section, it is the total experience that shapes students' judgments of quality, encourages engagement in productive learning and facilitates their retention. Of particular interest in the findings from this study is the fact that the social affinity subdomain attracted so many hits, and that its odds of a 'best aspect' comment were relatively high. This subdomain concerns the nature of the relationships that students experience, not just in the traditional classroom but between peers and with staff from all areas of the university. In short, the *CEQuery* results strongly suggest that feeling that one's place of study is somewhere where it is great to be has a positive influence on retention, provided that the quality tests for course design and staff are being met. This study confirms, therefore, that learning is a profoundly social experience. The definition of social affinity in Attachment 1 gives further details.

However, it is not just the social milieu that contributes to the overall environment of a university. This, like many other studies, confirms that student administration systems, the library, learning resource quality, IT facilities, student support units, food and facilities all play a role in building up a context conducive to engagement in productive learning and supportive of retention. What is particularly irritating to students in this study is when these 'enabling' services work in contradiction to what is happening in the educational area, when they fail to deliver what is anticipated or give them the 'run-around'. Clunky student administrative systems, inaccurate enrolments and fees invoicing, failure to follow through on enquiries, staff who are unresponsive or who say 'that's not my job'—these all attract considerable "needs improvement" comments from students.

In summary, the study confirms that it is the total university experience that shapes students' judgments of quality and influences retention and productive learning, not just what happens in the traditional classroom. To reiterate, context counts.

#### *Self-reported outcomes*

The report's conceptual framework (Chapter 2) and the literature review (Chapter 1) suggest that if this combination of inputs (course design, staff and environment) works well, then the outcomes for students will be 'productive'. In this regard, the study has found that students identify a range of beneficial affective, cognitive as well as generic and profession- or discipline-specific outcomes they report having acquired during their course. The *CEQuery* Outcomes domain attracted the highest odds of receiving 'best aspect' comments of all five domains explored.

At the partner workshops this was seen as being a very pleasing result. However, participants advised exercising considerable caution in reading too much into students' self-identified outcomes. The reasons for this caution, said the workshop participants, included the fact that students may not yet know what the real demands of their profession or discipline are as they had just graduated, that there was likely to be a positive response bias as students had just successfully passed their course and that it would be important to determine if there was a significant correlation between self-report in this area and the actual grades received. A subsequent regression analysis between the *CEQuery* domains and the Graduate Destination Survey's (GDS) employment and further study measures confirmed that students who were 'unavailable for study or work' tended to make far more 'best aspect' comments on the *CEQuery* Outcomes domain than those who were part-time

employed. Similarly, this analysis showed that the Outcomes: work application subdomain attracted far more “needs improvement” comments from those who were ‘not employed but seeking work’ than all other employment and further study groups.

### **Using the study’s findings and the *CEQuery* tool**

A wide range of ways in which these findings can be practically applied and *CEQuery* can be used in Australian higher education to promote quality were identified in the partner workshops. They include their use to:

- generate a more focused and evidence-based set of ‘good practice’ guidelines down to the Field of Education level. The results can then be used by those responsible for assuring consistent quality in the accreditation and review of university learning programs and the services and systems intended to support their effective implementation;
- confirm and enhance current approaches to quality management for learning and teaching;
- identify what factors are most important to track as courses are implemented and reviewed;
- ensure that the items in student feedback surveys track what is really important to students;
- assist in making staff orientation, teaching and development programs more relevant by providing a consolidated picture in each Field of Education of what students repeatedly identify as a best aspect and as being unhelpful;
- identify the specific support, administrative, infrastructure, and environmental factors and services of universities that shape students’ judgments of university quality and influence their decisions on whether to stay, transfer to another university or drop out;
- complement other sources in order to identify key areas of good practice and potential areas for quality improvement that warrant follow-up;
- identify areas of patchiness that may require follow-up action with a view to ensuring greater consistency of quality in the student experience;
- complement the more quantitative data that are typically used to inform decision-making for the area (this can include showing more clearly what students had in mind when they gave ratings to particular areas);
- raise ‘flags’ concerning specific quality improvement areas warranting more detailed follow up;
- form a basis for benchmarking good practice and allowing those universities willing to share data to help each other identify improvement solutions at a Field of Education level; and to
- enhance opportunities for benchmarking by always including a section in feedback surveys that invites students to identify the best aspects of their experience and then those which most need improvement, before quantitative items are rated.

In terms of the significance of the *CEQuery* development and this study one Associate Dean at the participant workshops summed it up as follows:

This study is significant because it shifts the focus away from ratings to the internal perceptions of nearly a hundred thousand students all commenting at a particular time on their university experience in Australia. By sorting and showing

the patterns in the results it makes the collective experience and perspective of so many students accessible for the first time.

Another observed:

These results, when we combine them with the other studies, confirm to me that what we have been doing is on the right track. Before, what we were doing seemed intuitively right; now it is confirmed by a very large set of data down to the Field of Education level. It is clear to me that an inappropriate course design with good staff is no good and vice versa. It is clearly the positive combination of all the elements that counts.

The study has identified how the importance and mix of these educational quality and productive learning checkpoints can vary significantly, depending on a range of demographic variables including field and level of education.

It has also identified that there is considerable and consistently significant variation in the universities studied on the odds that a comment made on the CEQ will be about a best aspect of the student experience. A range of potential explanatory factors were suggested at the partner workshops that require further investigation. These include differences in location, number of campuses with significant enrolments, stage of development, academic profile, size, gross annual income per student EFTSL (equivalent full-time student load) and culture. As noted above, some networks of universities are already sharing their results with a view to benchmarking for improvement.

## **Recommendations**

It is recommended that:

1. The updated data dictionary produced as part of this project be released to the sector.
2. A check-list of key findings at the overall and Field of Education level be developed for widespread dissemination across the sector.
3. All remaining Australian universities be encouraged to share data in order to test, critique and enhance the findings of the current study and the key quality management themes that have emerged from it.
4. Analyses and interpretations of data relating to the quality of Australian higher education be made at the Field of Education not the university level in order to ensure that results derive from comparisons of 'like with like'.
5. Universities with similar missions and resources be encouraged to share and benchmark data at the Field of Education and program level along the lines of that already being undertaken by the Australian Technology Network (ATN) universities as a result of the study
6. Further research be undertaken in the following areas:

- i. identify the key incentives for staff to engage with and disseminate such data<sup>3</sup>;
  - ii. undertake a more detailed analysis of the comments for every subdomain, along the lines of that completed for the Assessment: feedback subdomain in the present report (see Chapter 5.5);
  - iii. investigate and clarify the key quality assurance checkpoints for particular Fields of Education based on the results of this study compared with the results of parallel empirical research;
  - iv. replicate the study with universities overseas by inviting them to include a BA/NI section in all relevant surveys they deliver and to gather demographic data similar to that included in the current study;
  - v. undertake a supplementary study to review the core CEQ items in the light of the current findings and explore whether new or modified scales or items are necessary;
  - vi. explore effective approaches to the joint use of data from this and parallel sources for improvement benchmarking and evaluate the impact of such initiatives;
  - vii. investigate why there was comparatively little mention of CIT-enabled methods as a best aspect by this group of students;
  - viii. run further regressions between the *CEQuery* scales and the GDS scales, especially to determine if there is any correlation between the Outcomes and Course Methods areas and employment or further study outcomes; and
  - ix. examine further the relationships between the importance and quality results on the *CEQuery* subdomains as the independent (explanatory) variables and the CEQ scales as the dependent (response) variables.
7. An importance as well as a performance scale be included in all future surveys to enable more precise identification of the comparative importance of various aspects of the student experience and to confirm the ongoing relevance of the items being tracked to the respondents.
  8. The designers of surveys, both local and national, be encouraged to include opportunities for students to give “best aspect” and “needs improvement” comments. This will allow triangulation of data from a wide range of sources and at different levels using *CEQuery*.
  9. Students be asked to provide their open ended “best aspect” and “needs improvement” comments before, not after, they respond to the CEQ rating items. This will help minimise potential for the CEQ items to shape what students choose to comment upon.
  10. Those responsible for course accreditation in each university be encouraged to (a) use the key quality management checkpoints which have emerged from the study and (b) look beyond the learning methods habitually used in each Field of Education to see if there is merit in using those which consistently attract high “best aspect” counts in other areas.

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<sup>3</sup> There are a range of studies available on the area available. A recent example is the research undertaken for the Carrick Institute for Learning and Teaching by McKenzie, Alexander, Harper and Anderson (2005).

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## Chapter 1

### Literature review<sup>4</sup>

#### 1.1 Overview

The literature review draws on higher education theory, research and practice. It outlines those factors repeatedly identified as being associated with engagement in productive student learning in universities. The outcomes of this review were used to validate the *CEQuery* domains and subdomains, to inform the study's conceptual framework (Chapter 2) and to identify hypotheses and issues to be tested as the *CEQuery* data were analysed.

In particular, the review sought to investigate the relationship between what is known to engage students in high quality, productive learning, and the methodologies that are used to evaluate the quality of learning and seek feedback on it.

We were also interested in teasing out the relationship between what engages higher-education students in productive learning and what most influences their retention.

#### 1.2 Key terms

##### *Retention*

In this study, retention is seen primarily as being an indicator that engagement in a particular university program is proving to be cost-beneficial to a student. For example, there are indications in the literature reviewed and in the results of the study itself that students will leave a program if they do not find participation in it relevant, productive or feasible. In many cases this means that they may move to another program in the same university or move to another university. Most importantly, if students are not retained in the higher education system as a whole they will not gain a degree and this has high social, political and economic costs as well as personal ones.

##### *Engagement*

Engagement is seen as being closely tied to retention. Indicators that a learning program is engaging can include students: coming to every class; being actively involved in what is going on; interacting consistently and positively with staff, fellow students and the learning resources built into the program; being enthusiastic about their studies when asked; wanting to spend additional 'time on task'<sup>5</sup>; and giving high overall satisfaction ratings on course feedback questionnaires.

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<sup>4</sup>Particular thanks go to A/Professor Carolyn Webb, Director of the UWS Educational Development Centre for coordinating this Review and to Liz Curach the UWS Librarian for her support.

<sup>5</sup> Krause et al (2005: 34, 38) note: 'Recording the amount of time spent on various activities pertaining to student learning is a widely accepted measure of engagement. Indicators of disengagement (include)... skipping classes and coming to class without completing readings or assignments... along with a third ('You can miss a lot of classes in this course because most notes and materials are on the web')..(these) formed a new (First Year Experience) Scale in 2004... The 'prepared and present' scale.'

### *Learning*

In this study learning is seen as having occurred when there has been a demonstrably positive change in the capabilities known to be most important to subsequent professional or disciplinary practice and constructive societal participation. The mix of capabilities varies by profession and discipline and brings together affective and cognitive dimensions as well as generic and job-specific knowledge and skills. The extent and quality of learning is determined via a range of formal assessment methods, supplemented by a range of less formal forms of feedback from, for example, employers or clients.

Valid and reliable assessment is central to assuring the quality of learning outcomes and the degrees granted in higher education. In terms of validity, it is our view that assessment must focus on the capabilities that are shown to count for successful professional and disciplinary performance and the key social outcomes sought in graduates. In terms of reliability, the criteria applied need to be at a university standard and the marking of assessment items has to be consistent and accurate. Assessment at a university standard cannot, therefore, test ‘shallow’ learning like the ability to memorise and regurgitate facts but must reliably and consistently test ‘deeper learning’—for example, the combination of affective and cognitive capabilities that studies of graduates identified as performing successfully in the first years of professional or disciplinary practice consistently demonstrate (Scott & Yates, 2002; Scott & Wilson, 2002; Rochester et al 2005, Vescio, 2005). The distinguishing capabilities include highly developed levels of personal and interpersonal emotional intelligence that the graduate can draw upon, especially when things go wrong, together with a core set of cognitive capabilities such as the ability to get to the essential issue in a complex technical and human practice situation; to diagnose what is causing a perplexing problem; to trace out the consequences of a range of potentially relevant solutions to such situations; to see the relationships between complex phenomena; to be able to critically appraise ideas; and the capacity to figure out which issues to attend to and which to allow to pass by. These studies consistently indicate that generic and job-specific skills and knowledge are necessary but are not sufficient for successful professional or disciplinary practice.

### *Productive learning*

Key indicators that learning in higher education has been productive are seen in this study as including (in increasing levels of importance):

- high levels of student retention;
- consistently positive comments by students on the outcomes of their learning;
- being granted a degree;
- evidence that there has been ‘value add’ in this process (for example, that people with low tertiary entrance scores are passing at the same rate as those with much higher ones);
- high rates of graduate employment or further study; and
- high ratings of graduate performance by those who employ or use their services during the early years of professional or disciplinary practice.

Recurring indicators identified in the studies of successful early career graduates cited above include consistent delivery of services and projects on time to specification, along with high levels of client and collegial satisfaction.

### 1.3 Learning research

The extensive research into student learning in post-secondary education over the last several decades builds on and, to an extent, challenges earlier psychological accounts of learning by researching it within the contexts in which it takes place. Biggs (1999: 59-60) provides a very accessible account of the development of student learning research in post-secondary education, with its foundations in the study by Marton and Saljo (1976) who coined the terms ‘surface’ and ‘deep’ learning. These phrases refer to qualitatively different conceptions of, and approaches to, learning by students, and are seen as being related to the quality of their learning outcomes. This research has been the focus of many higher education conference proceedings and journal articles since the mid-1970s, with spin-offs into the scholarship of teaching within disciplines, the scholarship of leadership in higher education, and the quality assurance field.

The impact of student learning research on the approaches that have been adopted to evaluate educational quality and the quality of learning has been significant. The underlying premise in many of these approaches is that learners’ perceptions of their experience provide a window through which to make judgments about the quality of teaching, learning design, delivery and its support.

The development of Australia’s Course Experience Questionnaire (CEQ) had its origins in this educational research base. The antecedent to its development was the Course Perceptions Questionnaire (CPQ) that Ramsden and Entwistle (1981) intended for use to identify factors in the learning environment that influenced how students approached their learning. Ramsden (1999: 25) depicted the CEQ as:

...a proxy measure for the quantity and quality of student learning outcomes, having been constructed from first principles to examine course and teaching attributes associated in students’ experiences with more effective learning.

While intended to measure the perceived quality of teaching at a whole course level, the CEQ provided a source of data which has enabled performance indicators to be implemented for comparisons between institutions and over time.

A wealth of subsequent literature has stemmed from the use of the CEQ, with a strong tendency to focus on examining the relationships between teaching and learning which were posited at the core. A set of phenomenographic studies since the mid-1980s has sought to test the associative power of the surface to deep learning continuum. Some (for example, Webb, 1997) have involved a critique of the construct. Others have involved empirical investigation of a range of potential associations between various aspects of the student experience and the surface-deep learning continuum.

Kreber (2003), for example, used the Approaches and Study Skills Inventory for Students (ASSIST) survey and the CEQ to investigate relationships between students’

approaches to learning and their perceptions of the learning environment. This study identified associations between heavy workload, inappropriate assessment and surface approaches to learning, and between generic skills and deep approaches. Vieira (2002) found a strong relationship between students' views, teachers' views, and pedagogic quality. These studies support the call made by Ramsden (1991: 93) for avoiding the 'technicist ideology' that underlies the decontextualised use of students' ratings of teaching quality without accounting for the variability in teaching approaches and contexts of learning.

Similarly, there have been many studies that have sought to confirm the psychometric qualities of the CEQ, including Ramsden (1991, 1999), Wilson et al (1997), and numerous other studies referred to in the comprehensive review article by Richardson (2005). Many of these studies have sought to validate the CEQ in different and specific higher education contexts. Examples include the work of Byrne and Flood (2003) in accounting education, Broomfield and Bligh (1998) and Lyon and Hendry (2002) in medical education, and Eley (2001), who concluded that varying the question format would improve the psychometric properties of the CEQ scales.

In spite of the range of studies that have demonstrated the rigour, internal validity and reliability of the CEQ, there has been some increasing concern with the way in which its results are being used for summative as well as for formative evaluation<sup>6</sup>. While acknowledging that the content validity of the survey derives from its strong theoretical base, Koder (1999:159) presented a view that political processes have 'led to a multiplication of stakeholders who are now trying to load on to the CEQ additional purposes, that is generating goal displacement'. Koder cautioned against adding new scales to the instrument to account for the multiplying purposes to which the CEQ was being applied.

The additional scales were developed partly in response to the growing recognition that there are many factors beyond the classroom or the teacher that can have an effect on learning (factors like the university's student support and administrative systems, the quality of its learning resources and infrastructure, and the important role played by the formal and informal social contexts in which learning takes place). This extension of the CEQ to encompass the broader context in which teaching and learning takes place was particularly tied to growing concerns about the influence of this context on the process of transition from school to university (McInnes, 2001). Subjected to rigorous psychometric testing, the extended CEQ was shown to demonstrate internal validity (McInnes et al, 2001). These additional CEQ scales can be found at Attachment 2.

The Students' Experiences of Educational Quality (SEEQ) survey developed by Marsh and colleagues (Marsh, 1982) specifically gathers students' perceptions of teacher effectiveness rather than having the broader course experience focus of the CEQ. Following more than two decades of rigorous validation, the SEEQ survey has been consistently confirmed for its reliability and validity (summarised succinctly in Richardson, 2005). Coffey and Gibbs (2001) attribute this to the highly developed psychometric characteristics of the survey, noting, however, that the 'constructs underlying the SEEQ are less well supported by learning theory'. Nonetheless, they

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<sup>6</sup> For a definition of summative and formative evaluation see the Glossary at the end of this report.

recommend that the SEEQ should be used in preference to other student feedback surveys in use in the UK.

Although the SEEQ and the CEQ are different in terms of where they put the focus for student feedback—the former on individual teacher effectiveness, and the latter on whole course experience—they both centre mainly on what happens in traditional on-campus learning settings and modes of delivery. There are numerous other student feedback surveys used in learning and teaching evaluation in somewhat traditional settings, but none as comprehensively investigated and validated as the SEEQ and CEQ. For example, the MISE (Instructional Model of the Educational Situation) (Betoret and Tomas, 2003) compares students' perceptions with staff perceptions of students' learning, from the point of view of what happened in the classroom; and the PLEQ (Perception of Learning Environments Questionnaire) (Clarke, 1998) applies qualitative survey methods, with a specific focus on the effect of the formal learning settings (lectures, tutorials, one-to-one, labs, and practicum) on the student experience.

#### **1.4 Student engagement research**

Coates (forthcoming) cites the U.S. National Survey of Student Engagement's (NSSE) interpretation of the concept of student engagement as follows:

‘Engagement is seen to comprise active and collaborative learning, participation in challenging academic activities, formative communication with academic staff, involvement in enriching educational experiences and feeling legitimated and supported by university learning communities.’

Coates (2005b; forthcoming) identifies two major dimensions of engagement—academic and social—that apply across online and traditional modes of study and that accommodate and interact with four transient styles of engagement: independent, intense, passive and collaborative. For example, independent styles tend to be associated with a more academic and less socially focused approach to study. Coates (forthcoming: 9) notes that: ‘In many ways the collaborative and passive engagement styles are the converse of the independent and intense styles’.

Griffin et al (2003: 260) highlighted the effect of increasing flexibility on the way that learners engage, claiming that what happens to students outside the classroom is just as important (or even more so) than what happens in the class.

The growing interest in the impact of new technologies in shaping the ‘neomillennial learning styles’ (Dede, 2005) of the ‘Net Generation’ (Oblinger and Oblinger, 2005) is forging a fundamental rethink of the ways in which learning will need to be mediated in order to engage a new generation of learners. However, Coates (2005: 68), in reporting on the findings of his empirical study of how best to leverage new IT-enabled learning management systems to enhance campus-based engagement, observes:

In many respects, staff and institutions do not appear to have considered how (online) learning management systems affect the way their students learn. Instead, there seems to have been a tacit reliance on serendipity to

produce patterns of use constructive for learning. This is surprising, given the resources invested in these potentially powerful learning technologies and the increasing recognition that the dynamics of student engagement are often central to the quality of university education.

Essentially, the emerging studies recommend that, more than ever before, learners will need to be immersed in learning situations that engage them in action, that are authentic, reflective and collaborative, and can be individually self-managed. This growing call for ‘mediated immersion’ (Dede, 2005)—or engagement in active learning—has, at its core, the simple fundamental principle about learning: namely, that ‘what the student does is actually more important in determining what is learned than what the teacher does’ (Shuell, 1986, cited in Biggs, 1993: 73). It echoes the old Chinese proverb: ‘I hear and I forget, I see and I remember, I do and I understand’.

Coates’ (2005: 26) critique of the technology of evaluation relates to this issue. He argues that there are ‘limitations with quality assurance approaches that, even after 20 years of development, exclude information about student engagement’. In claiming that there is ‘too much emphasis on information about institutions and teaching and not enough emphasis on what students are actually doing’, Coates argues for a quality assurance system that factors in the extent to which students are engaging in ‘active learning, involvement in enriching educational experiences, seeking guidance from staff or working collaboratively with other students’. Other factors that are often identified as indicators of educational quality—such as institutional reputation, resources, staff quality, course quality, and quality planning, governance and administration—are argued as not necessarily being associated with whether students are engaging in productive learning. Indeed, Coates maintains (Coates, 2005: 32) that—even without satisfying these performance indicators—students may be engaging in a way that brings about productive learning.

There is a range of well-known surveys whose common starting point is to identify what engages students in productive learning. One of these is the National Survey of Student Engagement (NSSE), developed in the USA in 2003 and now used extensively by colleges and universities in the USA and Canada. Kuh (NSSE website 2005) points to the ‘seven principles of good practice in undergraduate education’ identified by Chickering and Gamson (1987) as being a key influence on what the NSSE gives focus to. These principles, says Kuh, include: student-faculty contact, cooperation amongst students, active learning, prompt feedback, time on task, high expectations and respect for diverse talents and ways of learning. The survey itself has five areas of focus—level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences and supportive campus environment.

The NSSE differs from the CEQ and other more teaching-focused instruments in that it concentrates on inviting students to identify what they are doing to engage productively in learning and what is helping or hindering this. For example, it asks students to reflect on the extent to which they have engaged with the various learning environments and opportunities made available by their university through asking questions, preparing drafts of their work, interacting with students outside class, and so on; it invites them to consider the effect of a wide array of staff other than teaching staff on their learning engagement; and then it seeks to identify what students perceive

they are putting into their experience compared with what they perceive they are getting out of it.

## 1.5 Retention research

The relevance of investigating student learning from the perspective of understanding the degree of students' engagement in it and the related quality of their learning outcomes is well supported in the literature on student retention in higher education. Typically, studies of student retention seek to identify the factors that positively influence engagement and, through this, retention, especially year one to year two retention at the undergraduate level. These studies typically explore the way students experience different sorts of learning environments in post-secondary education and their decisions to persist in or withdraw from study.

Among the types of contextual variables identified as influencing retention, the following are consistently identified: the extent of social integration (Tinto, 1975; Wilcox et al, 2005), the extent of student-faculty interactions (Kuh & Hu, 2001), the extent to which the course, library, lecturers, and friends are cohesive (Waugh, 2001), the impact of academic workload (Szafran, 2001), and the extent of bureaucratic efficiency (Godwin & Markham, 1996). Other researchers have emphasised the learners' perceptions of the context which affect their retention, such as their perceptions of teaching and learning and their expectations of the environment (Laing & Robinson, 2003; Clarke, 1998).

Still others focus on the way in which students engage (or not) in learning, theorising that the degree to which they engage in social and active learning is strongly associated with their persistence to study (Kember and Leung, 2005; Braxton et al, 2000). Finally, there are studies that investigate changes over time; for example, the interaction of different events in the students' experience as an explanation of retention (DesJardins et al, 1999). An example of such time-based studies was that by Johnston (2001) which, in using the Approaches to Studying Inventory (Entwistle and Ramsden, 1983) to measure the learning approaches of students, found that students' approaches to learning in their first year of a commerce degree became more 'surface' over the course of the year as they grappled with their inappropriate expectations about their new learning environment.

Increasingly, such studies of retention are identifying the combination or mix of factors that have the most telling influence on students' willingness to engage and stick with their course of study. Krause et al (2005), for example, in reviewing ten years' research on the first year experience in Australian universities, identified a mix of key engagement factors: motivation to enrol as being a mix of interest and job related factors; an effective orientation to university; clear management of expectations; accurate course advice; adequate subject choice; feeling that one belongs to the university community; having a sense of personal connection to one's teachers (such as encountering staff who know one's name); experiencing an environment that fosters active student participation and interaction; peer interaction around academic activities in and out of class; time devoted to study; the existence of systems that ensure that students do not 'fall through the cracks'; and the ability to manage other commitments, employment and financial pressures while studying.

A parallel study was undertaken at the University of Western Sydney in 2004 (UWS 2004, *Sydney Morning Herald*, Jan 10, 2005: p. 9 and *Sydney Morning Herald*, Jan 13, 2005: Editorial). It was based on exit surveys undertaken with all students who left before the end of year one in 2004. This study found that the decision to leave was the result of a mix of factors beyond the university's control (family demands, conflicting work commitments, financial issues) and a range of factors that were within the university's control (including how well expectations were managed, whether early transition problems were resolved, the convenience and effectiveness of enrolment, academic advice, fees' invoicing systems, the extent to which the course proved to be relevant, and how easily accessed staff and classes were). What was apparent from this study was that the quality of learning as students experienced it was irrevocably tied to the quality of their whole experience.

## **1.6 Impact of learning interventions**

Evaluating the impact of interventions aimed at enriching learning for students is another relevant stream of investigation. Cope and Staehr (2005) studied the effect of small-scale interventions to the learning environment in order to test whether students adopt increasingly 'deep' approaches to learning. They found that decreasing student workload increased the extent to which students perceived that they adopted deeper learning approaches. Hughes & Lewis (2004) discovered a positive effect on the student experience resulting from the effective use of blended online learning support for on-campus students, whereas Campbell & Campbell (1997) identified a positive effect on academic performance from mentoring. Similarly, Peat et al (2001) noted the positive effect of peer networks on social integration and the overall university experience. Krause (2001) found that experiences of writing that were supported by interactions with staff and peers contributed to students' sense of academic integration, while Ahlfeldt et al (2005) concluded that a problem-based learning intervention resulted in a higher level of engagement, as measured by a Student Engagement Survey (adapted from the NSSE).

Yorke & Thomas (2003) identified a combined positive effect on student learning of student-centred approaches, early engagement, induction, first-year focus, a socially engaged curriculum, assessment quality management, mentoring, financial support and staff development. At a broader level of reflection and planning, Hossler et al (2001) investigated the value of using higher education research to guide universities in setting up interventions. This work summarised processes for evaluating the impact of such interventions, and key lessons learned including the importance of systemic collaboration to manage interventions. This latter point was a key finding from the evaluation study undertaken by Pitkethly and Prosser (2001) who argued for the importance of coordinating an integrated, university-wide response to supporting students' transition.

## **1.7 Consolidated reviews of the research**

In 1998 the American Association for Higher Education (AAHE, 1998) undertook a national review of research on learning in higher education. The review was based on '...insights gained through the scholarly study of learning and their implications for pedagogy, curricula, learning environments, and assessment.' It identified ten key



principles underpinning what it called a ‘shared responsibility for learning’, principles which align well with those upon which the NSSE is based and the engagement and retention research cited above.

For the AAHE, productive learning is:

- (i) fundamentally about making and maintaining connections;
- (ii) enhanced by taking place in the context of a compelling situation that balances challenge and opportunity;
- (iii) an active search for meaning by the learner—constructing knowledge rather than just receiving it;
- (iv) a developmental, cumulative process involving integrating new with old, past with present;
- (v) undertaken by individuals who are intrinsically tied to others as social beings;
- (vi) strongly affected by the educational climate in which it takes place: the settings and surroundings, the influences of others;
- (vii) a process which requires frequent feedback, practice and opportunities for application;
- (viii) a process that takes place informally and incidentally, beyond explicit teaching or the classroom, in casual contacts with faculty and staff, peers, campus life, active social and community involvement and unplanned but fertile, complex situations;
- (ix) grounded in particular contexts and individual experiences, requiring effort to transfer specific knowledge and skills to other circumstances; and
- (x) most effective when individuals are able to monitor their own learning, understand how knowledge is acquired, to develop strategies for learning based on discerning their capacities and limitations.

(AAHE, 1998)

Scott’s (2003) consolidation of 20 years’ research and study of post-secondary education at the University of Technology, Sydney, generally aligns with the AAHE principles. Scott identifies twelve characteristics repeatedly judged by students as distinguishing a high-quality learning program: relevance, active learning, theory-practice links, clear expectations, digestible learning, capability-driven design, flexible learning pathways, high-quality assessment and feedback, peer support, targeted assistance, self-managed learning opportunities and ease of access.

There are numerous parallel analyses in the literature on school education. These also aim to identify what the key influences on engagement in productive learning are, and to interpret what kinds of actions can be taken to encourage and enable it. For example, the U.S. National Research Council (1999) identified the following areas as being central to productive engagement in learning at the school level: frequent, focused feedback on learning; peer group influences on motivation and support; relevance and experiential learning; active learning; and consistent theory-practice links. These action areas are similar to the findings from a decade-long Australian study of productive pedagogies in schools by Hayes et al (2006: 22-23) which identifies the following as key dimensions: intellectual quality; connectedness; supportive environment; and working with and valuing difference.

## 1.8 Areas for further development in higher education survey research

In a large majority of the studies based on survey research in higher education there is a very strong focus on quantitative data and the psychometric properties of the instruments used to gather these data, with the units of analysis typically revolving around closed-ended responses on a Likert Scale.

There are three main areas for development in this stream of research.

*The need to more consistently ask students to rate the importance of each item surveyed, not just its performance.*

If an aspect of the student experience receives a high rating on importance and a low rating on performance then investing scarce development resources in it is more justified than an area which attracts not only a low performance rating but a low importance one as well. Also, the comparative importance rankings for different aspects of the university experience which emerge from asking this question are a significant source of information and trend data in their own right. In the national workshops undertaken as part of this study it was suggested that applying this system to a survey like the CEQ would help validate its items in an ongoing fashion and assist universities to set more valid improvement priorities as well as further assisting improvement benchmarking. When this has been done some interesting findings on the relative importance of different aspects of the university experience emerge. For example, in the Student Satisfaction Surveys run by the University of Technology, Sydney and the University of Western Sydney, ease of access to the library has consistently attracted the highest importance rating of all 87 aspects the total university experience surveyed ahead of all course design and educational items.

*Seek feedback two or three years after graduation*

The second area for development in student feedback research suggested at the national workshops is to undertake graduate feedback studies further down the track than just at graduation. This has recently been addressed through a series of surveys of graduates identified as being successful in nine professions during the first five years of professional or disciplinary practice (Scott & Wilson, 2002; Scott & Yates, 2002; Rochester, Kilstoff, & Scott, 2005; and Vescio, 2005). These surveys have included a section in which respondents are asked to look back on the educational aspects of their undergraduate experience and rate both the importance and the extent to which their university focused upon various aspects of that learning experience (1-low to 5-high). The consolidated results are presented in rank order on reported importance (highest first) in Table 2.

**Table 2. Educational quality items ranked on importance and performance by successful graduates in nine professions**

Mean Importance	Mean University Focus	Item No and Description
4.38	2.99	48. Make assessment more real-world and problem-based and less focused on memorising factual material
4.33	2.51	40. Use real-life workplace problems as a key resource for learning
4.26	2.99	47. Ensure that teaching staff have current workplace experience
4.23	2.74	44. Include learning experiences based on real-life case studies that specifically develop the interpersonal and personal skills needed

		in my particular profession
4.09	2.79	39. Focus more directly on the capabilities identified as being important by this study in university courses and assessment
4.08	2.45	42. Use successful graduates more consistently as a learning resource in university courses (e.g. as guest speakers)
4.08	2.64	41. Make work-placements which test the capabilities identified in this study a key focus in each course
3.86	2.70	46. Ensure that all teaching staff model the key attributes identified as being important in this study
3.81	2.64	49. Use performance on the capabilities identified as the most important in earlier parts of this study as the focus of assessment and feedback on all learning tasks
3.67	2.73	45. When relevant, use IT to make learning as convenient and interactive as possible
2.76	2.42	43. Decrease the amount of formal classroom teaching of basic technical skills and use self-instructional guides and IT to develop these

Source: Vescio (2005)

### *Better use of qualitative data*

The third area for development identified at the workshops is to make better use of the, often extensive, qualitative data generated by such surveys. At present such data receive only limited attention. When they are mentioned in research reports on learning and teaching in higher education, it is often from the point of view of processing difficulties, particularly from the viewpoint of the vast resource requirements needed to analyse such data (for example, Richardson, 2005). Generally, the use of these data is limited to the private interpretations made by the individual academic, and has been little studied in a systemic way.

## **1.9 Conclusion and summary**

This literature review has identified a wide range of student engagement factors that are potentially associated with productive learning (that is with ‘deep’ rather than ‘surface’ learning and ‘valuable’ outcomes). There is considerable overlap between these findings and the recurring commendations in the audits of Australian universities by the Australian Universities Quality Agency (see [www.uws.edu.au/quality](http://www.uws.edu.au/quality) for an analysis of these audit themes).

There are factors to do with ensuring that the **design of learning programs** will optimise student engagement—these include making sure that the program produced:

- is relevant not just to the backgrounds, abilities, needs and experience of the students who will undertake it, but to what is going to be essential in subsequent professional, social or disciplinary performance;
- involves an appropriate variety of active, problem-based and practice-oriented learning strategies;
- provides consistent theory practice links;
- ensures that expectations are managed and that the overall program has a sound structure and clear direction;
- focuses on the capabilities that count for effective social, professional or disciplinary performance;
- allows for flexible learning pathways and includes a choice of electives;

- ensures that assessment is integrated, not trivial, carefully marked and given prompt and constructive feedback;
- permits students to ‘learn in their own time’ by providing and training them in the use of relevant self-managed learning materials directly linked to assessment tasks, and including active, just in time online learning systems;
- is implementable by checking that there are appropriate staff, infrastructure and learning support and administrative systems available to deliver the design; and
- can be conveniently accessed.

A second set of factors concerns the importance of there being **capable staff** in place to implement each learning design developed against the design themes identified above. These staff need to be accessible at the times promised, enthusiastic, committed to teaching and their students, up to date, able to teach and modify the learning design in the light of how students respond as it is put into practice and who can provide prompt and constructive feedback.

A third set of factors concerns the findings from the engagement and retention literature that it is the total learning experience that engages students in productive learning, not just what happens in the traditional classroom. All of the following **support systems and environmental factors** need to synchronise with committed and capable staff and a sound learning design if the program is to prove engaging and productive as it is implemented:

- Effective student administration systems
- Responsive student learning support and assistance processes
- Opportunities for peer group support and learning
- A welcoming and high-quality general university environment
- An easily accessed and high-quality library
- Efficient, accessible and responsive IT infrastructure and learning systems

What the literature review does not do is shed sufficient light on the relative weight of these areas of activity or their subsets. Nor does it show how the three areas might best work together or how this can be made to happen. Finally, we could find no data on the relationship between the considerable quantitative data generated by the many surveys reported and the qualitative comments made on many of them.

It was upon this consolidated set of engagement factors and the gaps identified in the literature review that the study was built.

## Chapter 2

### Conceptual framework<sup>7</sup>

#### 2.1 The *CEQuery* domains and subdomains

The *CEQuery* domains and subdomains (Table 3) have emerged directly from a consolidation of all of the factors identified as being associated with engagement in productive learning in the literature review.

**Table 3. *CEQuery* domains and subdomains**

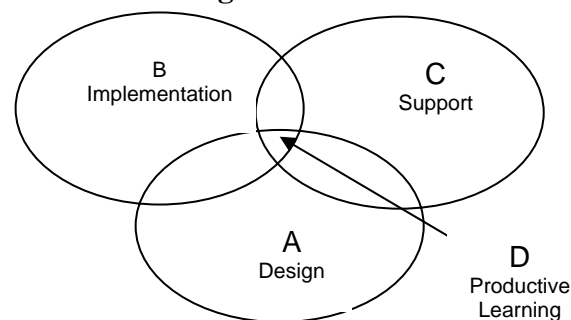
Outcomes	Staff	Course design	Assessment	Support
* Intellectual * Work application /career * Further learning * Personal * Interpersonal * Knowledge/skills	* Accessibility and responsiveness * Teaching skills * Practical experience (current) * Quality and attitude	* Practical-theory links * Relevance (to work/ life/discipline) * Flexibility/responsiveness * Methods of learning and teaching * Structure and expectations	* Relevance * Marking * Expectations * Feedback/return * Standards	* Library * Learning resources * Infrastructure /environment * Student administration * Student services * Social affinity/support

(See Attachment 1 for full details)

#### 2.2 The dynamics of learning design, implementation and support

The literature reviewed, however, did not indicate the way in which these suggested engagement factors might work together. A proposed dynamic tested in a range of local and international benchmarking projects with higher educators in Finland, Sweden, South Africa and New Zealand over the past five years is outlined in Diagram 1.

**Diagram 1. Quality management framework for learning and teaching in higher education**



<sup>7</sup> A conceptual framework explains, either graphically or in narrative form, the main dimensions to be studied—the key factors or variables—and the presumed relationships amongst them (Miles and Huberman, 1984: 28).

Diagram 1 suggests that:

- if a soundly constructed (i.e. a relevant, flexible, responsive, assessment-focused, accessible, learner-centred, feasible and clearly understood) **learning design** (A)
- is **implemented** by consistently capable, accessible and responsive staff using an appropriate combination of interactive, practice-oriented, problem-based learning methods (B)
- and if this delivery is consistently **supported** by directly relevant, responsive, value-adding and appropriate support from key enabling areas like IT, the library, learning support groups and a positive social and university environment (C)  
then
- **productive learning** (improved retention and a positive change in student capabilities) (D) will result.

It is both the appropriateness of action in areas A–C and the extent to which they work together to reinforce and support each other that makes the difference to student outcomes (D). It is posited that, if this occurs, students will be motivated to persist with learning and, as a consequence, be less inclined to either drop out or move to another university.

The relationship between the components of Diagram 1 and the *CEQuery* domains identified in Table 1 is as follows:

**Table 4. Relationship between the study’s conceptual framework and *CEQuery* domains**

<b>Component in Diagram 1</b>	<b><i>CEQuery</i> Domain</b>
A. Design	Course Design
B. Implementation	Staff/Assessment
C. Support	Support
D. Productive Learning	Outcomes

### **2.3 Key questions to be explored**

1. What is the relative weight of these domains and areas of activity and the subdomains that make them up?
2. How might the three areas best work together?
3. What is the relationship between the considerable quantitative data generated by the many surveys reported and the qualitative comments made on them?

## 2.4 Hypotheses to be tested

The literature review raises a number of hypotheses about what influences productive ('deep') learning and retention which this study sought to test. They include:

- (a) That it is the total experience of the university that shapes engagement in productive learning and, through this, influences retention.
- (b) That learning is more than teaching, and that it is a *wide range* of appropriately deployed active learning and practice-oriented strategies which students find most engaging.
- (c) That staff are important, but so too is a sound learning design, and effective administrative and learning support. It is the consistent and positive interaction and reinforcement of the three elements (A–C) in Diagram 1 that makes the difference in terms of productive learning outcomes and retention (D).
- (d) What is assessed is a key factor in shaping what students focus upon in their learning.
- (e) There will be variations between Fields of Education and University.

In addition, two psychometric questions were of interest to the National Steering Committee and the project team:

- (f) Is there a relationship between ratings on the CEQ's closed-ended items and what students choose to focus on in their open-ended 'best aspects' (BA) and 'needs improvement' (NI) comments?
- (g) Are there correlations between the CEQ demographic items and the odds of a 'best aspects' (BA) comment?

## Chapter 3

### Project methodology

#### 3.1 About *CEQuery*

As noted in the Executive Summary, this study has been made possible by the development of a new IT-enabled qualitative analysis tool—*CEQuery*. The analytical software was developed and tested through a partnership of 10 Australian universities in 2003 and distributed with a user manual and free training to all Australian universities in 2004 and 2005. *CEQuery* automatically classifies comments into five main domains (Outcomes, Staff, Course Design, Assessment and Support) and 26 subdomains based on the Report’s literature review (Chapter 1) and the conceptual framework (Chapter 2). It uses a custom-tailored dictionary that has been further enhanced during the current project to make these classifications (the default dictionary provided with the *CEQuery* software can be modified as necessary to suit user needs and can be enhanced as new dictionary terms are identified).

The *CEQuery* domains and subdomains were identified in Chapter 2. They are summarised again in Table 5, with further explanatory details and specific definitions of each subdomain provided in Attachment 1.

**Table 5. *CEQuery* domains and subdomains**

Outcomes	Staff	Course Design	Assessment	Support
* Intellectual	* Access-ability	* Practical-theory links	* Relevance	* Library
* Work application & career	* Teaching skills	* Relevance	* Marking	* Learning resources
* Further learning	* Practical experience	* Flexibility & responsiveness	* Expectations	* Infrastructure and environment
* Personal	* Quality and attitude	* Learning and teaching methods	* Feedback and return	* Standards
* Interpersonal				* Student admin
* Knowledge/skills		* Structure and expectations		* Student services
				* Social affinity/support

In the Course Experience Questionnaire’s (CEQ) open-ended questions, students are invited to comment on the best aspects (BA) of their course experience and the ones most needing improvement (NI). This means that the CEQ open-ended data comes pre-classified by the students themselves.

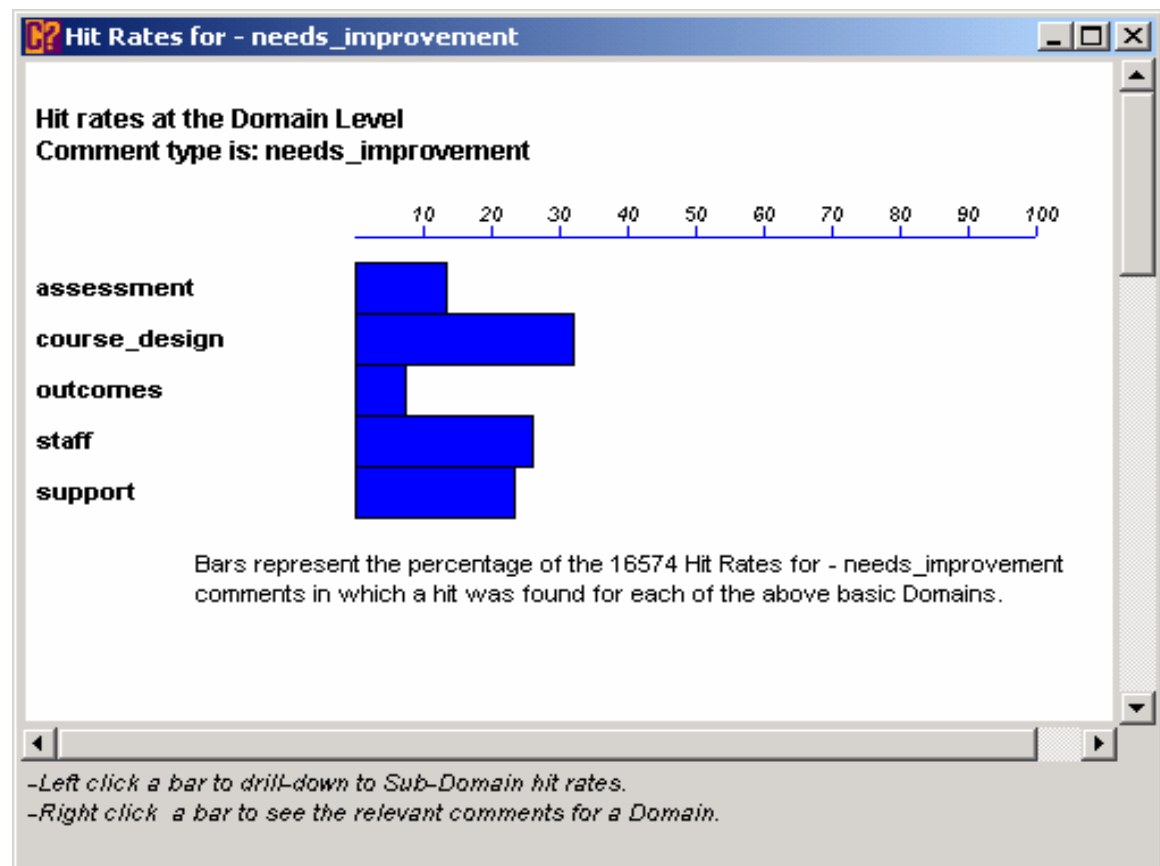
*CEQuery* ‘scores’ best aspect (BA) and needs improvement (NI) comments separately by looking for key words and combinations of words in the dictionary for each subdomain that are in proximity to each other. When these are found, the relevant section of the comment is placed into the count for that subdomain. This is called a

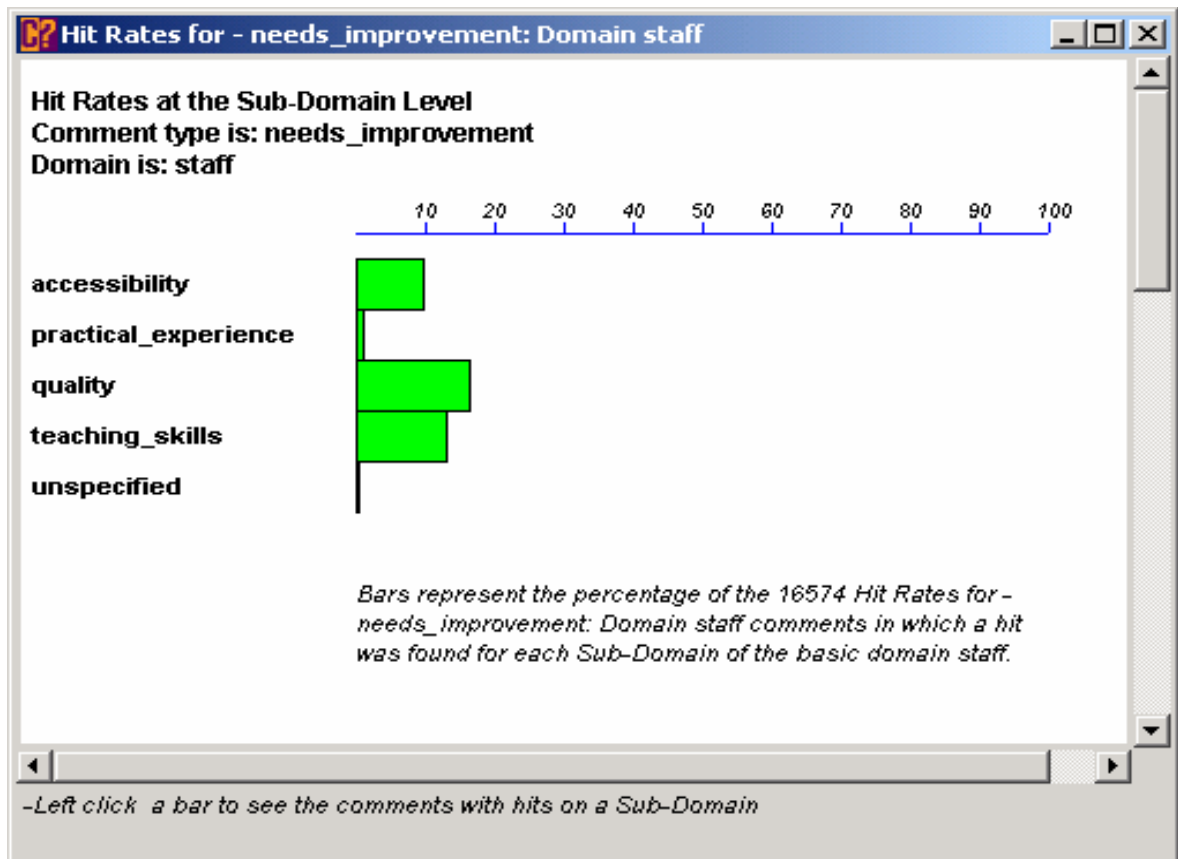


'hit'. This means that, when a 'best aspect' (BA) or 'needs improvement' (NI) comment covers more than one subdomain, this is picked up. In order to test the veracity of *CEQuery*'s 'scoring', the analyst can click on the *CEQuery* results for any domain or subdomain, and the comments that constitute it are presented for checking, with the words used to allocate it to that subdomain highlighted.

*CEQuery* is particularly flexible. Users can undertake a wide range of customised analyses against any of the variables gathered in the CEQ (university, Field of Education, award, fees, sex, age, mode of attendance, type of attendance, year in which the CEQ data were gathered, residence and Aboriginal & Torres Strait Islander [ATSI] status). There is also a custom search facility that was used in the present study when a detailed analysis of the types of methods cited in the Course Design: methods subdomain was explored in more detail. Finally, the *CEQuery* dictionary itself can be modified.

Below is an illustration of how the system works. In this example a small database of just over 16,000 NI comments have been scored. The first screen shows the number of hits for each *CEQuery* domain. If one left-clicks on the (blue) Staff bar then the second (green) screen appears. This shows the hits for each subdomain that constitute the count for the Staff domain. If one then selects a particular green bar—for example, Teaching Skills—and left-clicks on it, then the full set of comments that make up the count is presented.





The first five hits for Teaching Skills in the scored database are shown below, with the words from the *CEQuery* dictionary used to allocate the relevant section of each comment to this subdomain underlined, ready for checking for accuracy by the reader. Note how the first comment contains points about two quite different aspects of the student experience: Staff: teaching skills and Assessment.

### Subdomain: Teaching Skills

#### Needs improvement (NI) comments

- *Some lecturers were not very good at teaching; they just regurgitated the text book. In some subjects the questions in the final exam were nothing like the ones we had been taught to answer.*
- *Affordable technology needs to be better-utilised as using teaching aids by staff who know that to teach involves more than standing up the front droning on.*
- *Lecturers need to be brought in line now traditional teaching methods are becoming redundant to tutorials. They need to learn how to actively involve us, get us working creatively, experimenting—less chalk and talk.*
- *The teaching staff should give more constructive feedback and provide more interaction during classes.*
- *The methods employed by lecturers are boring; they need to participate more with their audience to encourage participation in discussions and enhance interest.*

### 3.2 Optimising the reliability and validity of *CEQuery* scoring

The project team was eager to ensure that the analysis was based upon accurately classified data and that the number of hits was maximised. The strategies used to assure data veracity are summarised below.

#### *Subdomain analysis*

To ensure that comments were being scored to the appropriate subdomains, approximately 100 sample comments from each of the 31 subdomains<sup>8</sup> were exported and validated by five individuals (both internal and external to the project team). The accuracy of allocation was established as being 90 per cent.

#### *Multiple Hits analysis*

Longer comments, where students discuss more than one aspect of their experience, are scored into multiple subdomains. To ensure that this process was accurate and that hits were not being duplicated, all ‘best aspect’ (BA) and ‘needs improvement’ (NI) comments that were scored into five or more subdomains were exported and a check was performed to ensure that this was accurate and there was no duplication. Few anomalies were found.

#### *Non-Hits analysis*

Initially 26 per cent of the ‘best aspect’ (BA) and ‘needs improvement’ (NI) comments in the database were not being scored—that is, they did not get captured as a hit in the *CEQuery* analysis. Samples of these unscored comments were printed off and reviewed. Where it was identified that valid comments were not being captured because the appropriate words were not in the dictionary, the *CEQuery* dictionary was updated.

The additional comments captured through this modification to the original default dictionary, and their scoring, were reviewed and validated to ensure that they were being meaningfully allocated to appropriate subdomains. For example, use of previously non-hit phrases that referred to the best aspect being the ‘practical nature’ or the ‘practical aspects’ of the course would be allocated to the Theory-practice links subdomain; references to the best aspect being the ‘practical experience’, ‘clinical’ or ‘practicum’ components of the course would be allocated to the Course Design: methods subdomain.

Following this initial analysis, and using the enhanced dictionary, the total data set was re-scored. It was found that the non-hit rate had been reduced to 19 per cent for ‘best aspects’ (BA) comments and 20 per cent for ‘needs improvement’ (NI) comments. An analysis of the remaining 20 per cent of un-hit comments revealed that a significant proportion were not able to be scored, as they are not actually comments

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<sup>8</sup> These subdomains included the 26 subdomains identified above plus five subdomains termed ‘unspecified’. The ‘unspecified’ subdomain in each domain accommodates comments about that area which contain too little information to be allocated to a subdomain. For example, in the ‘Assessment’ domain an unspecified BA comment would be ‘the assessment was good’.

but words such as ‘no comment’, ‘finished’ and ‘N/A’. Others provided too little information or were too cryptic to be scored.

### 3.3 Key caveats

It is important to take into account the following caveats when interpreting *CEQuery* results:

- The study accepted comments as entered (and de-identified) from each of the 14 partner universities. There was no attempt to verify the accuracy of entry of comments from the original paper-based surveys used by most universities. (Please note, however, that *CEQuery* does pick up common typographical errors).
- Significant variations in response rates to the CEQ between universities are not controlled for. Nor are we able to determine the extent to which, irrespective of response rate, the response sample was representative of the profile of each university as a whole.
- As indicated above, the allocation of comments to *CEQuery* domains and subdomains is not perfect. However, every attempt has been taken to improve the *CEQuery* dictionary and confirm the accuracy of its allocation of the points that students make to the correct domain and subdomain.
- It is important to use the fact that *CEQuery* can give back the comments which make up the count for a particular domain and subdomain to confirm for oneself the accuracy of its coding. The results of this confirmation step need to be taken into account when drawing any conclusions from the analysis.
- It is also important to keep in mind the specific definitions of each *CEQuery* domain and subdomain when allocating meaning to the results, as the meanings attributed to the terms used can vary between individuals. The definitions used in this report are given in Attachment 1.
- The findings of the analysis should always be triangulated with other sources of data and institutional research. They are, therefore, best used as indicative flags for more detailed follow-up.

### 3.4 Analytical and interpretative methodology used in studying the *CEQuery* results

Because each respondent file has on it data on a wide range of demographic variables (university, Field of Education, award, fees, sex, age, mode of attendance, type of attendance, year in which the CEQ data were gathered, residence and Aboriginal & Torres Strait Islander [ATSI] status) along with the student’s ratings on the CEQ items, as well as his or her open-ended comments on the ‘best aspect’ (BA) and ‘needs improvement’ (NI) questions, a wide range of analyses are possible. The analyses undertaken in the present study, and the methodologies used in these analyses, are outlined below.

*Overall hits: importance*

*CEQuery* gives a total number of hits for each domain and subdomain. This is the total of the BA plus NI hits and is seen as a proxy measure of importance. The

assumption here is that what students chose to write about in an open-ended comment is, presumably, of importance to them.

*Odds of a Best Aspect: quality*

This is simply the ratio of the total number of ‘best aspect’ (BA) hits divided by the total number of ‘needs improvement’ (NI) hits for each *CEQuery* domain and subdomain. It is seen as being a proxy measure of perceived quality.

**The Logistic Regression method**

This method was used to determine the relative contribution of various CEQ demographic factors (such as university, Field of Education, level of study, sex, age, residency status) to the odds of a ‘best aspect’ (BA) rather than a ‘needs improvement’ (NI) comment.

First, as indicated above, the method of analysis separates the results into ‘importance’ (judged by the total number of hits in each domain and subdomain) and into ‘quality’ (judged by the ratio—or odds—of ‘best aspects’ (BA) to ‘needs improvement’ (NI) comments).

The logistic regression analysis looks at perceived quality, that is at the odds of a ‘best aspects’ comment in each (sub-)domain and, in particular, at the various factors that may affect the quality. The data used for this analysis are the records of those people who make a positive or a negative comment for any (sub-)domain. ‘No comment’ records, and those that include both a positive and a negative comment, are not included.

Specifically, the modelling studies the odds of getting a ‘best aspect’ rather than a ‘needs improvement’ comment in each of the five *CEQuery* domains, and the relationship between these odds and various independent (possibly explanatory) variables. The modelling was carried out using logistic regression, a technique for examining the effect of various variables (categorical or quantitative, although all variables here were treated as categorical) on a binary response (‘best aspect’ versus ‘needs improvement’). The effect of an explanatory variable is measured as an ‘odds ratio’, a multiplicative term that shows how much more likely a positive than a negative comment is in one situation rather than another.

All records with comments in the particular domain were used in the modelling with the exception of records that had a comment (or more than one comment) in BA *and* NI. Records that had missing values on one or more of the independent variables were also not used in the modelling—the computer package does this automatically and of necessity.

Each of the files was examined and those variables that would seem not to play a part in the logistic regression modelling (for example, the comments themselves) were removed. Other variables were modified in some ways (for example, ‘99’ representing ‘missing’ was replaced by an actual missing value) or grouped (age was put into three categories: under 25, 25-44 and 45+).

The senior statistical analyst, who is also an Associate Dean (Learning & Teaching), worked in partnership with an academic from a centre for learning and teaching in higher education, who supplied valuable background insight in terms of pedagogy and higher education context. The key findings and hypotheses that emerged from the literature review (Chapters 1 and 2) were also taken into account. Various possible models for the variables that might have an effect on the odds of a positive rather than a negative comment in each domain were debated. Further study status and employment status were rejected, as these variables referred to present conditions rather than those at the time of study. It was agreed that, as the Higher Education Innovation Program (HEIP) proposal anticipated, a key variable would be Field of Education, as the results were reported separately for each field and because preliminary analysis showed that there were significant differences between fields. To this the CEQ variables representing Award, Fees, Sex and Age were added. ‘University’ had been found previously to be a very important variable in all models; that is, there were always significant differences between universities. Thus the basic model for each domain included the variables: Field, Award, Fees, Sex, Age and University. The results from these models are shown in Attachment 5 (Appendix 1).

These key variables were modified slightly. For Field of Education there were very few cases in field 11 (food, hospitality, personal services) and field 12 (mixed fields), so these two fields were excluded. Award was concentrated almost exclusively on undergraduate and postgraduate status, and others were excluded. Fees were kept in three groups—HECS, fees and other.

Following the construction of a basic model in each domain, the following variables were added to determine their significance: Attendance type (FT or PT), Attendance mode (Internal or External), Australian residence (No or Yes), ATSI (No or Yes) and Year (2001/2/3/4). With the larger samples in the updated data set, the variables could be added all together and acceptable models could still be produced, although the main aim here was not to construct a new model for all the variables at once, but to get an idea of the significance of these extra variables. The results from these investigations are shown in Attachment 5 (Appendix 2).

The regression models were run in each *CEQuery* domain consecutively, and the results of this modelling are summarised in Chapter 4. As many models were being looked at, and there were many terms in each model, a significance level of 0.01 was used (that is, an effect was only reported as statistically significant if it had a less than a 1-in-100 chance of occurring if there was no real underlying effect). Variables with p-values between 0.01 and 0.05 were regarded as marginally significant.

### **Regression between the CEQ scales and the odds of a ‘best aspect’ (BA) comment in *CEQuery***

A subsequent investigation looked at the relationship between the scores on the various CEQ scales as the independent variable and the odds of a ‘best aspect’ (BA) comment rather than a ‘needs improvement’ (NI) comment as the dependent variable. The CEQ scores are on a five-point scale (1 being low and 5 being high), and in this modelling they were treated as quantitative variables. The results show odds ratios for each step on the CEQ scale; that is, how many times more likely a positive rather than a negative comment is for each extra step up on the CEQ scale. The results from the

CEQ investigations are shown in Attachment 5, Appendix 3 and summarised in Chapter 4.

One feature of the CEQ scores is that the 10 CEQ scales (Attachment 2) are never obtained at the same time for a specific record. The first five scales (Good Teaching, Appropriate Assessment, Appropriate Workload, Generic Skills, Clear Goals) were available for most records, and these scales were examined together. The other scales (Graduate Qualities, Learning Resources, Learning Community, Student Support and Intellectual Motivation) were examined individually, as they never occurred together in any record. (For comparison, the first five scales were also examined individually, and when this was done the results were sometimes slightly different, in part due to the individual versus combined effects, and in part because the individual examinations allowed the full amount of data to be used.)

Finally, graphs were prepared for each domain showing the proportion of positive comments against the two most important independent variables, Field of Education and University. These graphs are shown in Attachment 5 (Appendix 4), together with some information on the number of records with comments in each domain, and the number actually used in the statistical investigations: of course, a record with a comment under both ‘best aspect’ (BA) and ‘needs improvement’ (NI) cannot contribute to an investigation of the odds of a positive rather than a negative comment. (However, these records may be used in the next stage of the investigation, when the odds are analysed for each subdomain.)

### **Regression between *CEQuery* domains and the CEQ scales and items**

Whereas the above analysis treated the odds of a ‘best aspect’ (BA) comment in *CEQuery* as the dependent variable, in a further investigation the analysis was reversed and the CEQ scales and items were made the dependent variables. The independent variables were the *CEQuery* domains as three-point dimensions (-1, 0, 1, representing the NI, ‘no comment’ and BA responses respectively).

That is, the aim of this analysis was to examine the relationship between the *CEQuery* domains treated as the independent (explanatory) variables and (a) the CEQ scales (Attachment 6) and then (b) the full set of 48 individual CEQ items (Attachment 7) as the dependent (response) variables.

In this regression it was expected that:

- (a) a significant association would be evident between certain *CEQuery* domains and certain CEQ scales and items,
- (b) the overall effect of the *CEQuery* domains would be different for specific CEQ scales and items, and
- (c) the individual effect of the *CEQuery* domains would be different for specific CEQ scales and items.

Multiple stepwise regression was used to examine whether and to what extent the scores (1-5) on each of the CEQ scales (such as Good Teaching and Appropriate Assessment) and the Overall Satisfaction item, as well as the scores on any of the 48 individual CEQ items, could be predicted by the scores (-1, 0, 1 representing the NI, ‘no comment’ and BA responses) on each of the *CEQuery* domains (such as

Outcomes, Staff and Course Design). For each scale the set of five domains was repeatedly searched for the best predictor, then the second best and so on, until the final set of significant predictors in descending order had been established.

Between-subject analysis of variance (ANOVA) was used to examine whether there was a significant difference in the mean scores on each of the CEQ scales and each of the 48 individual CEQ items for the three categories of responses (NI, 'no comment' and BA) within each of the *CEQuery* domains, and in particular for the BA against NI categories.

These two methods, although similar in nature, are not interchangeable, as regression reveals a linear relationship between variables and ANOVA reveals a relationship between averaged scores of categorised variables. It was of interest to compare the results of these two approaches.

### **Relationship between GDS Employment status and the *CEQuery* domains**

The aim of this analysis was to examine the relationship between the Graduate Destination Survey (GDS) Employment status categories (working full-time, part-time, not employed/seeking work, unavailable for study/work, full-time study) treated as the independent variables and the scores on the *CEQuery* domains and subdomains as the dependent (response) variables.

All records with no comments on the open-response questions were removed from the dataset as were the records with the 'No Data' comment on the employment status. The sample size was  $N = 79,056$ .

A one-way analysis of variance was conducted with Employment status as a five-level factor to examine the differences between the mean scores on the *CEQuery* domains and subdomains. These means were calculated based on  $-1 = \text{NI}$ ,  $0 = \text{'No Comment'}$ ,  $1 = \text{BA}$ . Thus, the group mean scores on domains and subdomains presented in the far right column of Table 14 (Attachment 8) imply that values  $> 0 = \text{more BA comments}$ , values  $< 0 = \text{more NI comments}$ , and values close to  $0 = \text{balanced or patchy comments}$ . Differences between the means within each employment category were tested using a pairwise multiple comparison test with  $p$ -value set at  $< .001$ .

### **Determining if *CEQuery* comments are pre-conditioned by CEQ items**

The aim of this analysis was to examine the extent to which comments on the open-response questions might be preconditioned by the items to be answered in the CEQ. All cases with no comments were removed from the original dataset, thus the analysis was based on 79,552 cases, each with at least one comment. Within this dataset, 30,322 respondents from five universities (6, 8, 10, 13 and 14) used the CEQ Student Support scale (see Attachment 2), and 49,230 from nine universities (1, 2, 3, 4, 5, 7, 9, 11 and 12) did not use this scale. Further, 9,095 participants from two universities (10 and 12) used the Learning Resources scale, and 70,457 participants from 12 universities (1-9, 11, 13 and 14) did not use this scale. It was hypothesised that significantly more comments about support (that is, hits in the *CEQuery* Support domain) would come from respondents in the universities that used these two support-related scales compared to those that did not.



Cross-tabulation was used to summarise the relationship between two categories of particular scale use (*used* versus *not used*) across two categories of comments on each particular domain (*comment* versus *no comment*). A chi-square test showed the probability of getting the pattern within the cross-tabulation table by chance. A *t* test was used as supplementary to cross-tabulation to examine a difference in the mean scores on *CEQuery* domain hits for the two categories of particular scale use: used versus not used.

### **Learning methods subanalysis**

As the *CEQuery* subdomain ‘Course Design: learning methods’ attracted the greatest number of hits of all 26 *CEQuery* subdomains, it was decided to undertake a more detailed analysis of what methods were being consistently identified by students as a ‘best aspect’. An amalgamated set of Fields of Education developed during early modelling for the DEST Learning and Teaching Performance Fund<sup>9</sup> was used. This analysis was undertaken using the ‘custom search’ facility of *CEQuery*.

In all, some 60 different learning methods were identified by students as a ‘best aspect’ of their studies. A classification system based, in part, on the Report’s literature review was used to cluster the methods identified.

### **‘Best Aspect’ hits on Learning Methods across Employment status**

Only records with ‘best aspect’ (BA) comments on Course Design: Methods were selected for this analysis. The records with the ‘No Data’ comment on the employment status were removed, thus the sample size was  $N = 18,691$ . A one-way analysis of variance was conducted with the ‘best aspects’ (BA) hits on Learning Methods as dependent variable and Employment status as a five-level factor.

## **3.5 Testing and verifying the findings: Phase 2 Partner workshops**

### **Phase 2 Workshop methodology**

A series of half-day workshops with more than 100 senior staff (Pro Vice-Chancellors, Directors of Learning and Teaching (L&T), Associate Deans, University Survey Managers and Institutional Researchers along with a selection of line staff were held in Brisbane, Sydney, Melbourne, Adelaide and Hobart with 13 of the 14 partner universities after the full set of results were available. The workshop methodology was tested and refined in a pilot workshop with senior staff, academic staff and Learning & Teaching (L&T) academics from one of the partner universities in Sydney. Findings and their implications were further scrutinised by senior academics and L&T directors as part of a set of workshops on tracking and improving

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<sup>9</sup> These aggregated categories include the ASCED Fields of Education as follows: Science & Built Environment—Natural and physical sciences; IT; Engineering & Related Technologies; Architecture & Building; Agriculture, Environmental & Related Studies; Health—Health; Education—Education; Management & Commerce—Management & Commerce; Society, Culture & Creative Arts—Society & Culture; Creative Arts; Food, Hospitality & Personal Services; Enabling course load only—Mixed field programs.

L&T in higher education run with eighteen South African and four western Canadian universities by HEIP Project Director Professor Scott in late 2005.

As a briefing for these workshops, participants received the original HEIP funding submission along with a briefing sheet on the purpose and approach to be adopted at the workshop and a summary of the study's data veracity tests and its results. This phase two scrutiny and discussion of the study's results was seen as being a critical step in the project because it would ensure that a wide variety of those who could act on the results were involved in determining their veracity, implications, limitations and most beneficial use.

The focus for each workshop was:

1. To critically appraise the methodology and results of the *CEQuery* analysis with a view to ensuring that appropriate caveats were placed on interpretation (Section 3.3 above) and to identify further enhancements to *CEQuery*.
2. To discuss and identify potential explanations for the results from:
  - a. the overall hits and odds analysis;
  - b. the Logistic Regression analysis;
  - c. the outcomes of the regressions between
    - i. the CEQ quantitative scales and the odds of a 'best aspect' (BA) comment x *CEQuery* domain; and
    - ii. the five *CEQuery* domains and the Overall Satisfaction item of the CEQ; and
  - d. the Course Design: Methods subscale results:
    - i. the classification system for this subscale analysis; and
    - ii. why the popularity of some methods compared with others
      1. overall; and
      2. by Field of Education.
3. To identify the extent to which the study's results align with broader research by participants or any additional literature of which they were aware.
4. To identify practical and beneficial ways in which key results of the *CEQuery* analysis could be used. This was with a view to identifying:
  - a. policy enhancements at the university or inter-university level;
  - b. potential ways of using the data to promote the university, a group of universities or the Australian higher education system;
  - c. key improvement areas at the university or system level, noting any solutions already under way for that area;
  - d. ways of enhancing/validating current student feedback survey items in the light of the *CEQuery* results; and
  - e. ways of using the results to ensure that course accreditation and review processes focus on what really counts for student engagement.

## Chapter 4

### Results

#### 4.1 Overall pattern of hits (Importance) and odds of a ‘Best Aspect’ comment

Table 6 presents the overall pattern of hits and the odds analysis.

**Table 6. Overall pattern of hits and odds analysis**

Rank Order BA/NI 1-high	Subdomain	Rank Order Hits 1-high	BA/NI Odds	Count BA	Count NI	Total Hits (BA + NI)
1	Outcomes – personal (OP)	25	19 to 1	1,668	88	1,756
2	Outcomes – further learning (OF)	30	14.5	347	24	371
3	Outcomes – intellectual (OI)	14	13.3	7,197	541	7,738
4	Outcomes – unspecified (OU)	27	6.5	1,126	173	1,299
5	Support – unspecified (SU)	31	5.1	277	54	331
6	Outcomes – interpersonal (OIP)	19	4.1	2,455	595	3,050
7	Outcomes – knowledge/skills (OK)	10	2.9	8,037	2,746	10,783
8	Support – social affinity (SSA )	9	2	7,249	3,683	10,932
9	Course design – unspecified (CU)	26	1.9	1,079	574	1,653
10	Assessment – relevance (AR)	17	1.8	2,537	1,400	3,937
11	Staff – practical experience (SP)	24	1.4	1,030	759	1,789
12	Staff – quality (SQ)	2	1.3	17,417	13,512	30,929
13	Course design – methods (CM)	1	1.2	22,231	18,338	40,569
14	Course design– flexibility (CF)	4	1.2	12,754	10,579	23,333
15	Staff – accessibility (SA)	3	1.2	12,748	10,611	23,359
16	Course – practical/theory links (CP)	6	1.2	9,157	7,658	16,815
17	Staff – unspecified (SU)	28	1	347	334	681
18	Outcomes – work application (OW)	12	0.9	4,715	5,248	9,963
19	Assessment – unspecified	29	0.7	179	251	430
20	Support – learning resources (SR)	11	0.7	3,970	6,006	9,976
21	Course design – relevance (CR)	7	0.7	6,335	9,658	15,993
22	Staff – teaching skills	8	0.6	5,548	9,969	15,517
23	Support – infrastructure/environment (SI)	13	0.5	3,423	6,353	9,776
24	Support – library (SL)	20	0.5	1,018	1,933	2,951
25	Support – student services	21	0.4	784	1,808	2,592
26	Assessment – standards (AS)	15	0.3	1,873	5,449	7,322
27	Support – student administration (SAd)	16	0.3	1,078	4,095	5,173
28	Course design – structure (CS)	5	0.2	3,579	15,668	19,247
29	Assessment – marking (AM)	22	0.2	386	2,045	2,431
30	Assessment – expectations (AE)	23	0.2	308	1,794	2,102
31	Assessment – feedback (AF)	18	1 in 10	316	2,792	3,108
<b>Totals</b>				<b>141,168</b>	<b>144,738</b>	<b>285,906</b>

The rank order of the subdomains, from the highest number of combined ‘Best Aspect’ and ‘Needs Improvement’ hits to the lowest, is identified in column three of Table 6. As indicated in Chapter 3.4, areas with a high count of hits for BA + NI are seen as indicating areas of high importance to students. When the three Outcomes subdomains are taken out of the top 15 hits list and the remaining 12 subdomains are

looked at in combination, there is clear confirmation that it is the total experience of the university that shapes students' judgments of quality, not simply what happens in the classroom. The top 15 list contains subdomains from all four areas that make up the study's conceptual framework: Course Design, Implementation and Delivery, Support, and Outcomes (Chapter 2). Note also that areas like Student Administration, although just outside the top 15, still attract a substantial number of hits.

If the percentage of hits in each domain and subdomain are compared, there is a preliminary indication of the relative weight that students give to different factors in shaping their judgments of quality and motivation to engage in higher education. In terms of the different domains, Course Design attracts the highest level of attention (117,610 hits out of 285,906); then Staff (72,275); Support (41,731); self-determined Outcomes (34,960) and Assessment (19,330). At the subdomain level the rank order on importance (weighting) is Course Design: methods (40,969 hits); Staff: quality (30,929); Staff: accessibility (23,359); Course Design: flexibility (23,333); Course Design: structure (19,247).

Specifically, the findings on importance in Table 6 indicates that it is the consistent combination of a sound learning design, having appropriate and committed staff there to deliver it and a range of support systems—including peer and social support—to underpin its operation that engages students. Columns five and six give the exact count of BA and NI hits for each subdomain.

A category for 'unspecified' comments has been included for each domain. This subdomain accommodates comments that are clearly about the domain but contain too little information to be classified accurately into a particular subdomain. A good example of an 'unspecified' comment for the Assessment domain would be 'the assessment was good'.

The fourth column gives the odds of a comment being about a 'best aspect' for each domain and subdomain. The results show that the Outcomes domain has the highest odds of attracting BA comments and the Assessment domain the lowest. The subdomains in the middle of this table (that is, areas with approximately even odds of a BA comment) identify areas of patchy practice and imply a need for greater consistency and equivalence across universities and fields of education (FOE) for the subdomains concerned. Note how five of the top six subdomains attracting the highest number of hits have also attracted relatively even odds of a BA comment. Attachment 3 gives a breakdown of these odds by Field of Education that shows the variations by FOE.

Areas of high importance (that is, those attracting the highest BA+NI hits) and low perceived quality (that is, those with low odds of a BA) identify potential areas for improvement follow-up across the sector. One example in this regard is 'Course Design: structure'. A closer analysis of what students reported in this subdomain identifies particular concerns with clarity in course direction and coherence, subject balance and distinctiveness, a need to reduce duplication in content across subjects, variable workload between subjects, inconsistent use of various prerequisites and co-requisites and the inappropriate use of learning modes.

Considerable variation in the odds of a ‘Best Aspect’ comment has emerged between all universities and Fields of Education for all these domains. We now turn to the specific and significant variations that have emerged from this study.

#### 4.2 Effects of CEQ variables on the odds of a BA comment

A logistic regression analysis was undertaken to explore potential variations. This, as noted in the report’s Methodology chapter (Chapter 3), explored the effect of various CEQ variables (university, Field of Education, award, fees, sex, age, mode of attendance, type of attendance, year in which the CEQ data were gathered, residence and ATSI status) on the odds of a ‘best aspect’ comment occurring in each *CEQuery* domain. The results of this analysis are summarised in Table 7, with full details given in Attachments 4 and 5.

**Table 7. Effects of CEQ demographic variables on odds of a BA comment x domain (\* = significant  $p < 0.01$ )**

	Asst	Course	Outcomes	Staff	Support
<b>University</b>	*	*	*	*	*
<b>FOE</b>	*	*	*	*	*
<b>Award</b>		*		*	
<b>Fees</b>	*		*	*	
<b>Sex</b>					
<b>Age</b>	*	*	*		*
<b>Attend type</b>		*	*		
<b>Attend mode</b>		*	*	*	*
<b>Year data</b>		*	*	*	
<b>Aust residence</b>	*	*	*	*	
<b>ATSI</b>					

The analysis revealed that the most important differences in each domain come between universities and between (the 10) Fields of Education.

Other factors—such as FT/PT attendance, fees status and Australian residence—are important in some fields, but not in others. Sex and ATSI status are never important; that is, there is never a significant difference between males and females, or between ATSI and non-ATSI students, in terms of their perception of quality (the odds of a BA comment) in each of the domains. In the case of ATSI status this result may be due to a low incidence of respondents (731 records or 0.5 per cent of the sample).

Specifically, the analysis summarised in Table 7 revealed that Field of Education was always very significant, as was university. In each model, these variables had p-values down to  $< .001$ , indicating that there were real differences between FOE and between universities for each domain. Most other variables were significant in some cases and not in others, with the exception of Sex and ATSI status, which, as noted earlier, were

never significant. Award was significant by itself for Course Design and Staff and in interaction for Assessment and Support. Fees were significant for Assessment, Outcomes and Staff. Age was significant for all domains except Staff. Surprisingly, Year was significant for Course Design, Outcomes and Staff. Attendance type was significant for Course Design and Outcomes, and Attendance mode was significant for all domains except Assessment. Australian residence was significant for all domains except Support.

A parallel analysis of the effects of the CEQ variables on each subdomain is ongoing.

### **4.3 Effects of the *CEQuery* domains on the CEQ scales**

A series of regressions were undertaken that looked for significant ( $p < .01$ ) relationships between the *CEQuery* domains as the independent variable and the CEQ scales along with the Overall Satisfaction item as the dependent variables. The results are given in Attachment 6.

In summary, this analysis revealed that all five domains are significantly associated with the majority of the CEQ scales but most strongly with the Good Teaching scale, the Overall Satisfaction item and the Clear Goals & Standards scale. That is;

- ‘Best Aspect’ comments predict higher CEQ scale scores, and
- ‘Needs Improvement’ comments predict lower ones.

No relationships were evident between the Appropriate Workload scale and the *CEQuery* Outcomes domain, between the Graduate Qualities scale and the Assessment domain, between the Intellectual Motivation scale and the Assessment domain, or between the Learning Community scale and the Course Design, Course Outcomes and Assessment domains.

The *CEQuery* Staff domain has the strongest relationship with the Overall Satisfaction item and nine of the 10 CEQ scales. This is the main message from the stepwise regression analyses. It means that positive comments on staff reliably predict high ratings on the majority of CEQ scales and negative comments predict low ratings. This may have a few explanations:

- the staff really make a principal difference in almost all aspects of the course;
- the staff make such a strong positive or negative impression that this affects what students say about other components of their course; and
- some CEQ scales that are not supposed to relate to the staff still contain the word ‘staff’, and thus may trigger staff-related comments

Both the analyses covered in the previous section and that above confirm the strong relationships between the CEQ and *CEQuery*, and hence the validity of the *CEQuery* instrument. The odds analysis supports its empirical validity or its accuracy as an assessment tool. The above analysis supports its theoretical validity or its sensitivity to the nature of the issues assessed.

### **4.4 Effects of the *CEQuery* domains on the CEQ items**

Whereas the above analysis investigated the relationship between the *CEQuery* domains and the CEQ scales, this analysis repeated the above analysis for each of the

48 CEQ items individually. The aim was to examine the relationship between the *CEQuery* domains treated as the independent (explanatory) variables and the 48 Course Experience Questionnaire (CEQ) items as the dependent (response) variables (see Attachment 2 for these items). The results of both analyses raise some issues about the validity of the CEQ items—especially but not exclusively in the assessment area, where the CEQ items focus on one issue; memory-based assessment (‘The staff seemed more interested in testing what I had memorised than what I had understood’, ‘Too many staff asked me questions just about facts’, ‘To do well in this course all you really needed was a good memory’.), but the comments cover a different, and much broader, range of areas. Full details are given in Attachment 7.

Tables 11, 12 and 13 in Attachment 7 report the strength and linearity of the relationship between the model of the five *CEQuery* domains and the CEQ items’ scores. In plain terms,  $F$  values show the strength of the general relationship between the two instruments, whereas adjusted  $R^2$  values reflect the presence of specific *CEQuery* domain(s) from the set of five, which are particularly strongly related to a given item. Such domains, if they exist, are specified in the far right column of each table.

The data in Table 11 of Attachment 7 are sorted by CEQ scale (as per Higher Education Innovation Program [HEIP] File Specifications), the data in tables 12 and 13 are sorted by  $F$  value and  $R^2$  value respectively. Thus, the items emerging on the top of tables 12 and 13, like most of the Good Teaching, Clear Goals and Standards, and General Skills scales items, appear valid from the students’ perspective. The bottom items of tables 12 and 13 may need to be revised and updated, as they do not pick up what students focus upon in their comments. Interestingly, the Staff domain again emerges as the strongest predictor of many items that are not supposed to be related to staff (some of these may also need revision), and the Assessment domain is never the strongest predictor. Again, this implies that the students’ perspective of many issues and interrelations in higher education differs from the current CEQ instrument’s perspective. For example, there are important issues of assessment, raised in the comments and specified as *CEQuery* Assessment subdomains which are not covered in the CEQ.

#### **4.5 Regressions between the odds of a Best Aspect comment and the Overall Satisfaction item on the CEQ**

A regression was also run between the Overall Satisfaction item of the CEQ as the independent variable and the odds of a BA comment in each *CEQuery* domain as the dependent variable. This analysis revealed that the Overall Satisfaction item is significantly and positively associated with the odds of a positive rather than a negative comment on each domain, with the following odds ratio: Assessment 1.22, Course Design 1.34, Outcomes 1.40, Staff 1.21, Support 1.21. For example, in the Outcomes domain, positive rather than negative comments were 40 per cent more likely for each step up on the five-point CEQ rating scale (1 being low and 5 being high) compared to only 21 per cent for Staff for each step up the scale.

#### 4.6 Relationship between GDS Employment status and the *CEQuery* domains

Of the 31 dependent variables examined (the five *CEQuery* domains and 26 subdomains) 11 appeared to be attracting significantly different comments, in terms of BA versus NI, among different employment status categories. The highlighted groups in Table 14 of Attachment 8 with results marked with an asterisk made significantly different comments from each other on the domains/subdomains in the far left column. For example, the Staff domain attracted significantly more ‘Best Aspect’ and fewer ‘Needs Improvement’ comments from the Full-Time Study group compared with the Not Employed/Seeking Work group (cf. means = .06 v. 00).

Interestingly, the Outcomes domain attracted significantly more “best aspect” and fewer “needs improvement” comments from the Unavailable for Study/Work group compared with the Working Part-Time group (cf. means = .16 v.10). It should be noted that all groups have more BA than NI comments on Outcomes, but these two groups show the greatest difference. A meaningful example is the Work Application/Career subdomain, which expectedly attracted many more NI comments and fewer BA comments from the Not Employed/ Seeking Work group than from any other group. This was the only significant difference it makes compared with the Working Full-Time group (cf. means = .12 v.02).

#### 4.7 Investigation of whether ‘Best Aspect’ and ‘Needs Improvement’ comments are preconditioned by the CEQ items

Table 15 in Attachment 9 reports significantly higher percentages of hits in the *CEQuery* Support domain for those universities where the CEQ’s Student Support and Learning Resources scales were used. As noted in Chapter 3, the fact that some but not all universities of the 14 that participated in the study had used these scales made a comparative analysis possible. For the universities using the Student Support scale this prevalence is: 37.1% cf. 33.6%,  $\chi^2 = 98.76$ ,  $p < .001$ , and for the universities using the Learning Resources scale it is 39.5% cf. 34.4%,  $\chi^2 = 91.74$ ,  $p < .001$ . Consistently, in both cases  $t$  values are positive and significant  $t = 9.94$  and  $t = 9.58$  respectively,  $p < .001$ .

Different results emerge when the other *CEQuery* domains are analysed in a similar way. For example, there is a relatively smaller difference in percentages of hits in the Staff domain for those universities that used the Student Support and Learning Resources scales compared to those that did not: 42.6% cf. 43.8%,  $\chi^2 = 4.32$ ,  $p = .038$ . Further, the respondents who did not use the Student Support and Learning Resources scales give more comments about Staff than those who used the scales. A similar pattern emerges for all the *CEQuery* domains except the Support domain.

These results not only confirm the hypothesis that rating particular CEQ items before writing comments may trigger certain comments, but also a converse idea that exclusion of particular CEQ items from the questionnaire may decrease the number of related comments.



#### 4.8 Methods analysis—where the Best Aspect hits mostly lie

As the Course Design: methods subdomain attracted the highest number of BA+NI hits it was decided to undertake a more detailed subanalysis of what students meant when they identified a particular method as a ‘Best Aspect’. Full details are given in Attachment 10. This sub-analysis used the custom search feature of *CEQuery*. The focus was just on methods attracting a ‘Best Aspect’ comment as it was felt that these results would provide a practical guide for those interested in improvement. The analysis identified a range of types of learning methods that fell into five clusters (Table 8).

**Table 8. ‘Best Aspect’ (BA) hits x type of learning methods**

Learning methods	Hits
Face-to-face	11 693
Independent study & negotiated learning	3 572
Practice-oriented & ‘real world’	9 808
Simulations & labs	877
CIT Supported	836

Some 60 different learning methods were identified, and their use varied considerably by Field of Education.

The methods and the five clusters that accommodated them were as follows:

- those associated with traditional university *face-to-face* learning and teaching, with a focus on (inter)active more than passive learning strategies (16 methods, ranging from the use of buzz groups, debates, discussions, panels, lectures, to the use of mentoring, peer-support, seminar presentations, small group/team projects, symposiums, tutorials and workshops);
- those concerned with *independent study and negotiated learning* (7 strategies including learning from essays, quizzes, self-teaching packages and distance education materials, writing portfolios and theses);
- those that focus upon *practice-oriented and real-world learning* (20 learning methods ranging from artistic productions, camps, the use of ‘real world’ case studies, field placements, practicum and clinical placements, to the use of key practitioners as guest lecturers or mentors, site visits, service learning and travel to other universities or overseas study exchanges) ;
- those that use *simulated environments and laboratory* methods (6 learning methods ranging from the use of university-based experiments, simulations, discovery learning, educational games and experiment, to the use of hypotheticals, mock trials, role plays and simulated interviews); and

- a range of *CIT-enabled learning* methods and resources (11 options ranging from the use of audio-tapes and CDs, email, one-on-one phone contact with staff or students, teleconferences, the use of digital images to TV broadcasts, DVDs, and web-based learning).

The results of a further analysis which sought to identify the methods most cited as a 'Best Aspect' in each aggregated Field of Education was undertaken. The results (in rank order with the highest number of BA hits first) are given in Table 9. In those Fields of Education where just one or two methods attracted the majority of hits these methods have been underlined.

**Table 9. Learning methods attracting most BA hits x Field of Education**

Fields of Education	
<p>Science &amp; Built Environment</p> <p>Team/group project, assignments, field study/site visit, hands-on practice, lecture, class exercises, laboratory work, practical work, practical experience</p>	<p>Management &amp; Commerce</p> <p><u>Team/group project</u>, assignments, lecture, class exercises, seminar—individual presentation, tutorial, discussion, case study, real-world problems to solve, work experience</p>
<p>Health</p> <p><u>Clinical placement</u>, practical experience, lecture, hands-on practice, assignments, tutorial, class exercises, group project work, labs, practicum, work experience</p>	<p>Society, Culture &amp; Creative Arts</p> <p>Assignments, class exercises, lecture, tutorial, group project, class discussion, hands-on practice, practical experience, seminar—individual presentation, practical work</p>
<p>Education</p> <p><u>Practicum</u>, practical experiences, assignments, hands-on practice, lecture, tutorial, class discussion, class exercises, team/group project work</p>	

(in rank order for each aggregated FOE)

The analysis revealed that practice-oriented, interactive, face-to-face learning methods attracted by far the largest number of 'Best Aspect' comments overall. It also shows that there is considerable variation in the types of methods that attract the most BA comments in each of the five aggregated Fields of Education studied (Science & the Built Environment; Health; Education; Management & Commerce; Society, Culture & Creative Arts). This suggests that there may be opportunities to use the 'Best Aspect' methods identified in one Field of Education in another field where their application would be feasible but they are currently little used. A good example of this finding is the extensive mention of the use of team-projects in Management & Commerce and in Science but not in Health, Education or Society, or Culture & the Creative Arts. Similarly, by far the largest number of BA comments for independent study focused on the learning that results from writing essays or assignments, with much less identification of self-teaching packages as a best aspect.

This aspect of the study revealed that lectures (especially if they actively involve students in various ways) do have a place, but that an appropriate combination of more interactive, practice-oriented, problem-based methods is what appears to engage students most. Many *CEQuery* comments in this subdomain indicate that there are now more convenient and more telling ways to access relevant content than writing it down from a lecture. Online search of quality-assured databases directly relevant to the subject at hand is one good example of how this can be done<sup>10</sup>.

Comparatively little mention of Communications and Information Technology (CIT)-enabled methods as a best aspect was made by this group of students. This finding warrants follow-up as this is an area of major investment at the moment and was discussed at the national workshops with the *CEQuery* partners. As Coates (2005: 68) puts it:

In many respects, staff and institutions do not appear to have considered how (online) learning management systems affect the way their students learn. Instead, there seems to have been a tacit reliance on serendipity to produce patterns of use constructive for learning. This is surprising, given the resources invested in these potentially powerful learning technologies and the increasing recognition that the dynamics of student engagement are often central to the quality of university education.

A subsequent analysis of the full set of “Needs Improvement” comments for CIT revealed that:

- in some instances students found online learning less engaging than having face-to-face interaction with peers;
- where IT-enabled learning tools were being used, many staff were simply putting lectures and power point slides on the site but not exploiting other more interactive ways of using them;
- more use of online access to searchable and digitised library materials was recommended;
- greater use of other forms of CIT—like teleconferencing—was recommended;
- technical hitches, when they occurred, caused considerable frustration, as did complex and multiple access points;
- self-managed print materials were preferred to those put on the web in many cases; and
- unmediated chat rooms (a type of ‘on-line bar’) were seen to be unhelpful.

The general message was that CIT had a place as part of a broader learning design and that, when used, it should involve active learning not simply reading set materials.

#### **4.9 Best Aspect hits on Learning Methods across Employment status**

The results of this analysis are presented in Table 10 below. Post hoc pairwise multiple comparison tests with  $p < .001$  showed no significant differences between

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<sup>10</sup> See, for example, Google Scholar (at <http://scholar.google.com/>). Where universities subscribe to the digitised journal articles identified, students can seamlessly access and work on these articles online. Similarly, print-based or online copies of lecture notes and associated A/V resources are easy to mount on PIN-accessed subject websites for downloading.

the employment status groups regarding “Best Aspect” comments on the Independent Study & Negotiated Learning, Simulation & Labs, and CIT-supported methods.

For the *face-to-face* cluster of methods, significant differences were found between the Not Employed/Seeking Work group (higher scores) and both Working Full-Time and Working Part-Time groups (lower scores); and also between Full-Time Study group (higher scores) and Working Part-Time groups (lower scores). In other words, the face-to-face cluster of methods was particularly well regarded by participants who were unemployed or studying full-time and less highly regarded by those who were employed.

For the *practice-oriented* cluster of learning methods, significant differences were found between respondents Working Part-Time (higher scores) and the three other groups: Not Employed/Seeking Work, Unavailable for Study/Work, and Full-Time Study (lower scores); and also between the Working Full-Time group (higher scores) and the Not Employed/Seeking Work group (lower scores). Or, more concisely, the practice-oriented cluster of methods was particularly highly regarded by employed participants and less by those who were unemployed, unavailable for study/work or doing full-time study.

**Table 10. BA hits on Learning Methods across Employment status**

Employment Status	% of Best Aspect Hits on Learning Methods ( $n = 18691$ )				
	Face-to-face	Independent study & negotiated learning	Practice-oriented & ‘real world’	Stimulation & labs	CIT supported
Working full-time	* 49.8	11.5	* 45.9	6.9	3.4
Working part-time	* 45.8	12.6	* 49.6	5.6	3.0
Not employed - seeking work	* 56.3	14.1	* 38.0	7.5	3.9
Unavailable for study/work	53.7	15.8	* 39.8	7.8	3.8
Full-time study	* 52.1	11.1	* 43.6	7.9	3.3

\* Significant differences between Employment Status groups,  $p < .001$

Note: There was a considerable amount of missing data for employment status and the percentages will not add up to exactly 100% because of multiple responses.

## Chapter 5

### Discussion and implications

#### 5.1 Overview

As noted in Chapter 3, a series of workshops was held around Australia in late 2005 with more than 100 key staff from the 14 partner universities to discuss the study's methodology, results and its implications.

The key issues explored at these workshops and the outcomes of these meetings are summarised below as a collective picture of what the key players from the 14 partner universities see as being the study's significance, veracity and implications. This consolidation of the views of such a large group of Pro Vice-Chancellors (PVCs), Directors of Learning and Teaching, Online Learning, Heads of School, Heads of Program, Survey Managers and institutional researchers from the 14 universities was identified in the Higher Education Innovation Program (HEIP) project proposal as being a distinctive and important strategy to develop ownership and more thorough appraisal of the study's findings than the interpretation of the project team and National Steering Committee alone.

#### 5.2 The study's definition of 'importance' and 'quality'

The proposition that total hits (BA+NI) is a proxy measure for perceived importance and that the odds of a 'Best Aspect' (BA) comment is a proxy measure for perceived quality were generally endorsed.

It was noted that many of the 'needs improvement' comments simply call for the use of an approach identified as being a "best aspect" in another program, field of education or university.

#### 5.3 Opportunities for improvement benchmarking

These findings, in particular the results of the linear regressions, suggest that there is considerable potential for benchmarking at the Field of Education level between those universities that attract much higher odds of a BA comment in a particular *CEQuery* domain and subdomain and those which do not. As the senior statistical consultant to the project observed:

This is the main message from the logistic regression analyses. And this is despite the comments of those people who claim that there are essentially no differences between universities or between fields of education. This outcome implies that we can learn from the diversity and, in particular, learn from those universities and fields of education that are doing well.

This process of 'benchmarking for improvement' would, said participants, be especially useful when undertaken for a shared Field of Education and between universities with similar missions, profiles and resources. A good example of how this is being carried out as a result of the study is the universities in the Australian

Technology Network (ATN) sharing and benchmarking of the five members' individual results.

#### **5.4 It is the total experience that counts**

Participants at every workshop agreed that the results clearly confirm that it is the total university experience which shapes students' judgments of quality, that it is the combination of a sound design, consistently effective delivery, appropriate support, all continuously monitored and improved that helps account for productive learning and influences students' decisions about whether to stay on or leave a particular university. This conclusion aligns with the study's conceptual framework (Chapter 2), the experiences of participants, and the research and writing from other sources identified in the study's literature review (Chapter 1).

The relatively high number of hits attracted by the social affinity subdomain was noted and, as one partner workshop participant put it, 'This shows you that learning is a profoundly social experience. This is why online learning as the sole mode of delivery has not taken off'. This again aligns with the literature from other sources. Social affinity was found in the results to have many dimensions (see Attachment 1). Participants agreed that it is the critical mass of the influences identified in the five *CEQuery* domains, consistently experienced, that would be most telling. They also noted the need to deploy more consistently a range of incentives (financial, cultural and leadership) to reinforce the importance of both academic and support staff being consistently responsive to students and focused on what the study identifies as counting most for their productive engagement in learning and retention.

Participants at one workshop discussed how much harder it is to provide a high-quality total experience when a university is genuinely multi-campus (that is, when it has more than three campuses with more than 1500 students at each), given that this requires it to duplicate rather than concentrate resources. This, said another, was exacerbated when the fact that the total annual income per student EFTSL for some universities is up to \$50,000 whereas for others, including some multi-campus universities, it is as low as \$10,000.

#### **5.5 Assessment: a key area for attention**

It was important, said the workshop participants, to note how the comments made accessible by *CEQuery* can be used to get a much clearer picture of exactly what respondents had in mind when making quantitative ratings on the CEQ. Often this can reveal quite different perspectives and information to those assumed when people discuss the quantitative results.

To test this proposition a detailed analysis of the full sample of comments made in the Assessment domain was undertaken. Whereas the workshop participants observed that the CEQ items focus mainly on memorisation, the detailed content analysis of the 15,000 hits for the Assessment domain revealed that what attracted students' attention were assessment relevance, marking (especially inconsistent marking and unreliable marking of group work projects), standards and feedback (see Attachment 1). This aligns with what attracts high-importance ratings for the assessment area in parallel

student satisfaction surveys, and in the broader research literature on learning and teaching in higher education (see Chapter 1).

As an example of how these qualitative data can reveal important insights for quality improvement, consider the results of an analysis of the 3000 comments made by students on the Assessment: feedback subdomain. This analysis was undertaken by the project's senior analyst, who is also an Associate Dean, and a colleague academic from his university's Educational Development Centre:

- We found that 'feedback' includes quality of comments, quantity of comments, and timeliness of comments.
- Feedback is identified as being on assignments, questions, practical work, industry work, projects, theses, studios, exams—both mid-semester and final.
- Feedback is also focused on how a student is doing overall; it is intimately connected with expectations and an understanding of what is required for different grades HD/D/Cr/P.
- Positive feedback is often described as constructive, critical, consistent, useful, insightful—it encourages enthusiasm, identifies strengths as well as areas of improvement, fosters professionalism.
- Overwhelmingly negative feedback can be discouraging, and can include illegible, curt or ambiguous comments.
- It was very apparent that many of the positive comments on feedback (only 300 of 3000) came from students taking courses externally. We hadn't investigated this variable previously, but just reading the comments made it clear.
- More unusual comments included the notion of feedback from fellow group members, feedback on drafts before submission (for example, theses or essays), and teachers using feedback to prepare further work or assessments.
- One student wrote that detailed feedback shows that the lecturer 'has a genuine interest in the subject matter beyond mere instruction'.
- NI comments were often the converse of the BA comments. It was surprising to us how many students were talking about getting assignments back after the next one was due, after the final exam, after the end of the academic year, or never!
- Several comments from external students talked about problems of lost or misplaced assignments, and administrative procedures that resulted in months of delay in getting their assessment results credited.
- Many students complained of poor quality feedback, low quantity feedback (only a mark, maybe with one or two words) and the previously mentioned time problems.
- Students observed that, in these cases, they didn't know how to improve for the next assessment task.
- Other students talked of inconsistent feedback and its links to another *CEQuery* subdomain: marking, compounded by a lack of clear requirements and expectations.
- Students wanted feedback on overall progress as well as specific feedback on assessment tasks.

- A surprising number suggested that it would be good to get feedback on exams—whether this was mid-semester exams or final exams was not clear.

Our analysis shows that the odds of a “best aspect” rather than a “needs improvement” one was only about 1:9 (that is, about 90 per cent of the comments were NI comments—some of them very passionate complaints about what they saw as poor treatment).

It seems to us that a few very easy principles would be enough to remove the vast majority of ‘Needs Improvement’ comments:

- have clearly stated requirements for assessment in particular and for the course overall and refer to stated grading criteria when giving feedback;
- assess less but assess better by using fewer but more integrated assessment tasks, rather than a whole series of smaller, disaggregated ones;
- return marked work promptly, and certainly before the next task is due;
- give a reasonable amount of written feedback on assessment tasks;
- balance any negative comments (suggestions for improvement) with positive comments on the good aspects, and present them all in a clear and encouraging tone;
- give students some idea of how they are progressing overall in the course; and
- ensure that administrative procedures related to assessment are efficient.

Beyond this, some other points could raise the quality of feedback overall (but in some cases at the cost of significant extra effort):

- allow students to seek feedback on drafts of assessment tasks;
- raise the consistency of feedback by using devices such as standardised, electronic feedback forms;
- give brief feedback on mid-semester and final exams (this may be able to be done using an IT-enabled approach; for instance, each exam question could have a brief description of common problems, and students could be given the comments for questions in which they had not done well); and
- invite students’ feedback (such as on the assessment tasks and lectures) and use it in the course.

Similar analyses can be undertaken for every *CEQuery* subdomain.

Quality management for assessment was also the subject of considerable discussion at the partner workshops.

Participants noted that, although the Assessment domain generally attracts very low odds of a BA comment, it is also relatively low in the number of hits it attracts. A number of potentially relevant explanations for this comparatively low hit rate were offered. They included suggestions that, as students have just passed their course, they



will be less likely to focus on the area in their open-ended comments, and that the CEQ items don't really trigger comments on the areas that students identify as important.

At one meeting a participant raised the issue of whether 'assessment' is destined to always receive more 'Needs Improvement' than 'Best Aspect' comments simply because of the nature of the issue. Another commentator observed that this might be the result of an accumulation of poor practice issues. In one sense, the more detailed analysis of the Assessment: feedback comments above confirms this interpretation. This suggests that more-detailed follow-up of BA comments x Field of Education and University might be warranted to identify and disseminate good practice and to sharpen the items used to track the area.

It was generally agreed that, irrespective of the hits it attracts, there were additional and compelling reasons for focusing on quality management for assessment in the current Australian context. Participants noted increasing attention to the issue in the complaints received by the State Ombuds Offices, a recent NSW Independent Commission Against Corruption (ICAC) case on the area, growing media attention to so-called 'soft marking' and the management of plagiarism and the links to validity and reliability of English assessment tests used as part of the admissions process for students from a non-English speaking background (NESB). The lack of a consistent parallel language assessment system as part of the admissions process for resident NESB students and academic staff during selection was also noted.

## 5.6 Staff

The importance of having staff who are of consistently high quality, accessible at the time(s) promised<sup>11</sup>, up-to-date with the latest developments in the profession or discipline concerned and who are capable teachers was acknowledged. The fact that the Staff domain generally attracts even-odds of a "best aspect" comment indicates considerable patchiness and suggests that a key task in optimising student engagement and retention is to improve the accessibility, capability and consistency of staff quality.

Participants once again emphasised, however, that it is the combination of consistently capable staff, with appropriate learning designs and a support system that enables them to deliver what is intended that is critical.

The issue of staff selection and development was discussed in this context. At one workshop it was recommended that a compilation of comments with an overall analysis on each *CEQuery* subdomain at the Field of Education level could be given to all new staff and especially to sessional staff.

Participants said that giving those staff members such a compilation of de-identified comments from students *in that exact course and context*:

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<sup>11</sup> This finding aligns with that of Krause et al (2005: v): '...only half of respondents agree that staff are usually available to discuss their work and there remain a substantial number who do not perceive staff to be accessible. A little less than one-third of students feel that teaching staff take an interest in their students' progress and give helpful feedback.'

- would act as a targeted orientation for new staff about the issues, both valuable *and* unhelpful, that students find important;
- would make the message more compelling and engaging; and that
- this use of the voice of the past students would be a particularly convincing way to optimise the relevance of the orientation received by new staff.

### 5.7 The relevance issue

The issue of perceived relevance (an area attracting a lot of attention in students' comments) was explored at the partner workshops. It was agreed that relevance can relate to much more than a vocation, that it can encompass relevance to further disciplinary study and to broader social and higher education goals as well as to the non-vocational interests of students. It was also noted that students may not be well positioned to judge what will ultimately prove to be most relevant in the first years following graduation as they are yet to experience the realities of the profession or further study. In this regard the studies of successful graduates (Vescio, 2005) were seen as having the potential to provide more valid data.

There was concern about an increasing tendency for 'relevance' to be given a very instrumental, vocational focus, with one participant observing: 'We have to be very careful of simply pushing to make everything vocationally relevant—we are not a training agency but a university'. There was general agreement that figuring out how best to balance *mission* (achieving the key purposes of the university) with *market* (giving students what they want in order to gain and retain them—even if this is specific, skills-focused job training) poses a key dilemma for universities in the current operating context, where optimising retention and, through this, income is so important.

Either way, it was agreed that managing the relevance issue requires the institution to be continuously linked to what is happening in its rapidly changing external and disciplinary environments.

### 5.8 Course design

#### *Moving away from a teacher-centred approach in higher education*

Participants at the partner workshops emphasised that the study's findings confirm that 'up-the-front' teaching is just one—albeit important—component of all that makes for productive learning. It was interesting in this regard, said participants, to see that the Course Design: methods subdomain attracted a higher hit rate, for example, than Staff: teaching (although this was still in the top ten subdomains on importance).

This, said some participants, highlights how important it is to get away from the still pervasive 'sage on the stage', teacher-centred, knowledge transmission conception of university study to a more consistent 'guide on the side', learner-centred approach. Some participants noted that the CEQ core items are still very much centred in the traditional 'sage on the stage' model, an issue also raised in the literature review (Chapter 1). They noted, for example, that there were no core items on IT-enabled learning, flexible and blended learning or the many practice-oriented approaches that

attracted so many BA hits in the *CEQuery* methods analysis. This was also seen as being consistent with the outcomes of the study's literature review.

#### *Course flexibility and responsiveness*

Participants noted that the Study's results confirm the importance of adopting more flexible and responsive approaches to learning design and delivery (Flexibility of Course Design attracted the fourth highest number of BA+NI hits).

A closer analysis of comments in this area reveals the importance of having flexible learning pathways and more flexible access to learning.

For example, in their "best aspect" comments students repeatedly praise being able to undertake a selection of majors and submajors, having opportunities to take relevant electives, and having learning occur at a time and place that makes participation easy for them. 'Needs Improvement' comments typically note the absence of these forms of flexibility, responsiveness and ease of access. This finding is consistent with the literature on retention and the findings from exit surveys identified in the literature review (see Chapter 1).

The analysis also reveals that the traditional 14-week semester is a model that suits some but by no means all students. Other preferred modes of learning identified in the study by particular sorts of students were confirmed by the workshop participants as improving retention. These include, the mixed mode designs appreciated by busy, mature-aged students that consist of intensive workshops scheduled well in advance, self-teaching materials, IT-enabled access to digital resources, teleconferences, and the use of 'learning buddies' and so on rather than having to come along two or three times a week to evening classes.

The positive comments from many students about being able to 'learn in their own time' using self-teaching materials, and having convenient access to online library resources and interactivity via IT, were endorsed. Other modes of learning, including work-located learning where the lecturer comes out to work with a group of students from the same organisation at times that suit them, were also highlighted.

#### *Course structure*

As noted earlier, this subdomain not only attracted a very high number of BA+NI hits (that is, it was perceived to be of high importance) but the odds of a "best aspect" comment for the area were comparatively low (that is, it was an aspect of the student experience perceived to be of lower quality).

Participants identified a range of important implications of the results for this area (area A in the study's conceptual framework, Chapter 2). The implications include ensuring that:

- students are clear from the outset on where their learning program is headed, and where the program is—and is not—going to be flexible,
- there is no duplication of subject content,
- assessment tasks are not all due on the same day,
- there is an even balance of workloads across subjects,

The findings in this area were seen to align with research from many other studies (Chapter 1).

## 5.9 ‘Best Aspect’ learning methods

The findings of the subanalysis which identified those learning methods attracting most ‘Best Aspect’ comments were given particular focus at the workshops with the 14 partner universities.

There was considerable discussion on how to refine the classification system for the methods analysis, with a wide range of suggestions being made on how this might be achieved. For example, one participant (a Pro Vice-Chancellor) suggested the following as an alternative way of classifying the methods cited by students:

- a. Interactions with others
  - i. small and large groups
  - ii. practice-oriented
  - iii. practice-oriented—simulated
- b. Independent learning
- c. CIT-supported learning

It was noted that care needs to be exercised in interpreting the findings of the methods analysis because, as one participant put it, ‘Students’ conceptions of learning methods may not be ours. For example they might mean ‘interactive’ when they use the word “lecturing”.’

However, irrespective of whether the categories used were exactly right, what was widely acknowledged was the strong confirmation in the results of what emerged in the Study’s Literature Review (Chapter 1) - the importance of interactive learning; and the fact that, although face-to-face lecturing has an important role, it is just one of 60 options. The analysis also indicates a need for each Field of Education to consider why some methods are repeatedly identified as a ‘Best Aspect’ in particular fields and others are not. A good example of this finding is the extensive mention of the use of team-projects in the FOE of Management & Commerce<sup>12</sup> and Science but not in Health, Education or Society, Culture & the Creative Arts. Similarly, the use of various forms of practicum experience are common in the Health and Education areas but are little mentioned as a best aspect in areas like Management and Commerce.

Participants also noted how the practicum in Education and Clinical Placement in Health attracted by far the largest proportion of “best aspect” comments, whereas the spread of methods was much wider in some other fields. This, said participants, raised two issues:

- is the variety of learning methods appropriate for such areas; and
- are such practice-oriented learning strategies inevitably going to be preferred by students in fields like education and health, which are specifically vocationally oriented?

The fact that so many students identified aspects of practice-oriented and problem-based learning as a best aspect attracted considerable attention at every workshop. A

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<sup>12</sup> A subsequent analysis of the NI comments for this FOE established that team projects also attracted an equal number of NI comments. These typically called for the better use of approaches to using the method identified in the BA comments.

number of participants observed that this aligns with their own experience as well as parallel research identified in the study's literature review. Key issues and implications canvassed included the need to determine when and when not to use particular practice-oriented learning strategies, the optimum way to embed them into university studies, the need to link more directly what happens in the classroom to the practice-oriented components of each program and to ensure that workplace supervisors and mentors add value and assess accurately.

This discussion of the strong practice-oriented learning preferences of many students returned participants to a recurring theme expressed as follows at one workshop:

...this study raises flags about how universities might increasingly be expected to become very instrumental, practical vocational training agencies, and how increased fees and a focus on vocational outcomes and credentials as a measure of 'value for money' are reinforcing this trend.

Overall, it was agreed that a key challenge in seeking to engage students in productive learning was to identify what combination of learning methods is going to be most telling in each situation and Field of Education. It was also agreed that a 'one size fits all' approach is ineffective. Once again patchiness across subjects and programs was noted, with some instances of excellent course design and appropriate use of a variety of learning methods while in others a very limited and ineffective use was reported. Lectures were seen as being an important part of this process but it was uniformly agreed that they are only one element of what would have the most productive impact. Traditional 'one-way' lectures were seen as being important to set the scene for a subject, to outline the learning system for it and, in some cases, as being an important tool for enthusing students by bringing into play a leading expert in the area being studied to share latest research on it. As one participant put it:

When students speak of a great lecturer they talk of someone who is charismatic, enthusiastic, who loves the subject, has state-of-the-art knowledge about it and can use real world cases to bring it alive, and who structures what is delivered so it is easy to follow.

A more detailed study of students' comments on lecturing indicated that, in many cases, when students identified it as a best aspect they were responding to the use of a modified lecturing approach, in which a range of ways of actively involving students in what was happening was used.

Students' comments on group work attracted attention in one workshop. Here it was noted that, if group work is to be effective, students will need to be alerted explicitly to what makes for productive collaboration in order for there to be careful management of expectations around group assessment and for there to be specific strategies for managing 'freeloaders', along with specific advice on how to make communication between group members efficient and effective.

As the results of the methods analysis demonstrate, comparatively little mention of CIT-enabled methods as a best aspect was made by this group of 95,000 students. This finding warrants follow-up as this is an area of major investment at the moment.

This was discussed at each partner workshop where a range of potentially relevant explanations were offered. For example:

- There are no CEQ items on the area and it may be that students were, as a result, not triggered to make comment.
- Students may not have experienced many of the strategies listed.
- The area is so ‘taken for granted’, so integrated into their daily life that students, especially those who are Generation Y, don’t think to comment.
- It may be because people like human interaction.
- ‘It would be disappointing’, said one participant, ‘if students ended up saying that emailing their lecturer was their primary Best Aspect method.’ He concluded: ‘Why reify the best part of one’s course as using email’.
- These data are from students who completed studies in 2003—CIT has seen significant developments over the past two years to which these respondents were not exposed.

Coates (2005) notes that there is surprisingly little empirical evidence on what approaches to IT-enabled learning best engage students in particular contexts. Krause et al (2005: v) in their large-scale study of first-year university students in Australia found that the proportion of students using online discussion opportunities remains in the minority but that the majority had accessed online course resources. They observe, however:

It is somewhat surprising to find that first-year students make relatively limited use of email as a study tool and a key means of communicating with members of the learning community. This runs contrary to some of the more widely held views of students’ reliance on email in learning contexts. (Krause et al, 2005: 43).

### **5.10 Self-reported outcomes**

The high odds of students identifying the Outcomes domain and its subdomains as a best aspect attracted considerable discussion in the workshops. Some participants noted that it is not surprising that students would be so positive about this area as they had just successfully completed their course.

Others observed that this area of self report is always somewhat fraught, as students may not really know the true impact of their course for a number of years. As one participant observed “Unfortunately life must be lived forwards but can only be understood by looking backwards”.

A subsequent regression analysis between the *CEQuery* domains and the employment and further study measures of the Graduate Destination Survey (GDS) confirmed that students who were ‘unavailable for study or work’ tended to make far more “best aspect” comments on the *CEQuery* outcomes domain than did those who were part-time employed. Similarly this analysis showed that the Outcomes: work application subdomain attracted far more “needs improvement” comments from those who were ‘not employed but seeking work’ than all other employment and further study groups. In this regard the studies of successful graduates three to five years into their career (Scott & Wilson, 2002, Scott & Yates, 2003, Rochester, S, Kilstoff, K & Scott, G, 2005, Vescio, 2005) were seen to be addressing the issue in a more valid way.

At one workshop it was noted that students consistently give high importance to aspects of emotional intelligence (Goleman, 1998) in their comments on personal and interpersonal outcomes (Attachment 1), something found to be of utmost importance in the successful graduate studies noted above. One Associate Dean observed:

It is ironic that EI is given such a high proportion of Best Aspect comments when universities are becoming so pragmatic and instrumental. It is almost as if students know that this dimension is an important outcome in spite of our inadequate attention to it in teaching and assessment.

An area for further study could involve, said another participant, running regressions between these comments and student grades, if the two databases could be linked. In this regard, the work by the US National Survey of Student Engagement team on this area would be of interest (Kuh, 2005: 11).

### **5.11 Managing ‘patchiness’**

The fact that some very important (high-hit areas) were attracting almost even odds of a BA comment was discussed. This, as noted earlier, was seen in areas like the Staff domain. How the patchiness issue might best be addressed was seen as constituting a key challenge for the sector. This is because the unevenness—identified in high hit areas like staff quality and accessibility, and in course methods, flexibility and practical-theory links—has direct implications for both retention and student outcomes, as suggested in Chapter 1. Many participants at the partner workshops observed that areas with relatively even odds of a “best aspect” comment provide an ideal opportunity for improvement benchmarking. This process involves disseminating strategies or approaches attracting a “best aspect” comment in one program to equivalent programs elsewhere which are attracting a much high proportion of “needs improvement” comments. It was noted also that consistency and equivalence of quality (e.g. as indicated by high odds of a ‘best aspect’ comment) between programs and sites are two key concepts pursued by the Australian Universities Quality Agency in its audits.

### **5.12 Field of Education as the preferred focus**

It was consistently observed that the significant differences between fields of education (FOE) in the logistic regression confirm that FOE is a much more useful level of analysis than the overall university level. Participants noted that this finding aligns with those from other studies which demonstrate that there is as much variation between different Fields of Education and within universities as there is between universities. Focusing on FOE means that universities do not get falsely branded as excellent or underperforming overall, said participants. More importantly, they said, it means that there is a way of linking improvement solutions situated in the same context from one university to another. Just as students want to learn how to fill gaps in their expertise at the specific professional and disciplinary level, so too do academic educators. Capability in learning and teaching, like disciplinary and professional capability, is context-sensitive.

### 5.13 Acknowledging ‘best aspect’ areas of practice

Finally, participants noted that there is much to celebrate in these results. They observed that Australia was unique in the world in having *CEQuery*, and in having a national database to mine using it. Many of the partner universities report that they were already making extensive use of *CEQuery* for improvement purposes. They suggested that the findings of the current study, and how they were being used for quality assurance and improvement in higher education, should be given much wider publicity both locally and internationally.

### 5.14 Regressions against the CEQ scales

At one of the largest workshops it was agreed that because the study shows that *CEQuery* and the CEQ items and scales are correlated in the way expected does not automatically endorse the use of CEQ items for summative purposes. *CEQuery* adds value because it shows that what students had in mind when giving a particular CEQ rating on an item may not be exactly what their counterparts in another institution had in mind. As the project’s senior statistical consultant observed:

The CEQ scales predict the quality of the domains in the obvious way. While this is nice, it also leaves us open to the question of why we are analysing the written comments if the CEQ scales are good predictors, and hence have similar information. The analyses of course design, assessment or learning methods comments is a good answer to this question. Basically, the data are a lot richer even than what we are presently analysing, and further investigation can suggest reasons for the statistical results that we are finding which may be quite different to what people assume.

A comparison of the two regressions between the CEQ scales and the *CEQuery* domains was summarised as follows by one of the project’s statistical analysts:

In the analysis where the odds of a *CEQuery* BA comment was treated as the dependent variable and the CEQ scales were treated as the independent variable, there is evidence that almost every CEQ scale positively predicts improvement in attitudes/views/opinions on every *CEQuery* domain. The extent of this improvement depends on the degree of participants’ agreement regarding a given domain, rather than on the nature of this domain. Greater agreement on positive aspects relates to a greater improvement index, greater agreement on negative aspects relates to a smaller improvement index, disagreement relates to a medium index value.

In the analysis where the CEQ scales were treated as the dependent variable there is evidence that particular *CEQuery* domains significantly predict particular CEQ scales scores.

Therefore the *CEQuery* instrument is sensitive to both the nature of the constructs assessed (which supports its theoretical validity) and the degree of agreement in the sample (which supports its empirical or construct validity).



### 5.15 Using the study's findings and the *CEQuery* tool

A wide range of ways in which these findings can be practically applied and *CEQuery* can be used in Australian higher education to promote quality was identified in the national and international workshops on the results. They include using them in the following ways:

- Generate a more focused and evidence-based set of ‘good practice’ guidelines down to the Field of Education level for those responsible for assuring consistent quality in the accreditation and review of university learning programs and the services and systems intended to support their effective implementation.

It was generally agreed that the findings of the study were a useful source of evidence about what counts for students at the Field of Education level. Participants saw considerable potential in taking the high-importance areas that have emerged at the FOE level, along with the data on areas of low quality and combining them with the findings from the parallel research in the literature review to produce much sharper quality checkpoints for use during course accreditation and review. Here, they said, those responsible for course accreditation could ask for evidence in course approvals’ and self-review documentation that key areas of importance and quality to students in the particular Field of Education concerned are being appropriately addressed. However, it was also emphasised that student preferences are only one, albeit very important, factor in determining what to focus upon—strategic, professional, disciplinary, research-based, resourcing and legal factors also play a role.

- Confirm and enhance current approaches to quality management. As one Associate Dean observed:  
 What I am taking from this research is to be more strategic and focused in the range of quality management tasks for my courses: first get the course design and assessment right; then make sure the support is there to ensure that the design works and that the right staff for the course are assisted. These results, when we combine them with the other studies, confirm to me that what we have been doing is on the right track. Before, what we were doing seemed intuitively right; now it is confirmed by a very large set of data down to the Field of Education level. It is clear to me that an inappropriate course design with good staff is no good and vice versa. It is clearly the positive combination of all the elements that counts.
- Identify what factors are most important to track as courses are implemented and reviewed.
- Test the validity and importance of the items being included in student feedback surveys, again in conjunction with the findings from the parallel research listed in Chapter 1.

- Assist in making the orientation and development programs for staff more relevant by providing a consolidated picture in each Field of Education of what students repeatedly identify as a best aspect and see as being unhelpful.
- Identify and address the specific support, administrative, infrastructure, and environmental factors and services of universities that shape students' judgments of university quality and influence their decisions on whether to stay, transfer to another university or drop out.
- Complement other sources in order to identify key areas of good practice and potential areas for quality improvement that warrant follow-up.
- Identify areas of patchiness (even-odds areas) that may require follow-up action in order to ensure greater consistency of quality in the student experience.
- Complement the more quantitative data that are typically used to inform decision-making for the area; this can include showing what students had in mind when they gave ratings to particular areas.
- Raise 'flags' concerning specific quality improvement areas warranting more detailed follow-up. In this regard, one of the partner workshop groups noted that the comments themselves might give some improvement ideas but finding improvement solutions to an agreed area for enhancement would usually require additional work—for example, the use of supplementary focus groups with students and benchmarking for improvement with colleagues working under similar conditions and in the same Field of Education at another university.
- Form a basis for benchmarking good practice and allowing those universities willing to share data to help each other identify improvement solutions at an FOE level.
- Enhance these benchmarking opportunities by always including a section in feedback surveys that invites students first to identify the best aspect of their experience and then those that most need improvement, before quantitative items are rated.

### **5.16 Potential areas for further investigation and research**

A range of potential areas for follow-up and research was raised at the Study's national and international workshops. These include:

- Undertaking more detailed analysis of the comments from every *CEQuery* subdomain, along the lines of that completed for Assessment: feedback (section 5.5).
- Investigating and clarifying the key quality assurance checkpoints for particular Fields of Education based on the results of this study compared with

those from parallel empirical research.

- Replicating the study with other universities overseas by inviting them to include BA and NI sections in all relevant surveys they deliver, and gathering similar demographic data to that included in the current study.
- Reviewing the validity and coverage of the core CEQ items in the light of the study. An example of what might be done is seen in the area of Assessment where the CEQ items focus on one aspect of assessment and the CEQ comments on many others. Similarly, it would be worth looking at the extent to which the items focus on the areas of highest importance to students identified in this study and from student feedback surveys where respondents are explicitly asked to rate the relative importance of the many different aspects of their university experience. As one participant observed: ‘This study raises the question: to what extent are the core CEQ questions based on a traditional, teacher-centred, transmission model of learning that no longer applies?’ Another observed: ‘We should consider using items and scales that focus on the high-importance subdomains in the *CEQuery* study’.
- Incorporating an importance as well as a performance scale in all future surveys to enable more precise identification of the comparative importance of various aspects of the university experience to students and to confirm the ongoing validity of items.
- Identifying how universities are using the findings from their *CEQuery* analyses to improve quality management for learning and teaching.
- Identifying where institutions are sharing results with a view to working collaboratively to improve the student experience and determining what approaches to this collaboration are proving to be most productive.
- Following up on the fact that there was comparatively little mention of CIT-enabled methods as a best aspect by the students from these 14 universities.
- Running regressions between the *CEQuery* Scales and the GDS scales.
- Examining the relationships between the scores on the *CEQuery* subdomains treated as the independent (explanatory) variables and the CEQ scales as the dependent (response) variables as a way of sharpening the analysis already completed in the present study at the domain level.
- Clarifying if there is any correlation between respondents identifying “best aspect” comments on practice-oriented learning methods and the types of outcomes they also identify as a best aspect. The hypothesis put forward by one workshop participant was that there might be a strong relationship between preferred methods and vocational outcomes for particular fields of education, such as Health and Education, which have a predominantly vocational focus compared with some of the less directly vocational fields such as Arts.

## Chapter 6

### Conclusions and recommendations

#### 6.1. Conclusions

This study is among the first in the world to systematically explore a database of such enormous size using higher-education specific, IT-enabled software.

The study has given some indication of the relative weight that students give to different aspects of their university experience when they make judgments of quality and consider engagement. It has identified how the importance and mix of these educational quality and productive learning checkpoints can vary significantly depending on a range of demographic variables, including field and level of education.

It has also found that there is considerable and consistently significant variation in the universities studied on the odds that a comment made on the CEQ will be about a best aspect of the student experience. In this regard there are a range of potential explanatory factors that require further investigation; these include the potential influence of differences in location, stage of development, academic profile, number of campuses with significant student enrolments, gross annual income per student EFTSL, size and culture.

#### 6.2. Recommendations

It is recommended that:

1. The updated data dictionary produced as part of this project be released to the sector.
2. A check-list of key findings at the overall and Field of Education (FOE) level be developed for widespread dissemination across the sector.
3. All remaining Australian universities be encouraged to share data in order to test, critique and enhance the findings of the current study and the key quality management themes that have emerged from it.
4. Analyses and interpretations of data relating to the quality of Australian higher education should be made at the Field of Education not the university level in order to ensure that results derive from comparisons of 'like with like'.
5. Universities with similar missions and resources be encouraged to share and benchmark data at the Field of Education and program level along the lines of that already being undertaken by the ATN universities as a result of the study

6. Further research be undertaken in the following areas:
- i. identify the key incentives for staff to engage with and disseminate such data<sup>13</sup>;
  - ii. undertake a more-detailed analysis of the comments for every subdomain, along the lines of that completed for the Assessment: feedback subdomain in the present report (see Chapter 5.5);
  - iii. investigate and clarify the key quality assurance checkpoints for particular Fields of Education based on the results of this study compared with the results of parallel empirical research;
  - iv. replicate the study with universities overseas by inviting them to include a BA/NI section in all relevant surveys they deliver and to gather demographic data similar to that included in the current study;
  - v. undertake a supplementary study to review the core CEQ items in the light of the current findings and explore whether new or modified scales or items are necessary;
  - vi. explore effective approaches to the joint use of data from this and parallel sources for improvement benchmarking and evaluate the impact of such initiatives;
  - vii. investigate why there was comparatively little mention of CIT-enabled methods as a best aspect by this group of students;
  - viii. run further regressions between the *CEQuery* scales and the GDS scales, especially to determine if there is any correlation between the Outcomes and Course Methods areas and employment or further study outcomes; and
  - ix. examine further the relationships between the importance and quality results on the *CEQuery* subdomains as the independent (explanatory) variables and the CEQ scales as the dependent (response) variables.
7. An importance as well as a performance scale be included in all future surveys to enable more precise identification of the comparative importance of various aspects of the student experience and to confirm the ongoing relevance of the items being tracked to the respondents:
8. The designers of surveys, both local and national, be encouraged to include opportunities for students to give “Best Aspect” and “Needs Improvement” comments. This will allow triangulation of data from a wide range of sources and at different levels using *CEQuery*.
9. Students be asked to provide their open ended “Best Aspect” and “Needs Improvement” comments before, not after, they respond to the

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<sup>13</sup> There are a range of studies available on the area available. A recent example is the research undertaken for the Carrick Institute for Learning and Teaching by McKenzie, Alexander, Harper and Anderson (2005).

CEQ rating items. This will help minimise potential for the CEQ items to shape what students choose to comment upon.

10. Those responsible for course accreditation in each university be encouraged to (a) use the key quality management checkpoints which have emerged from the study and (b) look beyond the learning methods habitually used in each Field of Education to see if there is merit in using those which consistently attract high “best aspect” counts in other areas.

## Attachment 1

### *CEQuery* coding domains/subdomains

<b>Domain</b>	<b>Subdomain</b>
<i>Outcomes</i>	Intellectual Work application/career Further learning Personal Interpersonal Knowledge/skills
<i>Staff</i>	Accessibility and responsiveness Teaching skills Practical experience (current) Quality and attitude
<i>Course Design</i>	Practical-theory links Relevance (to work/life/discipline) Flexibility/responsiveness Methods of learning and teaching Structure and expectations
<i>Assessment</i>	Relevance Marking Expectations Feedback/Return Standards
<i>Support</i>	Library Learning resources Infrastructure/environment Student administration Student services Social affinity/support

### *CEQuery* subdomains: Specific definitions

#### OUTCOMES

##### **Intellectual**

Development of analytical skills, critical thinking, creativity, problem-solving, diagnostic abilities; ability to “see the key issue” in a welter of information, come to a justified decision in a tricky situation, trace out the consequences of various options for action, understand one’s key assumptions, see “the big picture” and “think on one’s feet”. Intellectual capabilities interact with Personal and Interpersonal ones.

##### **Work application/career**

Includes gaining promotion, improved employability, improved workplace performance, direct application of what was learnt at work.

**Further learning**

Going on to further and higher study as a result of the course; commitment to life-long learning. In the case of NI comments students may talk more about the blocks they experienced or the reasons why the course didn't motivate them to go on to further study.

**Personal**

All aspects of *personal* Emotional Intelligence identified in recent studies of successful graduates and other research (see Vescio 2005) e.g. the ability to remain calm when things go wrong, self-confidence, sense of 'efficacy', willingness to take negative feedback, ability to tolerate ambiguity, persevere and maintain self-motivation, independence, self understanding etc). Also includes comments about the personal satisfaction that comes from completing a higher-education program.

**Interpersonal**

This covers not just written and verbal communication skills but key aspects of *social* Emotional Intelligence identified in the successful graduate studies (e.g. the ability to work with a wide diversity of people, a developed understanding of cultural differences, an ability to work productively as part of a team, development and use of peer/other networks). See Scott & Yates (2002), Vescio (2005) for more detail on these concepts. NI comments tend to talk about the blocks in communication during the course that prevented the development of the desired interpersonal outcomes—staff and students with poor communication skills in English are regularly cited in this context.

**Knowledge/skills**

Includes both generic skills/knowledge (e.g. the ability to chair a meeting, use computers; self-teaching skills, library search skills, information literacy and skills of observation) and profession/discipline-specific skills/knowledge (e.g. knowledge of a particular statute in Law, or specific skills for use in a laboratory, etc). Also includes research skills.

**STAFF****Accessibility and responsiveness**

Ability to contact staff (face-to-face, online, by telephone etc), staff availability, how and when they respond, their willingness to support students, as well as comments about the interface between staff:student ratios and staff accessibility and responsiveness.

**Teaching skills**

Staff ability to teach and convey knowledge; their effectiveness, creativity, organisation and enthusiasm as lecturers as distinct from comments on how knowledgeable they are, or how they behave outside the classroom.

**Practical experience (current)**

How up-to-date, 'in touch' and linked staff are with current professional or disciplinary practice through, for example, being a current practitioner. Extent to which there is use of guest lecturers; staff ability to use 'real world' anecdotes to make their teaching more relevant.

**Quality and attitude**

Staff members' ability to inspire; their enthusiasm, promptness in coming to class, reliability, levels of organisation, engagement; their professionalism, organisation, commitment to the area taught, interpersonal skills and clarity of communication including English-language skills.

**COURSE DESIGN****Practical-theory links**

The consistency with which a course seeks to link and balance theory with practice, designs in a range of practice-oriented experiences directly connects to related theory. The extent to which it is professionally oriented and applied in its design.



**Relevance (to work/life/discipline)**

How interesting, engaging, current, and relevant course *content* is. Also includes comments about courses being personally relevant to the key interests and meeting students' other needs.

**Flexibility/responsiveness**

This includes comments on the extent to which the course design provides flexible/responsive learning paths (electives/majors/submajors); choice; negotiated learning; flexible attendance patterns; flexible delivery; ease of access to learning and assistance to determine which path is best. This subdomain has links to course design but here the focus is on the extent to which the course is able to respond to the particular backgrounds, abilities, needs and experiences of students as opposed to having a single 'one size fits all' model.

**Methods of learning and teaching**

Approximately 60 different learning and teaching methods have been identified including: lectures, group work, seminars, tutorials, specific practical, real-life learning methods (practicum, internships, coop ed., moots, simulations, work placements, field trips, clinical placements, industry and practical legal training, etc); use of prior learning of students; camps; lab-work to learning contracts, site visits, experiments, various forms of IT-enabled learning, simulations, teleconferences, guest speakers, specific peer/team learning methods and case-study analysis. Appropriate use of interactive learning methods is a recurring theme in students' BA comments.

**Structure and expectations**

**Structure:** subject balance and distinctiveness from each other, subject quality, overall load and amount of content to be learnt, appropriate sequence of learning, overlap between subjects, prerequisites, admission levels, timetable, overview of field, recognition of prior learning (RPL), the appropriateness of the modes of learning used (pt/ft, mixed mode, multi-site, intensive, work-based, distance, online etc.). Also includes comments about the appropriateness, timing, length and variety of mix of learning methods used, the extent to which the course has depth, a clear direction, is integrated, and has an overall integrity.

**Expectations:** management and clarity of information provided, course rules, access to staff, resources, university processes. Also includes comments about alignment between course prospectus and delivery and actual availability of advertised electives.

**ASSESSMENT****Relevance**

Extent to which assessment tasks are perceived to be real-world, applied, up-to-date, integrated, relevant to current and future professional or disciplinary practice and focused on 'real world' problems. Also covers comments where students discuss the extent to which assessment is interesting, challenging, engaging, appropriate and how well it matches what was taught and the stated subject/course objectives.

**Marking**

Consistency and reliability of marking; fair assessment of group work projects and NESB student work. Covers reliability across different assessment methods: short answer; online; practice-based; group-based etc. Also includes extent to which plagiarism and cheating are detected, comments about 'soft-marking' and the confusion between norm-referenced and criterion-referenced assessment in determining grades.

**Expectations**

Provision of clear assessment tasks and expectations on how to tackle and present them; clear submission deadlines, guidelines rules and grading criteria. Provision of examples of work, to give an operational picture of different grades and quality of work in each subject.

**Feedback/return**

Promptness with which assignments are returned, use of staged deadlines, quality of the feedback received including the extent to which markers comment on what was done well, explicitly identify key areas for improvement and say how improvements could have been achieved—with specific attention to the grading criteria distributed at the start of the subject.

**Standards**

Assessment which is at a university standard—which requires higher-order thinking more than rote memorisation from text books; is interesting, and negotiated; assessment that is valid (i.e. demonstrably focuses on the key capabilities that graduates will need to succeed in the first years of work in a specific profession or discipline). Includes comments about rote learning, industry recognition, over-assessment, range and appropriateness of assessment methods used, assessment load, plagiarism management, appeals, extensions, alignment between what is taught and tested, prerequisites, norm versus criterion-referenced assessment, submission and security, timing, weighting, and consistency of assessment quality and demands between subjects and courses at the same level.

**SUPPORT****Library**

Library collections, services, ease of access, facilities, equipment, efficiency, online services as well as face-to-face services, borrowing services and rules, fines.

**Learning resources**

Quality and availability of textbooks, print & digital support materials, course outlines, study guides, lecture notes, course readings, online learning resources, self-teaching materials, CD-Roms, video, TV, photographic and sound resources.

**Infrastructure/environment**

Classroom and lab quality, class sizes and levels of crowding, quality of computers and technical infrastructure, equipment levels and quality, ease of access to physical facilities and their quality, campus environment, equipment levels, social spaces. Also comments about funding levels for facilities and financial support at universities.

**Student administration**

Enrolment systems (online and offline), exam scheduling, fees processes, administrative advice, exemptions, graduation processes, delivery of transcripts, accuracy of fees' invoices, grievance processes, results, scholarships, admission, admin staff responsiveness, timetabling. Includes ease of access to student administration services and the extent to which queries and problems are followed up promptly and resolved. Also includes comments about efficiency, levels of bureaucracy.

**Student services**

Learning support services (English for academic purposes, study assistance, information literacy, transition to university programs, orientation etc), careers. Services to DEST-defined equity groups including ATSI and NESB students, along with counselling services. Comments about the helpfulness of support service staff including IT-enabled learning support. Both IT-enabled and face-to-face.

**Social affinity/support**

Comments that relate to the sense of 'belonging' that comes from a welcoming, friendly, approachable environment and culture and set of relationships among both staff and students. Comments which indicate that the student feels s/he is seen not as a number but an individual. Comments about levels of engagement or isolation felt by students. Also covers comments on the wide range of formal and informal types of social support, in particular peer support but also a general culture of support and service, ability to network, interaction with others, the development and use of reciprocal relationships. For interactions with staff it includes the presence of a 'service-oriented' culture.

## Attachment 2

### CEQ scales and questions (core and optional)

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#### Core CEQ scales & questions

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##### Core Scale: Good Teaching

- Q1: The staff put a lot of time into commenting on my work
- Q3: The teaching staff normally gave me helpful feedback on how I was going
- Q10: The teaching staff on this course motivated me to do my best work

##### Core Scale: Generic Skills

- Q6: The course helped me develop my ability to work as a team member
- Q14: The course sharpened my analytical skills
- Q23: The course developed my problem solving skills
- Q32: The course improved my skills in written communication
- Q42: As a result of my course, I feel confident about tackling unfamiliar problems
- Q43: My course helped me to develop the ability to plan my own work

##### Core Scale: Overall Satisfaction

- Q49: Overall, I was satisfied with the quality of this course

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#### Optional CEQ scales & questions

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##### Optional Scale: Clear Goals and Standards Scale

- Q8: It was always easy to know the standard of work expected
- Q28: I usually had a clear idea of where I was going and what was expected of me in this course
- Q39: It was often hard to discover what was expected of me in this course
- Q46: The staff made it clear right from the start what they expected from students

##### Optional Scale: Appropriate Workload Scale

- Q5: I was generally given enough time to understand the things I had to learn
- Q9: The sheer volume of work to be got through in this course meant it couldn't all be thoroughly comprehended
- Q19: The workload was too heavy
- Q29: There was a lot of pressure on me as a student in this course

##### Optional Scale: Appropriate Assessment Scale

- Q4: To do well in this course all you really needed was a good memory
- Q26: The staff seemed more interested in testing what I had memorised than what I had understood
- Q44: Too many staff asked me questions just about facts

##### Optional Scale: Intellectual Motivation Scale

- Q2: I found my studies intellectually stimulating
- Q7: I found the course motivating
- Q13: Overall, my university experience was worthwhile
- Q35: The course stimulated my interest in the field of study
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**Optional CEQ scales & questions (contd)**

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**Optional Scale: Student Support Scale**

- Q21: I was able to access information technology resources when I needed them
- Q24: Relevant learning resources were accessible when I needed them
- Q25: Health, welfare and counselling services met my requirements
- Q34: The library services were readily accessible
- Q37: I was satisfied with the course and careers advice provided

**Optional Scale: Graduate Qualities Scale**

- Q11: The course provided me with a broad overview of my field of knowledge
- Q17: The course developed my confidence to investigate new ideas
- Q30: University stimulated my enthusiasm for further learning
- Q36: I learned to apply principles from this course to new situations
- Q40: I consider what I learned valuable for my future
- Q48: My university experience encouraged me to value perspectives other than my own

**Optional Scale: Learning Resources Scale**

- Q12: The library resources were appropriate for my needs
- Q33: The study materials were clear and concise
- Q38: It was clear what resources were available to me to help me learn
- Q41: Course materials were relevant & up to date
- Q47: Where it was used, the information technology in teaching and learning was effective

**Optional Scale: Learning Community Scale**

- Q18: I feel part of a group of students and staff committed to learning
- Q20: Students ideas and suggestions were used during the course
- Q22: I learned to explore ideas confidently with other people
- Q31: I felt I belonged to the university community
- Q45: I was able to explore academic interests with staff and students
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## Attachment 3

### Hits and odds by broad Field of Education

The following tables provide a summary of the number of hits, their rank order and the odds ratio for the major Fields of Education from the *CEQuery* Project

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#### Science & Built Environment

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(This FOE attracted 60,791 hits out of 285,906)

#### Number of Hits = Importance

1	Course Design: Methods	9	Staff: Infrastructure
2	Staff: Quality	10	Outcomes: Knowledge_skills
3	Assessment: Flexibility	11	Outcomes: Work_application
4	Outcomes: Accessibility	12	Support: Learning_resources
5	Course Design: Structure	13	Support: Social_affinity
6	Course Design: Practical_theory_links	14	Outcomes: Intellectual
7	Course Design: Relevance	15	Assessment: Standards
8	Staff: Teaching_skills	16	Assessment: Relevance

#### Odds of a best aspect = Quality

Assessment: feedback	1 to 10	Staff: quality	evens
Assessment: expectations	2 to 10	Course Design: flexibility	1.1 to 1
Assessment: marking	2 to 10	Staff: practical_experience	1.1 to 1
Course Design: structure	2 to 10	Staff: accessibility	1.1 to 1
		Course Design:	
Support: student_administration	3 to 10	practical_theory_links	1.2 to 1
Assessment: standards	3 to 10	Course Design: methods	1.4 to 1
Staff: teaching_skills	4 to 10	Support: social_affinity	2 to 1
Support: student_services	4 to 10	Assessment: relevance	2 to 1
Support: library	5 to 10	Outcomes: knowledge_skills	2.7 to 1
Support: learning_resources	5 to 10	Outcomes: inter_personal	3.3 to 1
Support: infrastructure	6 to 10	Outcomes: intellectual	13.2 to 1
Course Design: relevance	6 to 10	Outcomes: personal	16.3 to 1
Outcomes: work_application	8 to 10	Outcomes: further_learning	43.5 to 1

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## Health

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(This FOE attracted 32,568 hits out of 285,906)

### Number of Hits = Importance

1 Course Design: Methods	9 Support: Social affinity
2 Staff: Quality	10 Outcomes: Knowledge skills
3 Staff: Accessibility	11 Outcomes: Work application
4 Course Design: Structure	12 Support: Infrastructure
5 Course Design: Flexibility	13 Support: Learning resources
6 Course Design: Practical theory links	14 Assessment: Standards
7 Course Design: Relevance	15 Outcomes: Intellectual
8 Staff: Teaching skills	16 Support: Student administration

### Odds of a best aspect = Quality

Assessment: feedback	1 to 10	Assessment: relevance	evens
Assessment: expectations	1 to 10	Outcomes: work_application	evens
Assessment: marking	1 to 10	Course Design: methods	1.1 to 1
		Course Design:	
Support: student_administration	2 to 10	practical_theory_links	1.3 to 1
Assessment: standards	2 to 10	Staff: accessibility	1.3 to 1
Course Design: structure	2 to 10	Staff: practical_experience	1.4 to 1
Support: library	5 to 10	Staff: quality	1.5 to 1
Staff: teaching_skills	5 to 10	Support: social_affinity	2 to 1
Support: student_services	5 to 10	Outcomes: knowledge_skills	2.2 to 1
Course Design: relevance	5 to 10	Outcomes: inter_personal	3.7 to 1
Support: infrastructure	6 to 10	Outcomes: further_learning	7.3 to 1
Support: learning_resources	6 to 10	Outcomes: intellectual	13.7 to 1
Course Design: flexibility	evens	Outcomes: personal	25.4 to 1

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## Education

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(This FOE attracted 37,954 hits out of 285,906)

### Number of Hits = Importance

1 Course Design: Methods	9 Support: Social affinity
2 Staff: Quality	10 Outcomes: Work application
3 Staff: Accessibility	11 Support: Learning resources
4 Course Design: Flexibility	12 Support: Infrastructure
5 Course Design: Practical theory links	13 Outcomes: Knowledge skills
6 Course Design: Structure	14 Assessment: Standards
7 Course Design: Relevance	15 Outcomes: Intellectual
8 Staff: Teaching skills	16 Support: Student administration

### Odds of a best aspect = Quality

		Course Design:	
Assessment: marking	1 to 10	practical_theory_links	evens
Assessment: feedback	1 to 10	Outcomes: work_application	1.1 to 1
Assessment: expectations	2 to 10	Course Design: flexibility	1.2 to 1
Course Design: structure	2 to 10	Course Design: methods	1.3 to 1
Support: student_administration	3 to 10	Staff: accessibility	1.5 to 1
Assessment: standards	3 to 10	Staff: quality	1.7 to 1
Support: infrastructure	6 to 10	Assessment: relevance	1.7 to 1
Course Design: relevance	6 to 10	Support: social_affinity	1.9 to 1
Staff: teaching_skills	7 to 10	Outcomes: knowledge_skills	2.1 to 1
Support: student_services	8 to 10	Outcomes: inter_personal	2.7 to 1
Support: learning_resources	9 to 10	Outcomes: personal	14.4 to 1
Support: library	evens	Outcomes: intellectual	14.6 to 1
Staff: practical_experience	evens	Outcomes: further_learning	34 to 1

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## Management & Commerce

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(This FOE attracted 78,053 hits out of 285,906)

### Number of Hits = Importance

1 Course Design: Methods	9 Support: Social affinity
2 Staff: Quality	10 Outcomes: Knowledge skills
3 Course Design: Flexibility	11 Support: Learning resources
4 Staff: Accessibility	12 Outcomes: Work application
5 Course Design: Structure	13 Assessment: Standards
6 Course Design: Relevance	14 Outcomes: Intellectual
7 Staff: Teaching skills	15 Support: Infrastructure
8 Course Design: Practical theory links	16 Support: Student administration

### Odds of a best aspect = Quality

Assessment: feedback	1 to 10	Outcomes: work_application	evens
Assessment: marking	2 to 10	Staff: quality	evens
Assessment: expectations	2 to 10	Course Design: methods	1.1 to 1
Course Design: structure	3 to 10	Course Design: practical_theory_links	1.2 to 1
Support: student_administration	3 to 10	Course Design: flexibility	1.3 to 1
Assessment: standards	4 to 10	Staff: practical_experience	1.4 to 1
Support: library	4 to 10	Assessment: relevance	2 to 1
Staff: teaching_skills	5 to 10	Support: social_affinity	2.1 to 1
Support: student_services	5 to 10	Outcomes: knowledge_skills	3.9 to 1
Support: infrastructure	5 to 10	Outcomes: inter_personal	4.5 to 1
Support: learning_resources	7 to 10	Outcomes: intellectual	11.5 to 1
Course Design: relevance	8 to 10	Outcomes: further_learning	13.8 to 1
Staff: accessibility	evens	Outcomes: personal	30.2 to 1

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## Society, Culture & Creative Arts

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(This FOE attracted 74,579 hits out of 285,906)

### Number of Hits = Importance

1 Staff: Quality	9 Support: Infrastructure
2 Course Design: Methods	10 Support: Social affinity
3 Staff: Accessibility	11 Outcomes: Knowledge skills
4 Course Design: Flexibility	12 Support: Learning resources
5 Course Design: Structure	13 Outcomes: Work application
6 Staff: Teaching skills	14 Outcomes: Intellectual
7 Course Design: Practical theory links	15 Assessment: Standards
8 Course Design: Relevance	16 Support: Student administration

### Odds of a best aspect = Quality

Assessment: expectations	2 to 10	Course Design: methods	1.1 to 1
Assessment: feedback	2 to 10	Course Design: practical_theory_links	1.2 to 1
Assessment: marking	2 to 10	Course Design: flexibility	1.2 to 1
Support: student_administration	2 to 10	Staff: accessibility	1.3 to 1
Course Design: structure	2 to 10	Staff: quality	1.6 to 1
Support: student_services	3 to 10	Staff: practical_experience	1.7 to 1
Assessment: standards	4 to 10	Assessment: relevance	1.7 to 1
Support: library	5 to 10	Support: social_affinity	1.8 to 1
Support: infrastructure	5 to 10	Outcomes: knowledge_skills	3 to 1
Course Design: relevance	7 to 10	Outcomes: inter_personal	5.4 to 1
Support: learning_resources	7 to 10	Outcomes: further_learning	13.1 to 1
Outcomes: work_application	7 to 10	Outcomes: intellectual	15.8 to 1
Staff: teaching_skills	8 to 10	Outcomes: personal	15.8 to 1



## Attachment 4

### Effects of CEQ demographic variables on odds of a 'Best Aspect' comment x domain (with size of the effects)

	Asst	Course	Outcomes	Staff	Support
<b>University</b>	* 91.44	* 428.48	* 289.17	*166.43	* 528.59
<b>FOE</b>	* 170.91	* 130.88	* 47.84	* 466.09	* 41.27
<b>Award</b>	.85	* 70.87	.03	* 58.57	.10
<b>Fees</b>	* 20.31	4.11	* 100.65	* 7.65	8.21
<b>Sex</b>	3.13	.31	.29	.19	.04
<b>Age</b>	* 16.95	* 35.64	* 161.66	1.27	* 14.87
<b>Attend Type</b>	1.89	* 8.65	* 18.70	4.67	.19
<b>Attend Mode</b>	1.00	* 109.02	* 34.59	* 35.41	* 8.84
<b>Year data</b>	2.80	* 33.41	* 22.89	* 20.21	2.06
<b>Aust residence</b>	* 19.01	* 19.97	* 19.24	* 11.80	4.63
<b>ATSI</b>	.36	6.37	4.88	.17	.31

\* = significant p <0.01)

The values of the Wald test summarised here indicate the effect of the predictor variables on the response variables in logistic regression. For example, the greater the values for University, the greater the difference in BA/NI odds ratio between universities for given domains.

## Attachment 5

### *CEQuery* logistic regression analysis

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#### **Introduction**

Below is a more extensive report on the logistic regression modelling that was carried out using the *CEQuery* data files supplied in five separate Excel files, one for each of the domains (Outcomes, Staff, Assessment, Course Design and Support). The analyses were carried out using SPSS v12.

#### **Method**

The modelling looked at the odds of getting a ‘best aspect’ (BA) rather than a ‘needs improvement’ (NI) comment in each of the five domains, and the relationship between these odds and various independent (possibly explanatory) variables. The modelling was carried out using logistic regression, a technique for examining the effect of various variables (categorical or quantitative, although all variables here were treated as categorical) on a binary response (BA rather than NI). The effect of an explanatory variable is measured as an ‘odds ratio’, a multiplicative term that shows how much more likely a positive than a negative comment is in one situation rather than another.

All records with comments in the particular domain were used in the modelling with the exception of records that had a comment (or more than one comment) in BA *and* NI. Records that had missing values on one or more of the independent variables were also not used in the modelling—the computer package does this automatically and of necessity.

I took each of the files and removed those variables that would seem not to play a part in the logistic regression modelling (for example, the comments themselves). Other variables were modified in some ways (for example, ‘99’ representing ‘missing’ was replaced by an actual missing value) or grouped (age was put into three categories: under 25, 25–44 and 45+).

Together with Anna Reid from the University’s Centre for Learning and Teaching, who supplied valuable background insight in terms of pedagogy and higher-education context, we debated various possible models for the variables that might have an effect on the odds of a positive rather than a negative comment in each domain. We rejected study status and employment status, as these variables referred to present conditions rather than those at the time of study. We decided that a key variable was Field of Education (FOE), as the results were likely to be reported separately for each field (or at least, making comparisons between fields) and because preliminary analysis showed that there were significant differences between fields. To this we added the variables representing Award, Fees, Sex and Age. University was found previously to be a very important variable in all models; that is, there were always

significant differences between universities. Thus our basic model for each domain included the variables: Field, Award, Fees, Sex, Age and University; the results from these models are shown in Appendix 1.

These key variables were modified slightly. For FOE there were very few cases in 11 = food, hospitality, personal services and 12 = mixed fields, so these two fields were excluded. Award was concentrated almost exclusively on UG and PG, and others were excluded. Fees were kept in three groups: HECS, fees and other.

Following the construction of a basic model in each domain, we added the following variables to determine their significance: Attendance type (FT or PT), Attendance mode (Internal or External), Australian residence (No or Yes), ATSI (No or Yes) and Year (2001/2/3/4). With the larger samples in the updated data set, we could add the variables all together and still produce acceptable models, although our main aim here was not to construct a new model for all the variables at once, but to get an idea of the significance of these extra variables. The results from these investigations are shown in Appendix 2.

The regression models were run in each domain consecutively, and the results of this modelling are reported below. Since we were looking at many models, and many terms in each model, we used a significance level of 0.01 (that is, an effect was only reported as statistically significant if it had a less than 1-in-100 chance of occurring if there was no real underlying effect). Variables with p-values between 0.01 and 0.05 will be regarded as ‘marginally significant’.

A subsequent investigation looked at the relationship between the scores on the various CEQ scores and the odds of ‘best aspect’ rather than ‘needs improvement’. The CEQ scores are on a 1–5 scale, and in this modelling they were treated as quantitative variables. The results show odds ratios for each step on the CEQ scale, that is, how many times more likely is a positive rather than a negative comment for each extra step up on the CEQ scale. The results from the CEQ investigations are shown in Appendix 3.

One feature of the CEQ scores is that the 10 scales are never obtained at the same time for a specific record. The first five scales (Good teaching, Appropriate assessment, Appropriate workload, Generic skills, Clear goals) were available for most records, and these scales were examined together. The other scales (Graduate qualities, Learning resources, Learning community, Student support and Intellectual motivation) were examined individually, as they never occurred together in any record. (For comparison, the first five scales were also examined individually, and when this was done the results were sometimes slightly different—in part due to the individual versus combined effects, and in part because the individual examinations allowed the full amount of data to be used.)

Finally, graphs were prepared for each domain showing the proportion of positive comments against the two most important independent variables, FOE and University. These graphs are shown in Appendix 4, together with some information on the number of records with comments in each domain, and the number actually used in the statistical investigations: of course, a record with a comment under both BA and NI cannot contribute to an investigation of the odds of a positive rather than a

negative comment. (However, these records may be used in the next stage of the investigation, when the odds are analysed for each *subdomain*.)

## Results

First, I will present a summary of how important each variable was, then I will look at each domain in turn. FOE was always very significant, as was University. In each model, these variables had p-values  $< 0.001$ , indicating that there were real and substantial differences between FOE and between universities for each domain. Most other variables were significant in some cases and not in others, with the exception of Sex and ATSI status, which was never significant. In case of ATSI status this result may be due to low incidence (731 records or 0.5 per cent of the sample). Award was significant (by itself or in interaction) for all domains except Outcomes, Fees were significant for Assessment, Outcomes and Staff; Age was significant for all domains except Staff. Surprisingly, Year was significant for Course Design, Outcomes and Staff. Attendance type was significant for Course Design and Outcomes, and Attendance mode was significant for all domains except Assessment. Australian residence was significant for all domains except Support.

## Assessment

In the basic model, FOE, University, Fees and Age were significant, and the effect of FOE was different on each of PG and UG. For the UG courses, the odds of a positive rather than negative comment was higher in fields 2, 3, 8 and 10 (IT, Engineering, Management and Commerce, Creative Arts) and lower in Field 6 (Health) than in Field 1 (Sciences). The differences were in other fields at the PG level, with fields 4 and 6 (Architecture & Building, Health) lower and Field 5 (Agriculture & Environment) more than twice as high as Field 1 (Science). The students paying fees were significantly more likely to make positive comments than HECS students, and the oldest age group (45+) were significantly less likely to make positive comments than the U25 group.

Universities 11 and 12 (and 10, marginally) had significantly lower odds of a positive comment than Uni 1 (with unis 11 and 12 having only 30 per cent and 35 per cent chance compared with Uni 1). Australian residents were more likely than non-residents to make positive comments, but there were no significant differences for PT versus FT, external versus internal and ATSI versus non-ATSI students, nor between the four years of the study.

## Course design

In the basic model, FOE, University, Award and Age were significant. The odds of a positive rather than negative comment was higher in Field 5 (Agriculture and environment) and lower in all other fields (only marginally so for Education) than in Field 1 (sciences). The PG students were more likely to make positive comments than the UG students, and the middle age category (25–44) had significantly lower odds of a positive comment than the U25 category.

Universities 6, 7, 8, 9, 10, 11, 13 and 14 had significantly lower odds of a positive comment than Uni 1 (with Uni 11 having only 38 per cent chance compared with

Uni 1). PT and external students were more likely to make positive comments than FT or internal students; Australian residents were more likely to make positive comments than non-residents, but there was only a marginally significant difference by ATSI status (with ATSI students less likely). For some reason, Year 3 (2003) was less likely to have positive comments than Year 1 (2001).

### **Outcomes**

In the basic model, FOE, University, Fees and Age were significant, and the effect of Fees was different across the Age groups. The odds of a positive rather than negative comment was somewhat lower in Field 5 (Agriculture and environment) compared to Field 1 (Sciences). Fee-paying students were more likely than HECS students to make positive comments (almost twice as likely for the U25 group), and the middle and older age groups were more likely than the U25s; however, the differences were less marked for older fee-paying students versus older HECS students.

Universities 9, 10 and 11 had significantly lower odds of a positive comment than Uni 1 (only 45 per cent for Uni 11). PT and external students were more likely to make positive comments than FT or internal students; Australian residents were less likely to make positive comments than non-residents, but there was only a marginally significant difference by ATSI status (with ATSI students more likely). Positive comments were less likely in years 2002, 2003 and 2004 than in 2001.

### **Staff**

In the basic model, FOE, University and Award were significant, and the effect of Fees was marginal, and different across different fields. For HECS students, the odds of a positive rather than negative comment was lower in fields 2, 3, 4, 6, 7, 8 and 10 (that is, all except Field 5, Agriculture and Environment) and marginally lower in Field 9 (Society and Culture) than in Field 1 (Sciences). However, for fee-paying (and other) students, the differences were less marked, although all fields were lower than Science, except for Field 7 (Education). PG students were more likely (30 per cent more likely) than UG students to make positive comments about staff, but the age groups were not significantly different.

Universities 2, 3, 5, 6, 10 and 11 had significantly lower odds of a positive comment than Uni 1. Years 2 and 4 (2002, 2004) were more likely to have positive comments than 2001, and external students and non-Australian residents were more likely to have negative comments than internal students and Australian residents. There was no difference between FT and PT students.

### **Support**

In the basic model, FOE, University and Age were significantly different, Fees were marginal, and Award had a different effect across different fields. At the UG level, the odds of a positive rather than negative comment was higher in fields 6 and 8 (Health, and Management and Commerce) than in Field 1 (Sciences). At the PG level, fields 5, 7 and 9 (Agriculture and Environment, Education, Management and Commerce) were higher than Field 1 (Science). The middle Age group (25–44) was somewhat less likely, and the oldest age group (45+) was somewhat more likely to have positive

comments than the youngest age group, and the fee-paying or other students were somewhat less likely to have positive comments than HECS students.

All the universities except 5 and 7 were significantly less likely than Uni 1 to have a positive comment (with Uni 11 only 23 per cent as likely and Uni 8 only 44 per cent as likely). External students were less likely than internal students to make positive comments. The years were not significantly different, nor were the FT and PT students, Australian and non-Australian residents, or the ATSI and non-ATSI students.

### **CEQ scales**

Appendix 3 shows the relationships between the scores on each CEQ scale and the odds of a positive rather than a negative comment in each domain. Looked at scale by scale (individually), there was a significant relationship between almost every CEQ scale and the odds of a positive comment, and in every domain. The strongest relationship was between the Good Teaching scale and the Staff domain, where positive rather than negative comments were over two-and-a-half (2.62) times as likely for every step up on the Good Teaching scale.

An interesting finding was that there was a *negative* relationship between the Appropriate Assessment scale and odds of a positive rather than a negative comment for every domain (and also for Appropriate workload in the domains of Assessment, Course Design and Staff). A negative relationship would imply that people who rated the scale high were more likely to make a *negative* rather than a positive comment, and seems counter-intuitive. As all the questions on the Appropriate assessment scale, and most of them on the Appropriate workload scale, are reverse scored, there is a possibility of some problem with the data on these scales (which is currently being investigated).

The scales that were *not* significant for each domain were: *Assessment*—Graduate qualities, Learning community, Intellectual motivation; *Course Design and Outcomes*—Learning communities; *Support*—Appropriate workload.

The Overall Satisfaction item was significantly positively associated with odds of a positive rather than a negative comment on each domain, with the following odds ratios: Assessment 1.22, Course Design 1.34, Outcomes 1.40, Staff 1.21 and Support 1.21. This means, for instance, that in the domain of Outcomes, positive rather than negative comments were 40 per cent more likely for each step up on the Overall Satisfaction item.

### **Further analyses**

The next step in the analysis of these data is to investigate the odds of a positive rather than a negative comment in each subdomain. As an indication of the possibilities, I have investigated one subdomain of Assessment—feedback—and the results from this are shown in Appendix 5.

*Summary of results for Feedback:*

Of the 14,330 students who made comments of any type on Assessment, only 3068 were in the subdomain of Feedback, about 10 per cent of them positive (296). A logistic regression model was constructed with Field, Award, Fees, Age, Sex and University as explanatory variables. This model showed largest differences between Universities and between Fields, with significant differences also between age groups, but not for Award, Fees and Sex.

Due to the smaller amount of data, although Fields were significantly different, the only field that was significantly different to Sciences was Creative Arts (Field 10), although the graphs show that Agriculture and Environment was also more positive than Science (Creative Arts and Agriculture and Environment are more than twice as likely as Science to have positive rather than negative comments, while IT is about half as likely as Science). All universities did worse than Uni 1, with 2, 3, 6, 7, 8, 9, 10, 11 and 14 significantly worse (Uni 13 had a very small number of comments under Feedback with all of them negative, resulting in poor estimation with very large standard errors). The older groups were significantly more likely (odds ratios 1.6 and 1.7) than the U25s to have positive rather than negative comments on Feedback.. (Fee-paying students were somewhat more likely to make positive comments, although this result was not statistically significant.)

It is not possible with this model to add in the effects of the other variables (Attendance type, Attendance mode, Australian residence, ATSI status, Year) without removing some other variables. The amount of data means that the model described in the previous paragraph is already a little stretched (although investigations with individual variables added to Field and University showed that the results were similar). When Attendance type and mode were added to a model with Field and University, it seemed that PT students and external students were significantly more likely to make positive rather than negative comments about Feedback (odds ratios 1.4 and 1.6), but similar models with Australian residence, ATSI and Year did not show any significant differences.

### Appendix 1. Basic model for each domain

Logistic Regression results - Assessment (n=12808)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>			170.907	9	.000			
Fld comp to Sciences								
Fld2 - IT	.641	.129	24.760	1	.000	1.898	1.475	2.443
Fld3 - Eng	.559	.142	15.406	1	.000	1.749	1.323	2.311
Fld4 - ArchBd	.254	.169	2.269	1	.132	1.290	.926	1.796
Fld5 - AgEnv	.331	.230	2.070	1	.150	1.392	.887	2.185
Fld6 - Health	-.546	.135	16.396	1	.000	.579	.444	.754
Fld7 - Educ	-.174	.129	1.813	1	.178	.841	.653	1.082
Fld8 - MgtCom	.353	.110	10.301	1	.001	1.423	1.147	1.766
Fld9 - SocCul	-.002	.117	.000	1	.983	.998	.794	1.254
Fld10 - CrArts	.532	.128	17.277	1	.000	1.703	1.325	2.189
Awd PG comp to UG	.278	.302	.846	1	.358	1.320	.730	2.386
Fees comp to HECS			20.312	2	.000			
Fees - fees	.244	.056	18.976	1	.000	1.277	1.144	1.425
Fees - other	.236	.104	5.143	1	.023	1.266	1.033	1.553
Sex Female comp to Male	.079	.045	3.133	1	.077	1.082	.992	1.181
Age comp to U25			16.948	2	.000			
Age - 25-44	-.125	.048	6.682	1	.010	.882	.803	.970
Age - 45+	-.318	.080	15.832	1	.000	.728	.622	.851
Uni comp to Uni1			91.440	13	.000			
Uni2	.020	.135	.022	1	.883	1.020	.783	1.329
Uni3	-.193	.128	2.274	1	.132	.824	.641	1.060
Uni4	.046	.134	.115	1	.734	1.047	.804	1.362
Uni5	-.119	.132	.812	1	.368	.888	.686	1.150
Uni6	-.144	.141	1.038	1	.308	.866	.656	1.142
Uni7	-.085	.135	.395	1	.529	.919	.706	1.196
Uni8	-.135	.131	1.058	1	.304	.874	.676	1.130
Uni9	-.202	.126	2.552	1	.110	.817	.638	1.047
Uni10	-.311	.132	5.562	1	.018	.733	.566	.949
Uni11	-1.232	.187	43.614	1	.000	.292	.202	.420
Uni12	-1.072	.321	11.137	1	.001	.342	.182	.643
Uni13	-.325	.226	2.069	1	.150	.723	.464	1.125
Uni14	-.294	.132	4.943	1	.026	.745	.575	.966
Awd*Fld comp to UG Sciences			47.872	9	.000			
PG IT	-.614	.330	3.465	1	.063	.541	.284	1.033
PG Eng	-.401	.357	1.260	1	.262	.669	.332	1.349
PG ArchBd	-.956	.480	3.967	1	.046	.385	.150	.985
PG AgEnv	.419	.525	.636	1	.425	1.520	.543	4.250
PG Health	.024	.335	.005	1	.943	1.024	.531	1.976
PG Educ	.298	.322	.855	1	.355	1.347	.716	2.534
PG MgtCom	-.471	.307	2.362	1	.124	.624	.342	1.139
PG SocCul	-.160	.319	.250	1	.617	.852	.456	1.594
PG CrArts	-.219	.366	.358	1	.549	.803	.392	1.645
Constant	-.966	.158	37.520	1	.000	.381		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Awd \* Fld .



## Logistic Regression results - Course Design (n=41365)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>			130.879	9	.000			
Fld comp to Sciences								
Fld2 - IT	-.348	.058	35.729	1	.000	.706	.630	.791
Fld3 - Eng	-.278	.064	18.796	1	.000	.757	.668	.859
Fld4 - ArchBd	-.453	.077	34.368	1	.000	.636	.546	.740
Fld5 - AgEnv	.263	.095	7.701	1	.006	1.301	1.080	1.567
Fld6 - Health	-.367	.053	47.529	1	.000	.693	.624	.769
Fld7 - Educ	-.119	.053	4.999	1	.025	.888	.800	.985
Fld8 - MgtCom	-.232	.049	22.575	1	.000	.793	.720	.872
Fld9 - SocCul	-.246	.051	23.576	1	.000	.782	.708	.863
Fld10 - CrArts	-.340	.057	35.623	1	.000	.711	.636	.796
Awd PG comp to UG	.251	.030	70.867	1	.000	1.285	1.212	1.362
Fees comp to HECS			4.110	2	.128			
Fees - fees	.051	.029	3.100	1	.078	1.052	.994	1.113
Fees - other	.081	.057	2.031	1	.154	1.084	.970	1.211
Sex Female comp to Male	.012	.022	.315	1	.575	1.013	.969	1.057
Age comp to U25			35.639	2	.000			
Age - 25-44	-.141	.024	35.620	1	.000	.868	.829	.909
Age - 45+	-.087	.039	4.857	1	.028	.917	.849	.990
Uni comp to Uni1			428.479	13	.000			
Uni2	-.032	.069	.209	1	.648	.969	.845	1.110
Uni3	.012	.066	.033	1	.857	1.012	.889	1.152
Uni4	-.048	.071	.455	1	.500	.953	.830	1.095
Uni5	-.019	.067	.080	1	.778	.981	.861	1.118
Uni6	-.259	.072	12.844	1	.000	.772	.670	.889
Uni7	-.336	.067	24.972	1	.000	.714	.626	.815
Uni8	-.177	.066	7.296	1	.007	.838	.737	.953
Uni9	-.202	.065	9.699	1	.002	.817	.719	.928
Uni10	-.329	.065	25.258	1	.000	.720	.633	.818
Uni11	-.974	.077	162.078	1	.000	.377	.325	.439
Uni12	-.231	.118	3.838	1	.050	.794	.630	1.000
Uni13	-.478	.100	22.989	1	.000	.620	.510	.754
Uni14	-.282	.067	17.503	1	.000	.754	.661	.861
Constant	.538	.076	50.667	1	.000	1.712		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni.

## Logistic Regression results - Outcomes (n=21748)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>			47.842	9	.000			
Fld comp to Sciences								
Fld2 - IT	-.092	.085	1.187	1	.276	.912	.772	1.077
Fld3 - Eng	.147	.095	2.403	1	.121	1.159	.962	1.396
Fld4 - ArchBd	-.141	.108	1.700	1	.192	.869	.703	1.073
Fld5 - AgEnv	-.372	.130	8.164	1	.004	.689	.534	.890
Fld6 - Health	-.054	.078	.487	1	.485	.947	.813	1.103
Fld7 - Educ	-.079	.079	1.000	1	.317	.924	.792	1.078
Fld8 - MgtCom	.092	.070	1.692	1	.193	1.096	.955	1.258
Fld9 - SocCul	.137	.074	3.450	1	.063	1.147	.992	1.325
Fld10 - CrArts	-.056	.080	.487	1	.485	.946	.808	1.106
Awd PG comp to UG	.009	.048	.032	1	.858	1.009	.918	1.108
Fees comp to HECS			100.652	2	.000			
Fees - fees	.629	.064	97.245	1	.000	1.876	1.655	2.125
Fees - other	.391	.155	6.353	1	.012	1.479	1.091	2.006
Sex Female comp to Male	.018	.034	.295	1	.587	1.019	.953	1.089
Age comp to U25			161.660	2	.000			
Age - 25-44	.372	.040	84.852	1	.000	1.450	1.340	1.569
Age - 45+	.838	.079	111.497	1	.000	2.312	1.979	2.701
Uni comp to Uni1			289.172	13	.000			
Uni2	-.019	.108	.030	1	.864	.982	.794	1.214
Uni3	-.064	.106	.366	1	.545	.938	.761	1.155
Uni4	.158	.111	2.014	1	.156	1.171	.942	1.457
Uni5	.196	.107	3.385	1	.066	1.217	.987	1.500
Uni6	.001	.117	.000	1	.991	1.001	.797	1.258
Uni7	-.216	.105	4.198	1	.040	.806	.655	.991
Uni8	.224	.106	4.450	1	.035	1.251	1.016	1.540
Uni9	-.333	.102	10.535	1	.001	.717	.587	.877
Uni10	-.454	.106	18.493	1	.000	.635	.516	.781
Uni11	-.784	.121	42.322	1	.000	.456	.360	.578
Uni12	-.054	.177	.093	1	.760	.947	.670	1.340
Uni13	.203	.154	1.748	1	.186	1.225	.907	1.656
Uni14	-.045	.109	.173	1	.678	.956	.772	1.183
Age * Fees comp to U25 HECS			28.623	4	.000			
25-44 and fees	-.350	.081	18.762	1	.000	.704	.601	.825
25-44 and other	.165	.198	.699	1	.403	1.180	.801	1.737
45+ and fees	-.533	.135	15.590	1	.000	.587	.450	.765
45+ and other	-.408	.331	1.515	1	.218	.665	.347	1.273
Constant	.585	.117	25.109	1	.000	1.796		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Age \* Fees .

## Logistic Regression results - Staff (n=33049)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1			466.093	9	.000			
Fld comp to Sciences								
Fld2 - IT	-1.278	.084	230.495	1	.000	.279	.236	.329
Fld3 - Eng	-1.072	.087	153.149	1	.000	.342	.289	.406
Fld4 - ArchBd	-.601	.098	37.324	1	.000	.548	.452	.665
Fld5 - AgEnv	-.038	.120	.100	1	.751	.963	.760	1.219
Fld6 - Health	-.430	.068	39.759	1	.000	.651	.569	.744
Fld7 - Educ	-.398	.066	36.751	1	.000	.672	.591	.764
Fld8 - MgtCom	-.656	.063	107.181	1	.000	.519	.458	.587
Fld9 - SocCul	-.150	.063	5.584	1	.018	.861	.760	.975
Fld10 - CrArts	-.475	.070	45.940	1	.000	.622	.542	.714
Awd PG comp to UG	.257	.034	58.574	1	.000	1.293	1.211	1.381
Fees comp to HECS			7.646	2	.022			
Fees - fees	-.444	.160	7.644	1	.006	.642	.469	.879
Fees - other	-.071	.400	.032	1	.859	.931	.425	2.041
Sex Female comp to Male	.011	.025	.189	1	.664	1.011	.962	1.062
Age comp to U25			1.275	2	.529			
Age - 25-44	-.010	.027	.133	1	.715	.990	.940	1.043
Age - 45+	.037	.044	.703	1	.402	1.037	.952	1.130
Uni comp to Uni1			166.434	13	.000			
Uni2	-.228	.078	8.468	1	.004	.796	.683	.928
Uni3	-.371	.075	24.552	1	.000	.690	.596	.799
Uni4	-.127	.079	2.592	1	.107	.880	.754	1.028
Uni5	-.257	.074	12.103	1	.001	.773	.669	.894
Uni6	-.352	.082	18.687	1	.000	.703	.599	.825
Uni7	-.128	.075	2.911	1	.088	.880	.760	1.019
Uni8	-.109	.073	2.206	1	.137	.897	.777	1.035
Uni9	-.116	.073	2.525	1	.112	.890	.771	1.028
Uni10	-.392	.074	28.178	1	.000	.676	.585	.781
Uni11	-.434	.085	26.083	1	.000	.648	.548	.765
Uni12	-.069	.125	.304	1	.581	.933	.731	1.192
Uni13	-.074	.114	.417	1	.518	.929	.742	1.162
Uni14	.078	.076	1.056	1	.304	1.081	.932	1.254
Fees*Fld comp to HECS Sciences			63.245	18	.000			
fees IT	.440	.183	5.753	1	.016	1.553	1.084	2.224
fees Eng	.460	.201	5.253	1	.022	1.584	1.069	2.349
fees ArchBd	.262	.236	1.234	1	.267	1.299	.819	2.062
fees AgEnv	-.204	.362	.318	1	.573	.815	.401	1.658
fees Health	.251	.179	1.971	1	.160	1.285	.905	1.823
fees Educ	.680	.182	14.020	1	.000	1.974	1.383	2.819
fees MgtCom	.090	.166	.295	1	.587	1.094	.791	1.514
fees SocCul	.160	.173	.857	1	.354	1.174	.836	1.647
fees CrArts	.381	.186	4.211	1	.040	1.463	1.017	2.105
other IT	.219	.454	.233	1	.629	1.245	.511	3.034
other Eng	.399	.474	.709	1	.400	1.490	.589	3.773
other ArchBd	-.693	.819	.716	1	.397	.500	.100	2.490
other AgEnv	-1.095	.792	1.913	1	.167	.335	.071	1.579
other Health	-.278	.459	.368	1	.544	.757	.308	1.860
other Educ	.273	.464	.346	1	.557	1.314	.529	3.263
other MgtCom	-.228	.411	.309	1	.578	.796	.356	1.781
other SocCul	-.188	.431	.190	1	.663	.828	.356	1.930
other CrArts	-.258	.474	.296	1	.586	.772	.305	1.957
Constant	.821	.088	86.504	1	.000	2.273		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Fees \* Fld .

## Logistic Regression results - Support (n=26519)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>								
Fld comp to Sciences			41.269	9	.000			
Fld2 - IT	.210	.083	6.410	1	.011	1.234	1.049	1.452
Fld3 - Eng	.073	.091	.648	1	.421	1.076	.900	1.286
Fld4 - ArchBd	.035	.109	.101	1	.750	1.035	.837	1.280
Fld5 - AgEnv	.147	.133	1.223	1	.269	1.159	.893	1.504
Fld6 - Health	.222	.075	8.787	1	.003	1.249	1.078	1.446
Fld7 - Educ	.169	.075	5.071	1	.024	1.184	1.022	1.372
Fld8 - MgtCom	.179	.067	7.147	1	.008	1.196	1.049	1.363
Fld9 - SocCul	.036	.068	.281	1	.596	1.037	.907	1.186
Fld10 - CrArts	-.076	.074	1.055	1	.304	.926	.801	1.072
Awd PG comp to UG	.065	.203	.102	1	.750	1.067	.717	1.587
Fees comp to HECS			8.213	2	.016			
Fees - fees	-.090	.037	5.981	1	.014	.914	.850	.982
Fees - other	-.152	.074	4.304	1	.038	.859	.743	.992
Sex Female comp to Male	.005	.028	.037	1	.848	1.005	.952	1.062
Age comp to U25			14.875	2	.001			
Age - 25-44	-.083	.033	6.167	1	.013	.920	.862	.983
Age - 45+	.152	.064	5.641	1	.018	1.164	1.027	1.320
Uni comp to Uni1			528.595	13	.000			
Uni2	-.239	.083	8.350	1	.004	.787	.669	.926
Uni3	-.580	.080	52.094	1	.000	.560	.478	.656
Uni4	-.264	.084	9.814	1	.002	.768	.651	.906
Uni5	-.116	.078	2.190	1	.139	.891	.764	1.038
Uni6	-.690	.085	65.442	1	.000	.501	.424	.593
Uni7	-.172	.080	4.623	1	.032	.842	.720	.985
Uni8	-.821	.078	111.635	1	.000	.440	.378	.512
Uni9	-.234	.078	8.997	1	.003	.791	.679	.922
Uni10	-.480	.076	39.317	1	.000	.619	.533	.719
Uni11	-1.475	.103	205.416	1	.000	.229	.187	.280
Uni12	-.542	.133	16.744	1	.000	.581	.448	.754
Uni13	-.544	.121	20.372	1	.000	.580	.458	.735
Uni14	-.573	.080	50.832	1	.000	.564	.481	.660
Age*Awd comp to U25 UG			5.441	2	.066			
25-44 PG	.161	.084	3.681	1	.055	1.175	.997	1.386
45+ PG	.012	.110	.013	1	.911	1.012	.816	1.256
Awd*Fld comp to UG Sciences			30.311	9	.000			
PG IT	-.333	.215	2.409	1	.121	.716	.470	1.092
PG Eng	-.169	.241	.493	1	.483	.844	.526	1.354
PGArchBd	-.361	.296	1.490	1	.222	.697	.390	1.244
PG AgEnv	.301	.325	.854	1	.355	1.351	.714	2.555
PG Health	-.251	.209	1.442	1	.230	.778	.516	1.172
PG Educ	.096	.205	.220	1	.639	1.101	.737	1.643
PG MgtCom	.027	.197	.019	1	.890	1.028	.699	1.511
PG SocCul	.082	.202	.162	1	.687	1.085	.730	1.613
PG CrArts	.185	.226	.669	1	.413	1.203	.772	1.874
Constant	.013	.093	.020	1	.888	1.013		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Age \* Awd , Awd \* Fld .

## Appendix 2. Extra effect of other variables for each domain

### Logistic Regression results - Assessment

Step	Fld	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
	Fld			151.641	9	.000			
	AttT PT comp to FT	.072	.053	1.895	1	.169	1.075	.970	1.191
	AttM Ext comp to Int	.063	.063	1.003	1	.316	1.065	.942	1.204
	AusRes Yes comp to No	.313	.072	19.007	1	.000	1.368	1.188	1.575
	ATSI Yes comp to No	.229	.380	.364	1	.546	1.258	.597	2.652
	Year comp to 2001			2.805	3	.423			
	Year - 2002	.081	.065	1.532	1	.216	1.084	.954	1.233
	Year - 2003	.095	.066	2.117	1	.146	1.100	.967	1.251
	Year - 2004	.101	.065	2.442	1	.118	1.107	.975	1.257
	Constant	-1.313	.416	9.969	1	.002	.269		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Awd \* Fld , AttT, AttM, AusRes, ATSI, Year.

### Logistic Regression results - Course Design

Step	Fld	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
	Fld			121.700	9	.000			
	AttT PT comp to FT	.077	.026	8.653	1	.003	1.080	1.026	1.137
	AttM Ext comp to Int	.341	.033	109.022	1	.000	1.406	1.319	1.499
	AusRes Yes comp to No	.165	.037	19.970	1	.000	1.180	1.097	1.268
	ATSI Yes comp to No	-.406	.161	6.370	1	.012	.666	.486	.913
	Year comp to 2001			33.413	3	.000			
	Year - 2002	.041	.033	1.531	1	.216	1.042	.976	1.112
	Year - 2003	-.117	.033	12.940	1	.000	.890	.835	.948
	Year - 2004	-.053	.032	2.771	1	.096	.948	.891	1.009
	Constant	.312	.090	12.007	1	.001	1.367		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, AttT, AttM, AusRes, ATSI, Year.

### Logistic Regression results - Outcomes

Step	Fld	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
	Fld			39.460	9	.000			
	AttT PT comp to FT	.174	.040	18.705	1	.000	1.190	1.100	1.287
	AttM Ext comp to Int	.318	.054	34.593	1	.000	1.375	1.236	1.529
	AusRes Yes comp to No	-.264	.060	19.236	1	.000	.768	.682	.864
	ATSI Yes comp to No	.552	.250	4.876	1	.027	1.736	1.064	2.833
	Year comp to 2001			22.890	3	.000			
	Year - 2002	-.152	.051	8.907	1	.003	.859	.777	.949
	Year - 2003	-.233	.050	21.702	1	.000	.792	.718	.874
	Year - 2004	-.188	.049	14.507	1	.000	.828	.752	.913
	Constant	.971	.141	47.392	1	.000	2.642		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Age \* Fees , AttT, AttM, AusRes, ATSI, Year.

## Logistic Regression results - Staff

Step	Fld	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
				468.018	9	.000			
	AttT - PT comp to FT	-.064	.029	4.672	1	.031	.938	.886	.994
	AttM Ext comp to Int	-.216	.036	35.415	1	.000	.806	.751	.865
	AusRes Yes comp to No	.148	.043	11.802	1	.001	1.159	1.065	1.261
	ATSI Yes comp to No	.066	.162	.166	1	.684	1.068	.778	1.467
	Year comp to 2001			20.210	3	.000			
	Year - 2002	.100	.037	7.232	1	.007	1.105	1.028	1.189
	Year - 2003	.068	.037	3.391	1	.066	1.071	.996	1.151
	Year - 2004	.156	.036	18.703	1	.000	1.169	1.089	1.254
	Constant	.614	.104	34.610	1	.000	1.848		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Fees \* Fld , AttT, AttM, AusRes, ATSI, Year.

## Logistic Regression results - Support

Step	Fld	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
				42.299	9	.000			
	AttT PT comp to FT	.015	.033	.193	1	.661	1.015	.950	1.084
	AttM Ext comp to Int	-.118	.040	8.836	1	.003	.889	.823	.961
	AusRes Yes comp to No	.102	.047	4.633	1	.031	1.107	1.009	1.215
	ATSI Yes comp to No	.099	.177	.314	1	.575	1.105	.780	1.564
	Year comp to 2001			2.058	3	.560			
	Year - 2002	-.023	.043	.299	1	.585	.977	.899	1.062
	Year - 2003	-.054	.042	1.678	1	.195	.947	.872	1.028
	Year - 2004	-.044	.041	1.175	1	.278	.957	.883	1.037
	Constant	-.018	.112	.025	1	.875	.983		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Sex, Age, Uni, Age \* Awd , Awd \* Fld , AttT, AttM, AusRes, ATSI, Year.

### Appendix 3. Effects of CEQ scales

Combined effects of first five scales

LR - Assessment (n=9057)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)		
							Lower	Upper	
Step 1 <sup>a</sup>	@GT	.192	.037	26.548	1	.000	1.212	1.126	1.303
	AA	-.070	.027	6.799	1	.009	.932	.885	.983
	AW	-.243	.038	41.583	1	.000	.784	.728	.844
	GS	.093	.039	5.758	1	.016	1.097	1.017	1.183
	CG	.192	.042	20.928	1	.000	1.212	1.116	1.316
	OS	.035	.031	1.279	1	.258	1.036	.975	1.101
	Constant	-1.719	.200	74.042	1	.000	.179		

a. Variable(s) entered on step 1: @GT, AA, AW, GS, CG, OS.

Assessment						
<i>Scale</i>	<i>n</i>	<i>Sig</i>	<i>Odds ratio</i>	<i>Lower CI</i>	<i>Upper CI</i>	
Good Teaching	11754	0	1.35	1.28	1.42	
Appropriate Assessment	10605	0	0.87	0.83	0.91	
Appropriate Workload	9094	0	0.81	0.75	0.87	
Generic Skills	11755	0	1.28	1.21	1.35	
Clear Goals	10713	0	1.40	1.31	1.50	
Graduate Qualities	1147	0.50	1.05	0.90	1.23	
Learning Resources	527	0.02	1.36	1.06	1.74	
Learning Community	620	0.32	0.91	0.77	1.09	
Student Support	2793	0.001	1.20	1.08	1.33	
Intellectual Motivation	1584	0.67	1.03	0.91	1.16	
Overall Satisfaction	13188	0	1.22	1.17	1.27	

LR - Course Design (n=27197)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)		
							Lower	Upper	
Step 1 <sup>a</sup>	@GT	-.073	.019	14.291	1	.000	.929	.895	.965
	AA	-.022	.014	2.467	1	.116	.978	.951	1.006
	AW	-.149	.020	54.833	1	.000	.862	.828	.896
	GS	.151	.020	56.988	1	.000	1.163	1.119	1.210
	CG	.049	.022	4.859	1	.027	1.051	1.005	1.098
	OS	.288	.016	313.694	1	.000	1.334	1.292	1.377
	Constant	-.841	.102	68.016	1	.000	.431		

a. Variable(s) entered on step 1: @GT, AA, AW, GS, CG, OS.

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**Course Design**

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<i>Scale</i>	<i>n</i>	<i>Sig</i>	<i>Odds ratio</i>	<i>Lower CI</i>	<i>Upper CI</i>
Good Teaching	37532	0	1.20	1.17	1.23
Appropriate Assessment	32794	0	0.88	0.86	0.90
Appropriate Workload	27303	0	0.90	0.87	0.93
Generic Skills	37525	0	1.31	1.27	1.35
Clear Goals	33196	0	1.22	1.18	1.27
Graduate Qualities	4722	0	1.17	1.09	1.25
Learning Resources	2525	0	1.40	1.27	1.54
Learning Community	2196	0.32	0.95	0.87	1.05
Student Support	10393	0	1.16	1.10	1.21
Intellectual Motivation	6158	0	1.21	1.14	1.28
Overall Satisfaction	42550	0	1.34	1.32	1.37

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LR - Outcomes (n=14556)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>								
@GT	.043	.029	2.259	1	.133	1.044	.987	1.105
AA	-.056	.021	7.137	1	.008	.946	.908	.985
AW	.121	.030	16.161	1	.000	1.129	1.064	1.198
GS	.247	.030	69.617	1	.000	1.280	1.208	1.356
CG	-.024	.033	.516	1	.473	.976	.915	1.042
OS	.225	.024	89.999	1	.000	1.252	1.195	1.312
Constant	-1.188	.153	60.678	1	.000	.305		

a. Variable(s) entered on step 1: @GT, AA, AW, GS, CG, OS.

### Outcomes

<i>Scale</i>	<i>n</i>	<i>Sig</i>	<i>Odds ratio</i>	<i>Lower CI</i>	<i>Upper CI</i>
Good Teaching	19602	0	1.36	1.31	1.41
Appropriate Assessment	17436	0	0.86	0.84	0.90
Appropriate Workload	14634	0	1.18	1.12	1.25
Generic Skills	19599	0	1.53	1.47	1.59
Clear Goals	17663	0	1.25	1.18	1.31
Graduate Qualities	2152	0	1.36	1.23	1.52
Learning Resources	942	0	1.40	1.20	1.65
Learning Community	1210	0.29	1.08	0.94	1.26
Student Support	4976	0	1.23	1.14	1.33
Intellectual Motivation	2864	0	1.40	1.28	1.53
Overall Satisfaction	22307	0	1.40	1.36	1.44

LR - Staff (n=21099)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)		
							Lower	Upper	
Step 1 <sup>a</sup>	@GT	.968	.022	1886.460	1	.000	2.631	2.519	2.749
	AA	-.038	.017	5.168	1	.023	.962	.931	.995
	AW	-.135	.024	31.391	1	.000	.873	.833	.916
	GS	-.105	.023	20.607	1	.000	.900	.860	.942
	CG	.156	.027	34.078	1	.000	1.168	1.109	1.231
	OS	.006	.015	.161	1	.688	1.006	.977	1.036
	Constant	-2.706	.130	429.990	1	.000	.067		

a. Variable(s) entered on step 1: @GT, AA, AW, GS, CG, OS.

Staff					
<i>Scale</i>	<i>n</i>	<i>Sig</i>	<i>Odds ratio</i>	<i>Lower CI</i>	<i>Upper CI</i>
Good Teaching	29687	0	2.62	2.54	2.70
Appropriate Assessment	25838	0	0.76	0.74	0.78
Appropriate Workload	21360	0.005	0.94	0.90	0.98
Generic Skills	29689	0	1.48	1.44	1.53
Clear Goals	26230	0	1.84	1.77	1.92
Graduate Qualities	3840	0	1.41	1.31	1.52
Learning Resources	1827	0	1.50	1.34	1.68
Learning Community	2013	0	1.57	1.42	1.74
Student Support	8223	0	1.38	1.31	1.46
Intellectual Motivation	4904	0	1.52	1.42	1.63
Overall Satisfaction	33979	0	1.21	1.18	1.23

LR - Support (n=16315)

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)		
							Lower	Upper	
Step 1	@GT	.132	.025	28.505	1	.000	1.141	1.087	1.198
	AA	.028	.018	2.346	1	.126	1.028	.992	1.065
	AW	-.030	.026	1.317	1	.251	.971	.923	1.021
	GS	-.001	.025	.003	1	.956	.999	.950	1.050
	CG	.015	.029	.268	1	.605	1.015	.959	1.074
	OS	.133	.021	39.985	1	.000	1.142	1.096	1.191
	Constant	-1.255	.131	91.141	1	.000	.285		

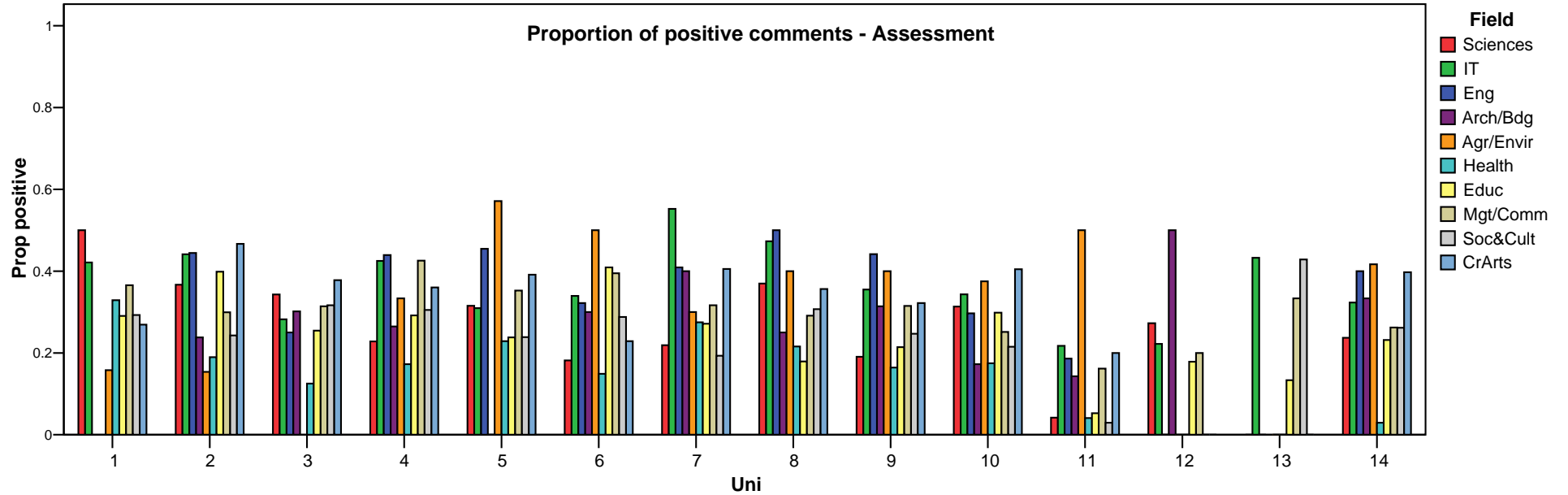
a. Variable(s) entered on step 1: @GT, AA, AW, GS, CG, OS.

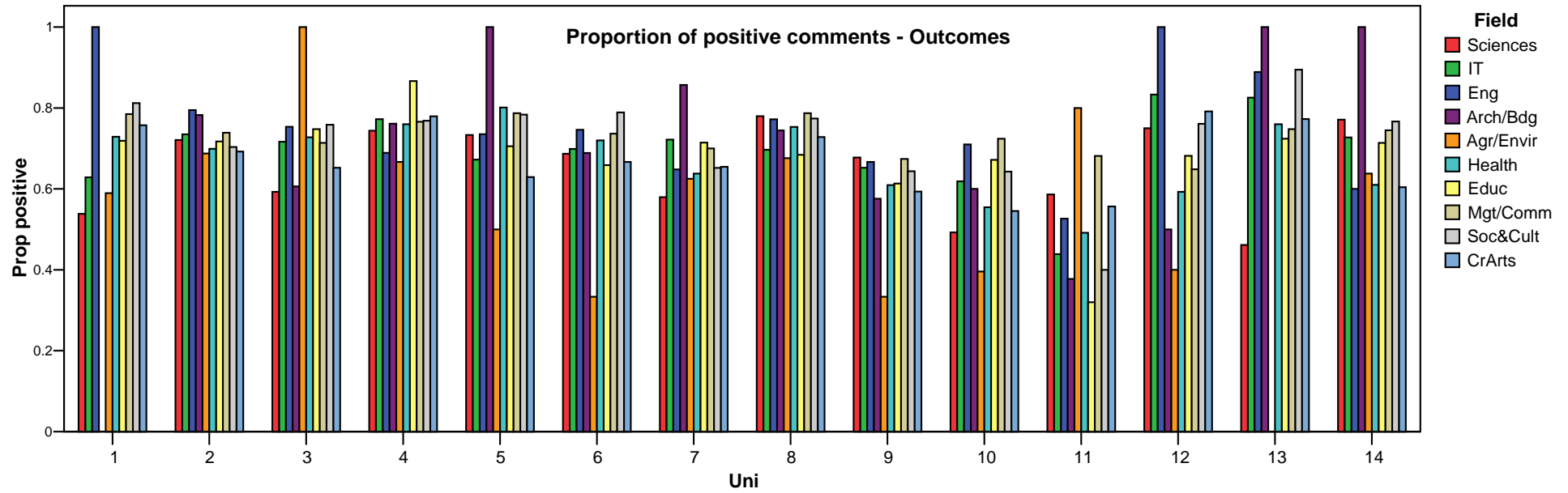
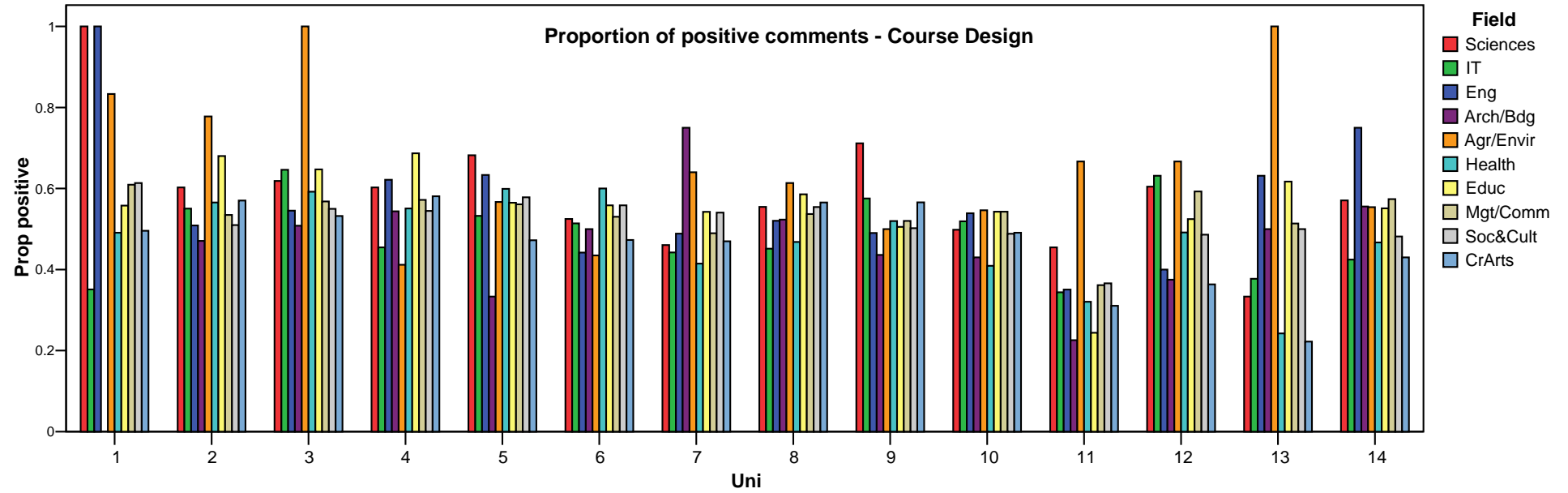
Support					
<i>Scale</i>	<i>n</i>	<i>Sig</i>	<i>Odds ratio</i>	<i>Lower CI</i>	<i>Upper CI</i>
Good Teaching	23896	0	1.21	1.18	1.25
Appropriate Assessment	20381	0.007	0.96	0.93	0.99
Appropriate Workload	16397	0.90	1.00	0.95	1.05
Generic Skills	23892	0	1.14	1.10	1.18
Clear Goals	20717	0	1.17	1.12	1.22
Graduate Qualities	3498	0	1.19	1.10	1.29
Learning Resources	1909	0	1.78	1.57	2.02
Learning Community	1589	0	1.30	1.17	1.44
Student Support	7476	0	1.64	1.54	1.75
Intellectual Motivation	4517	0.004	1.11	1.03	1.18
Overall Satisfaction	27178	0	1.21	1.18	1.24

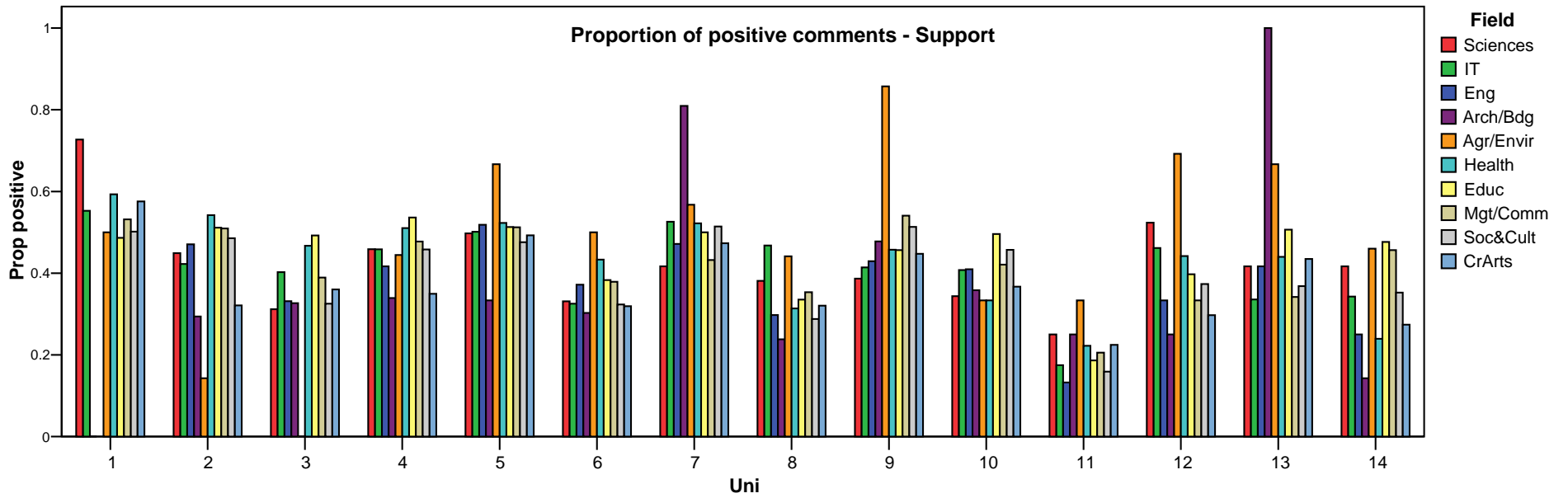
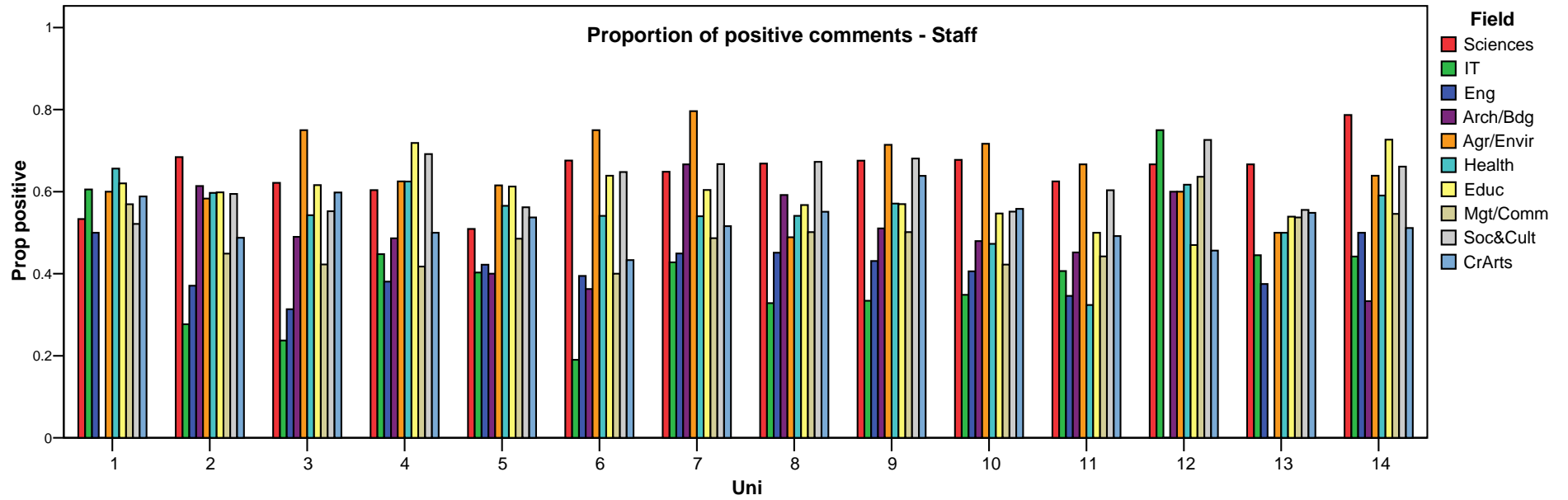
#### Appendix 4. Odds and proportion of positive comments for each domain

<i>Domain</i>	<i>Total with comments</i>	<i>Number with pos &amp; neg comments</i>	<i>Number used</i>	<i>Proportion positive</i>	<i>Odds positive</i>
Assessment	14 330	778	13 552	0.27	0.40
Course Design	62 650	18 943	43 707	0.37	1.14
Outcomes	24 917	1 938	22 979	0.65	1.67
Staff	41 142	6 240	34 902	0.45	1.14
Support	32 062	4 110	27 952	0.37	0.73

#### Graphs. Proportion of positive comments against Field of Education and University







## Appendix 5. Results for Assessment–feedback

**Logistic Regression results - Subdomain: Feedback (n=2859)**

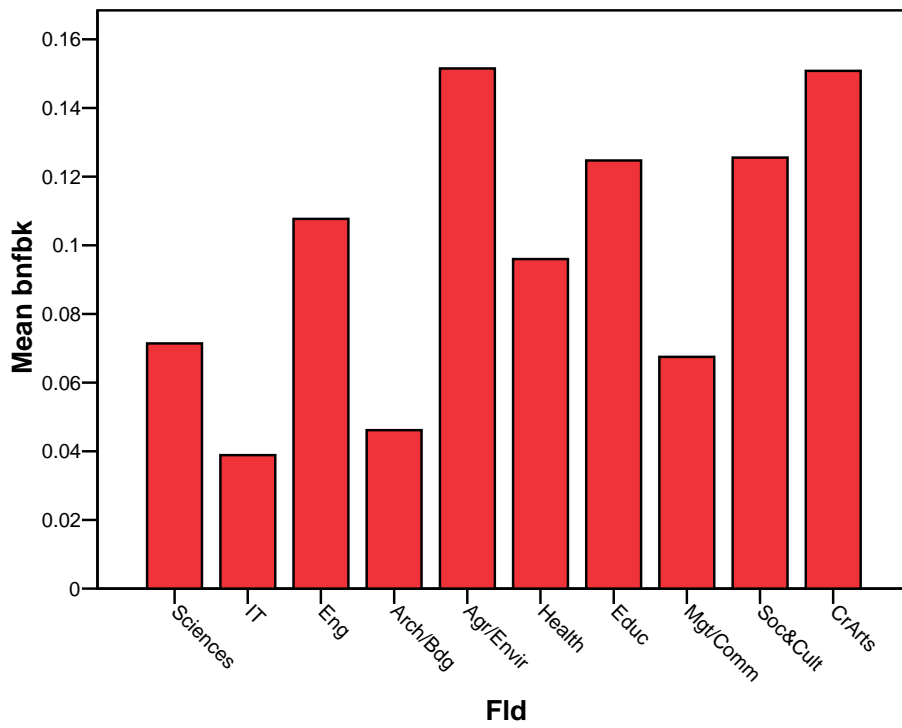
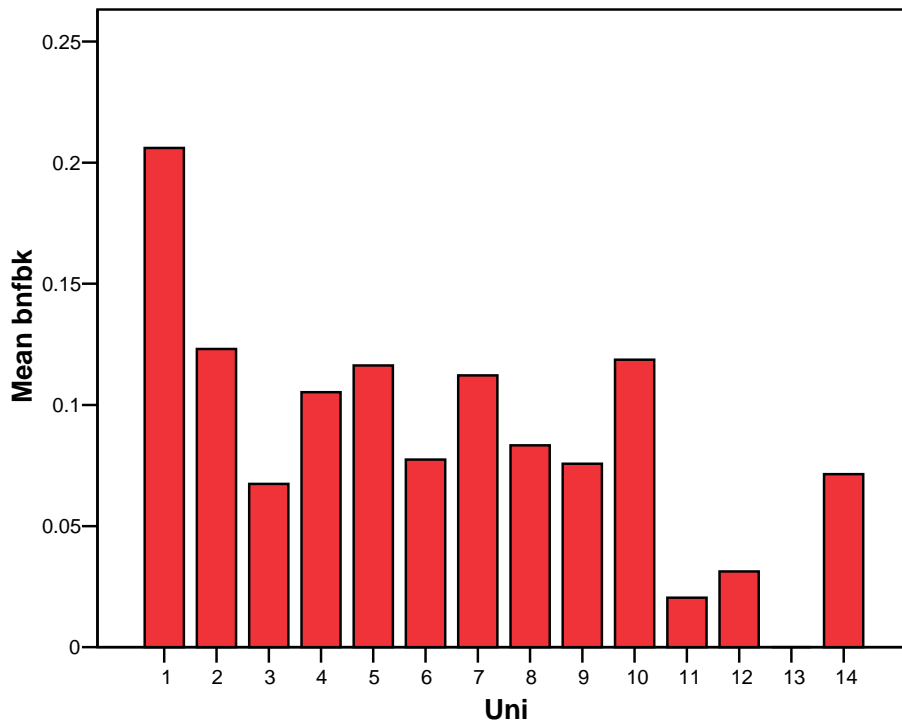
Step		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
1 <sup>a</sup>	Fld compared to Science			34.265	9	.000			
	Fld2 - IT	-.595	.546	1.188	1	.276	.551	.189	1.609
	Fld3 - Eng	.447	.485	.849	1	.357	1.563	.604	4.043
	Fld4 - ArchBd	-.348	.707	.242	1	.623	.706	.176	2.824
	Fld5 - AgrEnv	.755	.633	1.421	1	.233	2.128	.615	7.365
	Fld6 - Health	.105	.421	.062	1	.803	1.111	.486	2.537
	Fld7 - Educ	.547	.411	1.769	1	.183	1.728	.772	3.869
	Fld8 - MgtCom	-.268	.405	.436	1	.509	.765	.346	1.693
	Fld9 - SocCul	.468	.394	1.413	1	.235	1.598	.738	3.459
	Fld10 - CrArts	.973	.430	5.124	1	.024	2.645	1.139	6.140
	Awd PG comp to UG	-.162	.178	.826	1	.363	.851	.600	1.206
	Fees comp to HECS			4.405	2	.111			
	Fees - fees	.346	.182	3.605	1	.058	1.413	.989	2.018
	Fees - other	.439	.324	1.836	1	.175	1.552	.822	2.930
	Age comp to U25			9.557	2	.008			
	Age - 25-44	.527	.172	9.348	1	.002	1.694	1.208	2.376
	Age - 45+	.481	.215	5.007	1	.025	1.618	1.062	2.467
	Sex Female comp to Male	.249	.157	2.517	1	.113	1.283	.943	1.745
	Uni comp to Uni1			37.516	13	.000			
	Uni2	-.857	.329	6.784	1	.009	.424	.223	.809
	Uni3	-1.402	.333	17.666	1	.000	.246	.128	.473
	Uni4	-.778	.345	5.091	1	.024	.459	.234	.903
	Uni5	-.661	.302	4.800	1	.028	.517	.286	.933
	Uni6	-1.406	.411	11.672	1	.001	.245	.109	.549
	Uni7	-.903	.321	7.886	1	.005	.405	.216	.761
	Uni8	-1.176	.323	13.268	1	.000	.308	.164	.581
	Uni9	-1.216	.308	15.560	1	.000	.297	.162	.542
	Uni10	-.851	.283	9.055	1	.003	.427	.245	.743
	Uni11	-2.645	.761	12.094	1	.001	.071	.016	.315
	Uni12	-2.372	1.049	5.110	1	.024	.093	.012	.729
	Uni13	-19.838	9106.3	.000	1	.998	.000	.000	.
	Uni14	-1.348	.341	15.593	1	.000	.260	.133	.507
	Constant	-2.045	.468	19.073	1	.000	.129		

a. Variable(s) entered on step 1: Fld, Awd, Fees, Age, Sex, Uni.

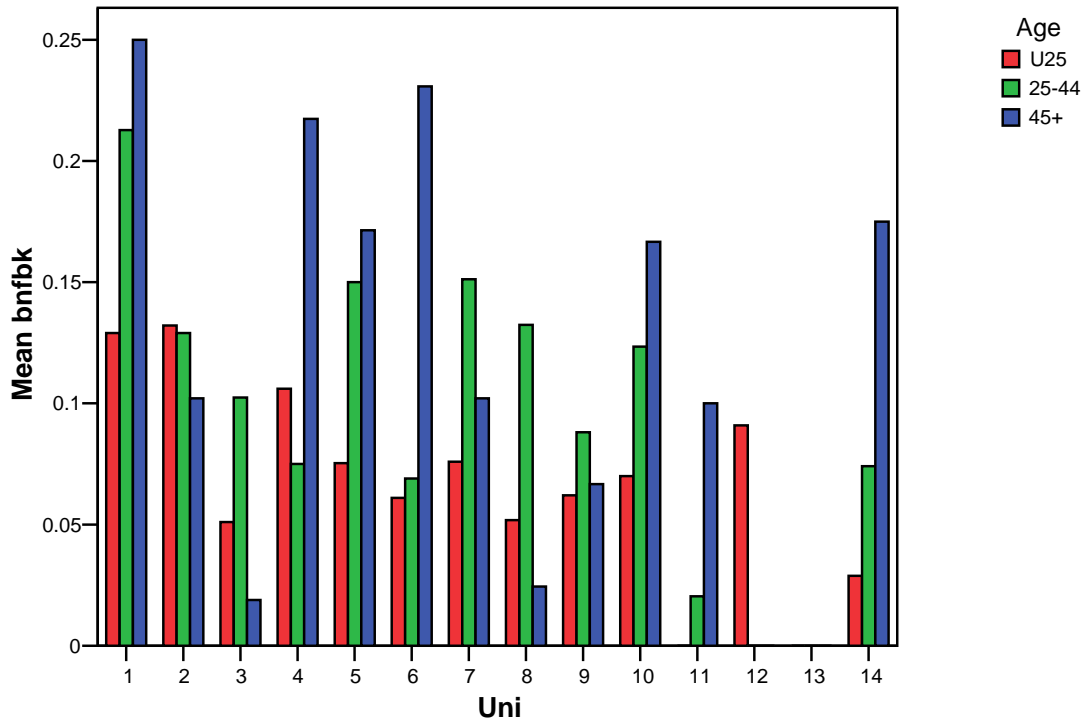
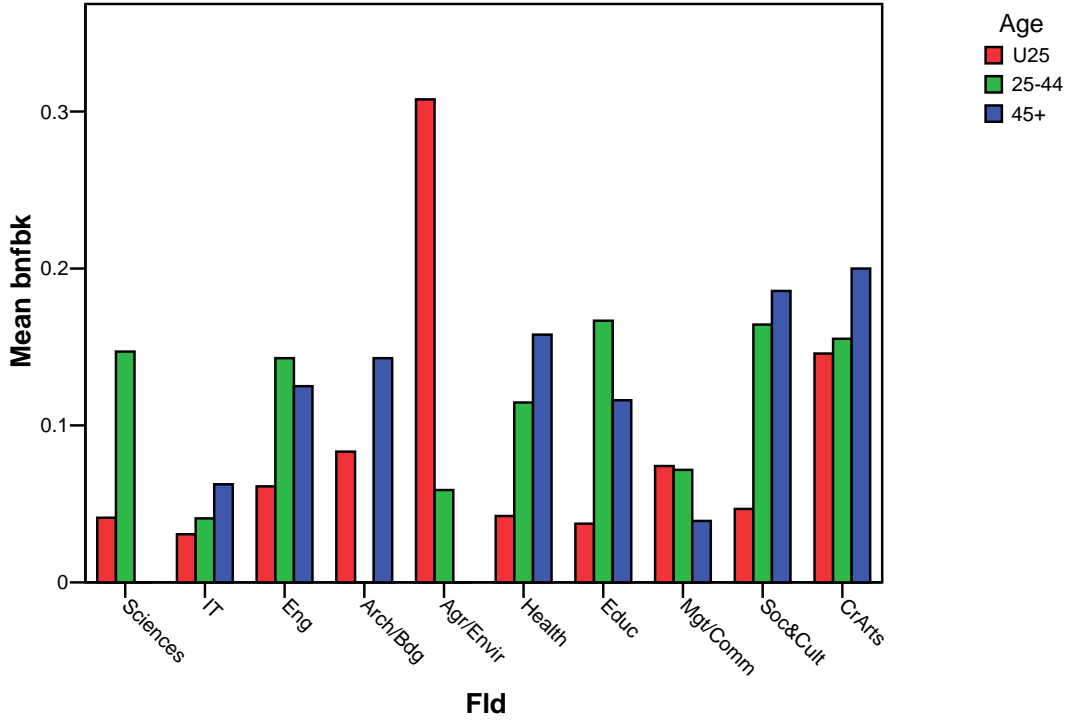
**Note** the fairly small number of comments: 296 positive, 2 772 negative, from a total of 14 330 comments in the Assessment domain.

**Note also** that Uni 13 had very few comments on Feedback (only 21, and all of them negative), resulting in the large standard error.)

Some graphical results:







## Attachment 6

### Regression analysis: effects of the *CEQuery* domains on the CEQ scales

<i>CEQ Scales in decreasing overall association with CEQuery domains</i>	<i>Best significant predictors (CEQuery domains) in descending order: R<sup>2</sup> statistic (a)</i>	<i>Significant main effects (difference in means on BA/NC/NI) in descending order: F statistic (b)</i>	<i>Significant difference in means on BA/NI in descending order: t statistic (c)</i>
Good Teaching	Staff	Staff	Staff
Overall Satisfaction	Staff Course Design Course Outcomes	Staff Course Outcomes Course Design	Staff Course Design Course Outcomes
Clear Goals and Standards	Staff	Staff Assessment	Staff
Generic Skills	Staff Course Outcomes Course Design	Staff Course Outcomes	Staff Course Outcomes Course Design
Appropriate Assessment	Staff	Staff	Staff
Appropriate Workload	Staff Course Design Assessment	No main effects	Staff Course Design Assessment
Student Support	Support Staff	Support Staff	Support Staff
Intellectual Motivation	Staff	Staff	Staff Course Outcomes
Learning Resources	Support Staff	No main effects	Support Staff Course Design
Graduate Qualities	Staff Course Outcomes	No main effects	Staff Course Outcomes
Learning Community	Staff	No main effects	Staff Support

(a)  $R^2$  statistic summarises the strength of the linear relationship.

(b)  $F$  statistic provides a test for the statistical significance of the differences among the means of multiple samples.

(c)  $t$  statistic provides a test for the statistical significance of the differences among the means of two samples.

## Attachment 7

**Table 11. Relationship between the CEQ items and the CEQuery domains sorted by CEQ scale**

Scale code and item #	CEQ items	ANOVA Model <i>F</i>	Adjusted <i>R</i> <sup>2</sup>	Best predictor CEQuery Domain(s)
GT_1ceq1	Good Teaching Scale Q: The staff put a lot of time into commenting on my work	490.00	.060	Staff
GT_1ceq3	Good Teaching Scale Q: The teaching staff normally gave me helpful feedback on how I was going	515.63	.063	Staff
GT_1ceq10	Good Teaching Scale Q: The teaching staff on this course motivated me to do my best work	555.42	.067	Staff
GT_1ceq15	Good Teaching Scale Q: My lecturers were extremely good at explaining things	476.04	.058	Staff
GT_1ceq16	Good Teaching Scale Q: The teaching staff worked hard to make their subjects interesting	483.23	.061	Staff
GT_1ceq27	Good Teaching Scale Q: The staff made a real effort to understand difficulties I might be having with my work	410.72	.051	Staff
AA_1ceq4	Appropriate Assessment Scale Q: To do well in this course all you really needed was a good memory	45.88	.007	
AA_1ceq26	Appropriate Assessment Scale Q: The staff seemed more interested in testing what I had memorised than what I had understood	121.33	.018	Staff
AA_1ceq44	Appropriate Assessment Scale Q: Too many staff asked me questions just about facts	76.52	.012	Staff
GS_1ceq6	General Skills Scale Q: The course helped me develop my ability to work as a team member	97.09	.012	Course Design
GS_1ceq14	General Skills Scale Q: The course sharpened my analytical skills	146.98	.019	Course Outcomes, Staff
GS_1ceq23	General Skills Scale Q: The course developed my problem solving skills	105.88	.013	Course Outcomes, Staff
GS_1ceq32	General Skills Scale Q: The course improved my skills in written communication	129.37	.016	Staff
GS_1ceq42	General Skills Scale Q: As a result of my course, I feel confident about tackling unfamiliar problems	165.22	.021	Course Outcomes, Staff
GS_1ceq43	General Skills Scale Q: My course helped me to develop the ability to plan my own work	129.80	.017	Course Outcomes, Staff
AW_1ceq19	Appropriate Workload Scale Q: The workload was too heavy	32.65	.004	
AW_1ceq5	Appropriate Workload Scale Q: I was generally given enough time to understand the things I had to learn	52.13	.006	
AW_1ceq29	Appropriate Workload Scale Q: There was a lot of pressure on me as a student in this course	37.66	.005	
AW_1ceq9	Appropriate Workload Scale Q: The sheer volume of work to be got through in this course meant it couldn't all be thoroughly comprehended	39.29	.005	
CG_1ceq8	Clear Goals & Standards Scale Q: It was always easy to know the standard of work expected	155.14	.023	Staff
CG_1ceq28	Clear Goals & Standards Scale Q: I usually had a clear idea of where I was going and what was expected of me in this course	216.99	.033	Staff
CG_1ceq39	Clear Goals & Standards Scale Q: It was often hard to discover what was expected of me in this course	154.92	.023	Staff

Scale code and item #	CEQ items	ANOVA Model <i>F</i>	Adjusted <i>R</i> <sup>2</sup>	Best predictor CEQuery Domain(s)
CG_1ceq46	Clear Goals & Standards Scale Q: The staff made it clear right from the start what they expected from students	270.97	.041	Staff
SS_1ceq21	Student Support Scale Q: I was able to access information technology resources when I needed them	37.58	.019	Support
SS_1ceq24	Student Support Scale Q: Relevant learning resources were accessible when I needed them	51.45	.026	Support
SS_1ceq25	Student Support Scale Q: Health, welfare and counselling services met my requirements	12.50	.006	
SS_1ceq34	Student Support Scale Q: The library services were readily accessible	32.17	.016	Support
SS_1ceq37	Student Support Scale Q: I was satisfied with the course and careers advice provided	69.96	.035	Staff
IM_1ceq2	Intellectual Motivation Scale Q: I found my studies intellectually stimulating	24.12	.019	Staff
IM_1ceq7	Intellectual Motivation Scale Q: I found the course motivating	29.39	.023	Staff
IM_1ceq13	Intellectual Motivation Scale Q: Overall, my university experience was worthwhile	28.15	.022	Staff
IM_1ceq35	Intellectual Motivation Scale Q: The course stimulated my interest in the field of study	19.08	.015	Staff
GQ_1ceq11	Graduate Qualities Scale Q: The course provided me with a broad overview of my field of knowledge	21.35	.016	Staff
GQ_1ceq17	Graduate Qualities Scale Q: The course developed my confidence to investigate new ideas	19.90	.015	Staff
GQ_1ceq30	Graduate Qualities Scale Q: University stimulated my enthusiasm for further learning	23.62	.018	Staff
GQ_1ceq36	Graduate Qualities Scale Q: I learned to apply principles from this course to new situations	16.12	.012	Staff
GQ_1ceq40	Graduate Qualities Scale Q: I consider what I learned valuable for my future	21.30	.016	Staff
GQ_1ceq48	Graduate Qualities Scale Q: My university experience encouraged me to value perspectives other than my own	17.72	.013	Staff
LR_1ceq12	Learning Resources Scale Q: The library resources were appropriate for my needs	6.92	.014	Support
LR_1ceq33	Learning Resources Scale Q: The study materials were clear and concise	10.67	.021	Staff
LR_1ceq38	Learning Resources Scale Q: It was clear what resources were available to me to help me learn	13.69	.028	Staff
LR_1ceq41	Learning Resources Scale Q: Course materials were relevant and up to date	9.85	.019	Staff
LR_1ceq47	Learning Resources Scale Q: Where it was used, the information technology in teaching and learning was effective	10.54	.021	Staff
LC_1ceq18	Learning Community Scale Q: I feel part of a group of students and staff committed to learning	28.86	.031	Staff
LC_1ceq20	Learning Community Scale Q: Students' ideas and suggestions were used during the course	25.23	.027	Staff
LC_1ceq22	Learning Community Scale Q: I learned to explore ideas confidently with other people	15.39	.016	Staff
LC_1ceq31	Learning Community Scale Q: I felt I belonged to the university community	20.35	.022	Staff

LC_1ceq45	Learning Community Scale Q: I was able to explore academic interests with staff and students	30.43	.032	Staff
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**Table 12. Relationship between the CEQ items and the CEQuery domains sorted by F value**

Scale code and item #	CEQ items	ANOVA Model <i>F</i>	Adjusted <i>R</i> <sup>2</sup>	Best predictor CEQuery Domain(s)
GT_1ceq10	Good Teaching Scale Q: The teaching staff on this course motivated me to do my best work	555.42	.067	Staff
GT_1ceq3	Good Teaching Scale Q: The teaching staff normally gave my helpful feedback on how I was going	515.63	.063	Staff
GT_1ceq1	Good Teaching Scale Q: The staff put a lot of time into commenting on my work	490.00	.060	Staff
GT_1ceq16	Good Teaching Scale Q: The teaching staff worked hard to make their subjects interesting	483.23	.061	Staff
GT_1ceq15	Good Teaching Scale Q: My lecturers were extremely good at explaining things	476.04	.058	Staff
GT_1ceq27	Good Teaching Scale Q: The staff made a real effort to understand difficulties I might be having with my work	410.72	.051	Staff
CG_1ceq46	Clear Goals & Standards Scale Q: The staff made it clear right from the start what they expected from students	270.97	.041	Staff
CG_1ceq28	Clear Goals & Standards Scale Q: I usually had a clear idea of where I was going and what was expected of me in this course	216.99	.033	Staff
GS_1ceq42	General Skills Scale Q: As a result of my course, I feel confident about tackling unfamiliar problems	165.22	.021	Course Outcomes, Staff
CG_1ceq8	Clear Goals & Standards Scale Q: It was always easy to know the standard of work expected	155.14	.023	Staff
CG_1ceq39	Clear Goals & Standards Scale Q: It was often hard to discover what was expected of me in this course	154.92	.023	Staff
GS_1ceq14	General Skills Scale Q: The course sharpened my analytical skills	146.98	.019	Course Outcomes, Staff
GS_1ceq43	General Skills Scale Q: My course helped me to develop the ability to plan my own work	129.80	.017	Course Outcomes, Staff
GS_1ceq32	General Skills Scale Q: The course improved my skills in written communication	129.37	.016	Staff
AA_1ceq26	Appropriate Assessment Scale Q: The staff seemed more interested in testing what I had memorised than what I had understood	121.33	.018	Staff
GS_1ceq23	General Skills Scale Q: The course developed my problem-solving skills	105.88	.013	Course Outcomes, Staff
GS_1ceq6	General Skills Scale Q: The course helped me develop my ability to work as a team member	97.09	.012	Course Design
AA_1ceq44	Appropriate Assessment Scale Q: Too many staff asked me questions just about facts	76.52	.012	Staff
SS_1ceq37	Student Support Scale Q: I was satisfied with the course and careers advice provided	69.96	.035	Staff
AW_1ceq5	Appropriate Workload Scale Q: I was generally given enough time to understand the things I had to learn	52.13	.006	
SS_1ceq24	Student Support Scale Q: Relevant learning resources were accessible when I needed them	51.45	.026	Support
AA_1ceq4	Appropriate Assessment Scale Q: To do well in this course all you really needed was a good memory	45.88	.007	
AW_1ceq9	Appropriate Workload Scale Q: The sheer volume of work to be got through in this course meant it couldn't all be thoroughly comprehended	39.29	.005	

Scale code and item #	CEQ items	ANOVA Model <i>F</i>	Adjusted <i>R</i> <sup>2</sup>	Best predictor <i>CEQuery</i> Domain(s)
AW_1ceq29	Appropriate Workload Scale Q: There was a lot of pressure on me as a student in this course	37.66	.005	
SS_1ceq21	Student Support Scale Q: I was able to access information technology resources when I needed them	37.58	.019	Support
AW_1ceq19	Appropriate Workload Scale Q: The workload was too heavy	32.65	.004	
SS_1ceq34	Student Support Scale Q: The library services were readily accessible	32.17	.016	Support
LC_1ceq45	Learning Community Scale Q: I was able to explore academic interests with staff and students	30.43	.032	Staff
IM_1ceq7	Intellectual Motivation Scale Q: I found the course motivating	29.39	.023	Staff
LC_1ceq18	Learning Community Scale Q: I feel part of a group of students and staff committed to learning	28.86	.031	Staff
IM_1ceq13	Intellectual Motivation Scale Q: Overall, my university experience was worthwhile	28.15	.022	Staff
LC_1ceq20	Learning Community Scale Q: Students' ideas and suggestions were used during the course	25.23	.027	Staff
IM_1ceq2	Intellectual Motivation Scale Q: I found my studies intellectually stimulating	24.12	.019	Staff
GQ_1ceq30	Graduate Qualities Scale Q: University stimulated my enthusiasm for further learning	23.62	.018	Staff
GQ_1ceq11	Graduate Qualities Scale Q: The course provided me with a broad overview of my field of knowledge	21.35	.016	Staff
GQ_1ceq40	Graduate Qualities Scale Q: I consider what I learned valuable for my future	21.30	.016	Staff
LC_1ceq31	Learning Community Scale Q: I felt I belonged to the university community	20.35	.022	Staff
GQ_1ceq17	Graduate Qualities Scale Q: The course developed my confidence to investigate new ideas	19.90	.015	Staff
IM_1ceq35	Intellectual Motivation Scale Q: The course stimulated my interest in the field of study	19.08	.015	Staff
GQ_1ceq48	Graduate Qualities Scale Q: My university experience encouraged me to value perspectives other than my own	17.72	.013	Staff
GQ_1ceq36	Graduate Qualities Scale Q: I learned to apply principles from this course to new situations	16.12	.012	Staff
LC_1ceq22	Learning Community Scale Q: I learned to explore ideas confidently with other people	15.39	.016	Staff
LR_1ceq38	Learning Resources Scale Q: It was clear what resources were available to me to help me learn	13.69	.028	Staff
SS_1ceq25	Student Support Scale Q: Health, welfare and counselling services met my requirements	12.50	.006	
LR_1ceq33	Learning Resources Scale Q: The study materials were clear and concise	10.67	.021	Staff
LR_1ceq47	Learning Resources Scale Q: Where it was used, the information technology in teaching and learning was effective	10.54	.021	Staff
LR_1ceq41	Learning Resources Scale Q: Course materials were relevant and up to date	9.85	.019	Staff
LR_1ceq12	Learning Resources Scale Q: The library resources were appropriate for my needs	6.92	.014	Support

**Table 13. Relationship between the CEQ items and the CEQuery domains sorted by adjusted R<sup>2</sup> value**

Scale code and item #	CEQ items	ANOVA Model <i>F</i>	Adjusted <i>R</i> <sup>2</sup>	Best predictor CEQuery Domain(s)
GT_1ceq10	Good Teaching Scale Q: The teaching staff on this course motivated me to do my best work	555.42	.067	Staff
GT_1ceq3	Good Teaching Scale Q: The teaching staff normally gave me helpful feedback on how I was going	515.63	.063	Staff
GT_1ceq16	Good Teaching Scale Q: The teaching staff worked hard to make their subjects interesting	483.23	.061	Staff
GT_1ceq1	Good Teaching Scale Q: The staff put a lot of time into commenting on my work	490.00	.060	Staff
GT_1ceq15	Good Teaching Scale Q: My lecturers were extremely good at explaining things	476.04	.058	Staff
GT_1ceq27	Good Teaching Scale Q: The staff made a real effort to understand difficulties I might be having with my work	410.72	.051	Staff
CG_1ceq46	Clear Goals & Standards Scale Q: The staff made it clear right from the start what they expected from students	270.97	.041	Staff
SS_1ceq37	Student Support Scale Q: I was satisfied with the course and careers advice provided	69.96	.035	Staff
CG_1ceq28	Clear Goals & Standards Scale Q: I usually had a clear idea of where I was going and what was expected of me in this course	216.99	.033	Staff
LC_1ceq45	Learning Community Scale Q: I was able to explore academic interests with staff and students	30.43	.032	Staff
LC_1ceq18	Learning Community Scale Q: I feel part of a group of students and staff committed to learning	28.86	.031	Staff
LR_1ceq38	Learning Resources Scale Q: It was clear what resources were available to me to help me learn	13.69	.028	Staff
LC_1ceq20	Learning Community Scale Q: Students' ideas and suggestions were used during the course	25.23	.027	Staff
SS_1ceq24	Student Support Scale Q: Relevant learning resources were accessible when I needed them	51.45	.026	Support
CG_1ceq8	Clear Goals & Standards Scale Q: It was always easy to know the standard of work expected	155.14	.023	Staff
CG_1ceq39	Clear Goals & Standards Scale Q: It was often hard to discover what was expected of me in this course	154.92	.023	Staff
IM_1ceq7	Intellectual Motivation Scale Q: I found the course motivating	29.39	.023	Staff
IM_1ceq13	Intellectual Motivation Scale Q: Overall, my university experience was worthwhile	28.15	.022	Staff
LC_1ceq31	Learning Community Scale Q: I felt I belonged to the university community	20.35	.022	Staff
GS_1ceq42	General Skills Scale Q: As a result of my course, I feel confident about tackling unfamiliar problems	165.22	.021	Course Outcomes, Staff
LR_1ceq33	Learning Resources Scale Q: The study materials were clear and concise	10.67	.021	Staff
LR_1ceq47	Learning Resources Scale Q: Where it was used, the information technology in teaching and learning was effective	10.54	.021	Staff
GS_1ceq14	General Skills Scale Q: The course sharpened my analytical skills	146.98	.019	Course Outcomes, Staff
SS_1ceq21	Student Support Scale Q: I was able to access information technology resources when I needed them	37.58	.019	Support

Scale code and item #	CEQ items	ANOVA Model <i>F</i>	Adjusted <i>R</i> <sup>2</sup>	Best predictor CEQuery Domain(s)
IM_1ceq2	Intellectual Motivation Scale Q: I found my studies intellectually stimulating	24.12	.019	Staff
LR_1ceq41	Learning Resources Scale Q: Course materials were relevant and up to date	9.85	.019	Staff
AA_1ceq26	Appropriate Assessment Scale Q: The staff seemed more interested in testing what I had memorised than what I had understood	121.33	.018	Staff
GQ_1ceq30	Graduate Qualities Scale Q: University stimulated my enthusiasm for further learning	23.62	.018	Staff
GS_1ceq43	General Skills Scale Q: My course helped me to develop the ability to plan my own work	129.80	.017	Course Outcomes, Staff
GS_1ceq32	General Skills Scale Q: The course improved my skills in written communication	129.37	.016	Staff
SS_1ceq34	Student Support Scale Q: The library services were readily accessible	32.17	.016	Support
GQ_1ceq11	Graduate Qualities Scale Q: The course provided me with a broad overview of my field of knowledge	21.35	.016	Staff
GQ_1ceq40	Graduate Qualities Scale Q: I consider what I learned valuable for my future	21.30	.016	Staff
LC_1ceq22	Learning Community Scale Q: I learned to explore ideas confidently with other people	15.39	.016	Staff
GQ_1ceq17	Graduate Qualities Scale Q: The course developed my confidence to investigate new ideas	19.90	.015	Staff
IM_1ceq35	Intellectual Motivation Scale Q: The course stimulated my interest in the field of study	19.08	.015	Staff
LR_1ceq12	Learning Resources Scale Q: The library resources were appropriate for my needs	6.92	.014	Support
GS_1ceq23	General Skills Scale Q: The course developed my problem solving skills	105.88	.013	Course Outcomes, Staff
GQ_1ceq48	Graduate Qualities Scale Q: My university experience encouraged me to value perspectives other than my own	17.72	.013	Staff
GS_1ceq6	General Skills Scale Q: The course helped me develop my ability to work as a team member	97.09	.012	Course Design
AA_1ceq44	Appropriate Assessment Scale Q: Too many staff asked me questions just about facts	76.52	.012	Staff
GQ_1ceq36	Graduate Qualities Scale Q: I learned to apply principles from this course to new situations	16.12	.012	Staff
AA_1ceq4	Appropriate Assessment Scale Q: To do well in this course all you really needed was a good memory	45.88	.007	
AW_1ceq5	Appropriate Workload Scale Q: I was generally given enough time to understand the things I had to learn	52.13	.006	
SS_1ceq25	Student Support Scale Q: Health, welfare and counselling services met my requirements	12.50	.006	
AW_1ceq9	Appropriate Workload Scale Q: The sheer volume of work to be got through in this course meant it couldn't all be thoroughly comprehended	39.29	.005	
AW_1ceq29	Appropriate Workload Scale Q: There was a lot of pressure on me as a student in this course	37.66	.005	
AW_1ceq19	Appropriate Workload Scale Q: The workload was too heavy	32.65	.004	



## Attachment 8

**Table 14. CEQuery domains and subdomains mean scores across employment status (significant results only, N = 79056)**

CEQuery domains and subdomains	Employment status	N	Mean score
<b>Domains</b>			
Staff	Working full-time	45 530	.02
	Working part-time	12 093	.05
	Not employed - seeking work	7 774	.00*
	Unavailable for study/work	2 074	.03
	Full-time study	11 585	.06*
Outcomes	Working full-time	45 530	.12
	Working part-time	12 093	.10*
	Not employed - seeking work	7 774	.11
	Unavailable for study/work	2 074	.16*
	Full-time study	11 585	.13
<b>Subdomains</b>			
Staff: Quality & attitude	Working full-time	22 244	.09
	Working part-time	6 096	.13*
	Not employed - seeking work	3 660	.04*
	Unavailable for study/work	1 115	.10
	Full-time study	5 765	.12
Staff: Accessibility & responsiveness	Working full-time	22 244	.04
	Working part-time	6 096	.08
	Not employed - seeking work	3 660	.01*
	Unavailable for study/work	1 115	.05
	Full-time study	5 765	.10*
Outcomes: Future learning	Working full-time	12 722	.01*
	Working part-time	3 631	.01
	Not employed - seeking work	2 566	.01
	Unavailable for study/work	617	.01
	Full-time study	3 549	.03*
Outcomes: Intellectual	Working full-time	12 722	.27
	Working part-time	3 631	.27*
	Not employed - seeking work	2 566	.30
	Unavailable for study/work	617	.35
	Full-time study	3 549	.32*

<i>CEQuery</i> domains and subdomains	Employment status	<i>N</i>	Mean score
<b>Subdomains (contd)</b>			
Outcomes: Interpersonal	Working full-time	12 722	.07*
	Working part-time	3 631	.08
	Not employed - seeking work	2 566	.11*
	Unavailable for study/work	617	.09
	Full-time study	3 549	.10
Outcomes: Work application / career	Working full-time	12 722	.02*
	Working part-time	3 631	-.09
	Not employed - seeking work	2 566	-.12*
	Unavailable for study/work	617	.01
	Full-time study	3 549	-.04
Support: Library	Working full-time	17 590	-.03
	Working part-time	4 758	-.02
	Not employed - seeking work	3 130	-.02*
	Unavailable for study/work	817	-.04
	Full-time study	4 347	-.05*
Support: Student Administration	Working full-time	17 590	-.11*
	Working part-time	4 758	-.09
	Not employed - seeking work	3 130	-.07*
	Unavailable for study/work	817	-.08
	Full-time study	4 347	-.09
Support: Student Services	Working full-time	17 590	-.02*
	Working part-time	4 758	-.05
	Not employed - seeking work	3 130	-.06*
	Unavailable for study/work	817	-.01
	Full-time study	4 347	-.04

## Attachment 9

**Table 15. Total hits attracted by CEQuery domains across student support (SS) and learning resources (LR) scales use (N = 79,552)**

### SS Scale

<i>CEQuery</i> domains	CEQ Student Support scale use	% of hits	$\chi^2$ (Sig.)	Mean	<i>t</i> (Sig.)
Support domain hits	Used SS scale	37.1	98.76 ( .000)	.37	9.94 ( .000)
	Not used SS scale	33.6		.34	
Staff domain hits	Used SS scale	42.9	9.59 ( .002)	.43	-3.10 ( .002)
	Not used SS scale	44.1		.44	
Assessment domain hits	Used SS scale	15.7	49.41 ( .000)	.16	-7.03 ( .000)
	Not used SS scale	17.7		.18	
Course Design domain hits	Used SS scale	53.8	11.09 ( .001)	.54	-3.33 ( .001)
	Not used SS scale	55.0		.55	
Course Outcomes domain hits	Used SS scale	26.6	102.17 ( .000)	.27	-10.11 ( .000)
	Not used SS scale	30.0		.30	

### LR Scale

<i>CEQuery</i> domains	CEQ Learning Resources scale use	% of hits	$\chi^2$ (Sig.)	Mean	<i>t</i> (Sig.)
Support domain hits	Used LR scale	39.5	91.73 ( .000)	.39	9.58 ( .000)
	Not used LR scale	34.4		.34	
Staff domain hits	Used LR scale	42.6	4.32 ( .038)	.43	-2.08 ( .038)
	Not used LR scale	43.8		.44	
Assessment domain hits	Used LR scale	15.3	18.99 ( .000)	.15	-4.35 ( .000)
	Not used LR scale	17.1		.17	
Course Design domain hits	Used LR scale	54.9	.33 ( .568)	.55	.57 ( .568)
	Not used LR scale	54.5		.55	
Course Outcomes domain hits	Used LR scale	24.4	92.47 ( .000)	.24	-9.62 ( .000)
	Not used LR scale	29.3		.29	

## Attachment 10

### Methods analysis

#### Overall picture of the results and caveats

Table 16 summarises the results of the analysis of the *CEQuery* subdomain *Course Design: Methods*. It shows that, of the 285,000 hits generated from the database analysed, some 26,786 ‘Best Aspects’ (BA) *CEQuery* hits were used in the analysis. It has been assumed that, if a learning method was identified as a “best aspect” by students, this means they perceive it as being engaging and productive.

For the purposes of the analysis a range of items was admitted from other parts of the *CEQuery* analysis. These included some 2,971 BA comments on writing essays and assignments and 276 BA comments on writing a thesis coded under Assessment.

Table 16 shows that some 60 different learning methods emerged from a detailed content analysis of the methods’ database. It should be kept in mind that the names for each of these methods have been generated from the words used by the students themselves, and that what is presented should only be seen as being indicative.

If the results are taken as a whole then the learning methods that attracted the highest number of “best aspect” hits were, in rank order:

- Small group project work
- Learning by completing assignments and essays
- Lectures
- Class-work exercises of various types
- Hands-on practice
- Practical experience
- Tutorials
- Practicum placement
- Clinical placement
- Discussion and sharing ideas

If the ‘hands-on practice’ and ‘practical experience’ categories are combined, then this group of methods is ranked first. Similarly if the ‘practicum’ (the favoured term in Education) and ‘clinical placement’ (the favoured term in Health) are combined, they move into third place for the number of BA hits they attract.

What this result suggests is that, although lectures clearly have a role, what particularly impresses students is active/interactive rather than passive learning by working, for example, on small group projects around real world cases in combination with practice-oriented, real world, ‘learning by doing’ with opportunities for students to discuss, consolidate, critique and make sense of these experiences. It also makes clear that assignments, essays and other assessment items are, in their own right, important individual learning strategies. Similarly, feedback on assessment emerges as being the unique opportunity for 1 on 1 discussion between lecturer and student. This aligns with both the wider body of research and writing reviewed in the study’s literature review (Chapter 1) and the areas given emphasis in other related areas of Course Design—like the high number of hits attracted by the *Course Design: Relevance and*

*Flexibility* subdomains and the high number of hits attracted by the Support: social affinity subdomain.

Interestingly, when an analysis of the Best Aspect comments on lectures are examined in more detail, what students are responding to positively is not just excellence in imparting the latest information or communicating their enthusiasm for the topic but the use of a range of modified lecture techniques that involve students in a wide variety of active learning processes as the lectures unfold.

What is evident in Table 16 is the overlap between the different terms used for what might be very similar methods across the various fields of higher education. This outcome requires further detailed and more targeted investigation.

**Table 16. CEQuery ‘Best Aspect’ methods sorted by aggregated Field of Education and cluster**  
(Rank order indicated in brackets)  
**Aggregated FOE**

Cluster/Method	Science & Built Environment	Health	Education	Management & Commerce	Society, Culture Creative Arts	Total
<b>FACE-TO-FACE</b>						
* Lecture	433 (2)	254 (1)	237 (1)	648 (2)	501 (2)	2073 (2)
* Team or group project/ small group work	878 (1)	186 (4)	150 (5)	1506 (1)	445 (4)	3165 (1)
* Tutorial	202 (4)	205 (2)	232 (2)	427 (5)	479 (3)	1545 (4)
* Class-work exercises	421 (3)	188 (3)	184 (4)	533 (3)	558 (1)	1884 (3)
* Discussion, sharing ideas	107 (6)	73 (5)	196 (3)	376 (6)	382 (5)	1134 (5)
* Seminar/ individual presentation	190 (5)	59 (6)	87 (6)	469 (4)	241 (6)	1046 (6)
* Workshop	57 (7)	53 (7)	69 (7)	81 (7)	115 (7)	375 (7)
* Debate	6	6	12	29	57	110
* 1/1 consultation/mentor	16	6	23	35	36	116
* Conference/symposium	10	3	21	8	23	65
* Forum/panel	6	3	17	14	15	55
* Exhibition	13	0	1	1	28	43
* Peer learning	5	4	5	12	5	31
* Group dynamics exercises	4	6	3	12	5	30
* Critique of student production/creation	2	0	2	1	14	19
* Buzz group	0	0	0	2	0	2
<b>TOTAL HITS</b>	<b>2350</b>	<b>1046</b>	<b>1239</b>	<b>4154</b>	<b>2904</b>	<b>11 693</b>

Cluster/Method	Science & Built Environment	Health	Education	Management & Commerce	Society, Culture Creative Arts	Total
<b>PRACTICE-ORIENTED &amp; REAL WORLD</b>						
* Clinical placement	44	1082 (1)	4	11	73	1214 (4)
* Practicum, practice tchg, teaching 'rounds'	26	105 (=5)	963 (1)	36	137 (5)	1267 (3)
* Practical legal training	4	0	1	7	59	71
* Cooperative Education	24	0	0	2	1	27
* Work experience, work-based learning, field/professional placement, industry training, supervised practice	289 (4)	105 (=5)	44 (5)	198 (3)	240 (3)	876 (5)
* Hands-on practice	462 (2)	246 (3)	331 (3)	153 (4)	364 (1)	1556 (1)
* Practical experience	237 (5)	400 (2)	510 (2)	134 (5)	269 (2)	1550 (2)
* Practical work	295 (3)	114 (4)	78 (4)	93 (7)	173 (4)	753 (7)
* Field study/work/trip/experience, site visit	599 (1)	40	33	73 (7)	104 (7)	849 (6)
* Camps	46	6	4	2	6	64
* Real-life problems to solve	190 (6)	64 (7)	22	213 (2)	91	580 (8)
* Use of guest speakers, industry/professional representatives	81 (7)	53	29 (7)	96 (6)	128 (6)	387 (10)
* Professional mentor	1	0	0	5	4	10
* Design Studio	15	0	0	2	11	28
* Artistic production	1	1	0	2	22	26
* Placement /study overseas, other HEIs	8	9	5	14	24	60
* Experimental learning	1	0	2	4	4	11
* Case study	63	30	19	325 (1)	42	479 (9)
<b>TOTAL HITS</b>	<b>2386</b>	<b>2255</b>	<b>2045</b>	<b>1370</b>	<b>1752</b>	<b>9808</b>

Cluster/Method	Science & Built Environment	Health	Education	Management & Commerce	Society, Culture Creative Arts	Total
INDEPENDENT STUDY NEGOTIATED LNG						
* Learning by completing assignments/essays etc	612 (1)	226 (1)	452 (1)	974 (1)	707 (1)	2971 (1)
* Writing a thesis	104 (2)	12 (3)	18 (3)	28 (3)	114 (2)	276 (2)
* Use of self-teaching/ correspondence packages	22 (3)	60 (2)	30 (2)	62 (2)	57 (3)	231 (3)
* Self-directed study	4	4	11	6	23	48 (4)
* Project report writing	17	4	1	10	9	41 (5)
* Proposal writing	2	0	0	1	0	3
* Learning contract	0	0	1	0	1	2
<b>TOTAL HITS</b>	<b>761</b>	<b>306</b>	<b>513</b>	<b>1081</b>	<b>911</b>	<b>3572</b>
SIMULATIONS & LABS						
* Mock trials, role play, simulated interviews	11 (3)	9 (3)	4	38 (1)	24 (2)	86 (3)
* Hypothetical	2	0	1	3	1	7
* Games	5	4	4	24 (3)	7	44
* Discovery learning	1	0	0	0	0	1
* Experiments	59 (2)	11 (2)	4	8	19 (3)	101 (2)
* Lab work – including demonstration followed by practice	378 (1)	155 (1)	15 (1)	37 (2)	53 (1)	638 (1)
<b>TOTAL HITS</b>	<b>456</b>	<b>179</b>	<b>28</b>	<b>110</b>	<b>104</b>	<b>877</b>

Cluster/Method	Science & Built Environment	Health	Education	Management & Commerce	Society, Culture Creative Arts	Total
CIT- SUPPORTED LEARNING METHODS						
* Online search for information/web sites	34 (1)	22 (1)	38 (2)	64 (1)	50 (3)	208
* Web-based learning/ on-line-study	17 (2)	15 (2)	18	35	17	102
* Email contact with staff/ students	12 (3)	13 (3)	64 (1)	22 (2)	28	139
* Phone contact with staff/ students (1/1)	8	9	27	11	15	70
* Teleconference	1	10	28 (3)	6	12	57
* Tele-tutorial	1	2	0	14 (3)	5	22
* Learning from radio	1	0	2	4	82 (1)	89
audio Tapes, CDs	1	3	7	4	7	22
TV	2	0	2	5	57 (2)	66
Video/DVD	1	7	6	4	30 (4)	48
photos, slides, digital images	0	0	0	2	11	13
TOTAL HITS	78	81	192	171	314	836
<b>Grand total</b>	<b>6,031</b>	<b>3,867</b>	<b>4,017</b>	<b>6,886</b>	<b>5,985</b>	<b>26,786</b>

Table 16 shows that the 60 methods were found to fall into 5 major clusters: (a) 16 were concerned with face-to-face learning methods, commonly those used in the classroom; (b) 18 involved the use of more Practice-oriented/'Real World' focused methods; (c) 7 primarily involved independent and/or negotiated study; (d) 6 concerned the use of various simulations of real-world practice, including laboratory work; (e) Finally a range of CIT- enabled learning methods and associated resources were identified. It should be noted that this way of clustering the results is by no means the only possibility. It does, however, align with the broader research and writing reviewed in Chapter 1 and with the findings from other Course Design subdomains in the present study.

This clustering and the list of methods in Table 16 show the wide variety of possibilities for engaging students in productive learning currently being used in Australian higher education. What emerges in other parts of the study and in broader research on the area is that the art is to use the most telling combination of these methods, especially those repeatedly identified as a 'best aspect', rather than rely on just one or two.



In doing this there are clearly combinations that may be more feasible and effective in one field of education than another. We now turn to exploring the variations that occur across the different Fields of Education.

### **Best Aspect methods of learning x Field of Education**

There are twelve ASCED fields of education (FOE) currently used by DEST. For the purposes of this analysis these have been consolidated, as Table 17 indicates, into the following five areas:

- Science & Built Environment—Natural and physical sciences; IT; Engineering & Related Technologies; Architecture & Building; Agriculture, Environmental & Related Studies;
- Health—Health;
- Education—Education;
- Management & Commerce—Management & Commerce;
- Society, Culture & Creative Arts—Society & Culture; Creative Arts; Food, Hospitality & Personal Services;

The ASCED Enabling course load and Mixed Programs categories have been excluded from the analysis due to small sample sizes.

Table 16 shows the full spread of Best Aspect hits for each cluster and method. The numbers in brackets show the rank order of the number of hits attracted by each method for each FOE in each cluster. The totals also show in brackets the overall rank order of hits for each method in that cluster. For example, in the cluster Face-to-face Methods in the Science and Built Environment FOE, the method attracting the highest number of BA hits was team/group project work (878 hits out of 2350), followed by Lecture (433 hits), then Class-work exercises (421).

Table 17 provides a more detailed comparison between the different Fields of Education. In Column 2 it shows which cluster attracted the most hits. Column 3 identifies the methods attracting the highest number of hits overall in rank order and irrespective of cluster. Column 4 then shows which methods attracted the highest share of hits for each FOE within each cluster.

A number of interesting things stand out in Table 17.

First, the first three Fields of Education attracted the highest share of hits in the practice-oriented cluster whereas the last two attracted the highest share in the face-to-face cluster. This makes some sense, given the nature of the different disciplines they are made up of.

As column 3 in Table 17 shows there is some variation by Field of Education in the specific methods which attract the highest share of “best aspect” hits. This aligns with the results in column 2. What is also clear in column 3 is the fact that in some fields—for example, Health—there is a high proportion of hits on just one method (in the case of Health, clinical placement). This raises the issue of whether other methods are relevant but are not being well deployed or are inappropriate. A similar question arises when we look at the fact that some methods attract a high number of “best aspects” hits in one Field of Education but not in others. Examples include the use of the field study in Science & Built Environment, the case study in Management & Commerce, the high proportion of BA hits for group project work in that area

and Science & Built Environment but comparatively low use in areas like Health and Education.

This suggests that there may be some merit in those responsible for course accreditation in various Fields of Education looking beyond their own disciplinary traditions to others to see if methods attracting a high number of “best aspect” hits in these different fields might add value to learning in their courses. This could, for example, include looking at the use of case studies and team projects in Fields beyond Management & Commerce, the practicum in Management & Commerce, and the use of field studies in courses beyond those concerned with Science and Built Environment.

**Table 17. Rank order of hits x Fields of Education: overall and by cluster**

Field of Education	Cluster Attracting Most BA Hits	Methods Attracting Most BA Hits overall	Methods Attracting Most BA Hits in Each Cluster
Science & Built Environment	Practice-Oriented (2386 hits / 6032)	Team/group project (878/6032) Completing assignments (612) Field work/Site visit (599) Hands on Experience (462) Lecture (433) Class-work exercises (421) Lab work (378)	Face-to-face: team project POE: Field study Independent study: assignment Simulations/Lab: Labs CIT-enabled: Online search
Health	Practice-Oriented (2255 / 3867)	Clinical placement (1082/3867) Practical experience (400) Lecture (254) Hands on practice (246) Completing assignments (226) Tutorial (205) Class-work exercises (188)	Face-to-face: Lecture POE: Clinical placement Independent study: assignment Simulations/Lab: Labs CIT-enabled: Online search
Education	Practice-Oriented (2045 / 4017)	Practicum/prac tchg (963/4017) Practical experience (510) Completing assignments (452) Hands on practice (331) Lecture (237) Tutorial (232) Discussion, sharing ideas (196)	Face-to-face: Lecture POE: Practicum Independent study: assignment Simulations/Lab: Labs CIT-enabled: Email contact with staff and fellow students
Management & Commerce	Face-to-face (4154 / 6886)	Team/group project (1506/6886) Completing assignments (974) Lecture (648) Class-work exercises (533) Seminar presentation (469) Tutorial (427) Discussion, sharing ideas (376)	Face-to-face: team project POE: Case study Independent study: assignment Simulations/Lab: Role play CIT-enabled: Online search
Society, Culture & Creative Arts	Face-to-face (2904 / 5985)	Completing assignments (707/5985) Class-work exercises (558) Lecture (501) Tutorial (479) Team/group project (445) Discussion, sharing ideas (382) Hands on practices (364)	Face-to-face: class work exercises POE: Hands on practice Independent study: assignment Simulations/Lab: Labs CIT-enabled: Radio/audio/TV

### Methods commonly cited as a ‘Best Aspect’ (BA) in some Fields of Education but not in others

- Team/group projects and small group work attract the most hits in Science & the Built Environment (37% of hits for face-to-face methods in this FOE) and the most hits in Management & Commerce (36% of hits for face-to-face methods in this FOE) whereas this method ranks 4<sup>th</sup> for Health (18% of hits for face-to-face methods in this FOE), 5<sup>th</sup> for Education (12% of hits for face-to-face methods) and 4<sup>th</sup> for Society, Culture & Creative Arts (SCCA) (17% of hits for face-to-face methods).
- Camps, co-operative education and field trips in Science.
- Radio, Video, DVD and TV as best aspects in Arts.

### Overall Observations

- There is considerable variation in the methods attracting the highest number of hits depending on the Field of Education.
- Some fields of education appear to have ‘preferred’ methods and in some cases only one or two methods (for example, clinical practice in health) attract most of the hits. This raises the question whether those attracting high best aspect hits in other Fields of Education might be applicable and help increase variety. It also suggests that some Fields of Education which are particularly vocational (like Education and Health) may inevitably see preference for methods which are practice-focused and, as a consequence, vocationally relevant.
- The low number of hits for best aspects in CIT requires follow-up.
- The high hit areas show how important ‘relevance’ and ‘learning by doing’ are to students: especially hands-on vocational focus, and *active* rather than *passive* learning
- Lectures, are always going to be part of a broader learning design and need to be used where they most add value—for example, to give an overview of where the learning is going, of the big picture and so on.
- The overall pattern of “best aspect” hits confirms that learning is a profoundly interactive and social experience
- In some Fields of Education, traditional modes of teaching attract a lower proportion of best aspect hits than in others—for example, lectures in Management & Commerce.
- There are indications, when comments are read in detail, that the best aspect methods promote engagement in productive learning, and, as a result increased motivation to stay at the chosen university
- The methods attracting high “Best Aspect” hits on *CEQuery* also attract high importance ratings University level Surveys which include importance as well as performance ratings.

### Further work needed

There is a need to:

- Refine the methods’ clusters.
- Investigate if students are using different terms for the same concept.

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## Glossary

*AAHE.* American Association for Higher Education.

*ANOVA* Analysis of Variance: a statistical test for differences in the means of several groups. A one-way ANOVA involves an analysis where the groups are defined on only one independent variable.

*ASCED.* Australian Standard Classification of Education.

*Assessment.* Process used to gather data about student capabilities in the area studied for the purposes of evaluation.

*ASSIST.* Approaches and Study Skills Inventory for Students.

*ATN.* Australian Technology Network

*ATSI.* Aboriginal & Torres Strait Islander.

*AUQA.* Australian Universities Quality Agency.

*BA.* Best Aspect: written comments by students on the positive aspect(s) of their course experience

*Categorical / qualitative variables.* variables in which distinct categories exist (such as sex, place of residence, ethnicity), with counts or number of observations in each category.

*CEQ.* Course Experience Questionnaire: an annual national survey of graduate Satisfaction with their recently completed course, coordinated by Graduate Careers Australia (GCA)

*CEQuery.* An IT-enabled qualitative analysis tool specifically calibrated for use in education.

*CEQuery domains.* Major areas of course experience into which open-ended comments are classified.

*CEQuery subdomains.* Subcategories within the *CEQuery* domains.

*Chi-square test  $\chi^2$*  A statistical test used for analysing categorical data by examining the pattern of relationship within a cross-tabulation table.

*CIT.* Communications and information technology

*Conceptual framework* A conceptual framework explains, either graphically or in narrative form, the main dimensions to be studied—the key factors or variables—and the presumed relationships amongst them (Miles & Huberman, 1984: 28).

*Continuous / quantitative variables.* Variables based on counts or measurements.

*CPQ.* Course Perceptions Questionnaire

*Cross-tabulation.* A table of frequencies summarising the relationship between categorical variables.

*DEST.* Department of Education, Science and Training (formerly DETYA).

*DETYA.* Department of Education and Training and Youth Affairs (now DEST).

*EI.* Emotional Intelligence.

*EFTSL.* Equivalent full-time student load.

*Engagement.* Engagement with the learning experience is the level of active involvement of the student in learning activities and the extent of their interaction with staff and peers

- Evaluation* The process which leads to judgements about the worth, effectiveness and efficiency of an activity, product, project or strategy (McDonald & Bishop, 1990: 12). It can be formal or informal and can be formative (intended to improve that which is evaluated) or summative (intended to sum up its overall benefit and impact). Evaluation can also be norm-referenced or criterion-referenced.
- Factor*. Another word for independent variables in the analysis of variance. A five-level factor means independent variable with five subcategories.
- FOE*. Field of Education: the broad groupings of related educational disciplines (such as Education, Health, Business) used for purposes of analysing educational characteristics and outcomes
- F value / statistic*. In ANOVA, an indicator of difference in the means of several groups. Even if significant, this does not show where exactly difference is or what the differences are (See: Post Hoc multiple comparison tests).
- GCA*. Graduate Careers Australia.
- GDS*. Graduate Destination Survey: an annual national survey of graduate outcomes in higher education (for example, employment, starting salaries), coordinated by GCA.
- HECS*. Higher Education Contribution Scheme.
- HEIP*. Higher Education Innovation Program.
- HERDSA*. Higher Education Research & Development Association.
- Hit*. Automated placement of a comment or relevant section of a comment into a specific *CEQuery* subdomain.
- Independent and dependent variables*. B is an independent (also explanatory or predictor) variable and C is a dependent (response) variable if changes in C depend on changes in B.
- Interaction*. The condition when the strength of association between two variables depends on the value of a third.
- Item*. A general term referring to an individual problem, issue, question or statement, used within a test, survey or other data gathering instrument or system.
- Learning*. Learning occurs when there has been a demonstrably positive change in individual capabilities important to professional, societal or disciplinary practice. These capabilities include cognitive and affective dimensions as well as generic and job-specific knowledge and skills.
- Logistic regression*. A variant of regression used when the dependent variable is a dichotomy such as a 'Best Aspect' / 'Needs Improvement' response.
- Model*. A mathematical statement or a conceptual framework, which expresses a relationship between variables.
- Multiple regression*. A regression with two or more independent variables.
- NESB*. Non-English speaking background.
- NI*. Needs Improvement: written comments by students on the aspects of their course experience they identify as warranting improvement.
- NSSE*. National Survey of Student Engagement.
- Odds ratio*. The ratio of Best Aspects (BA) to Needs Improvement (NI) comments in a particular domain or subdomain of *CEQuery*. For example, an odds ratio of 1.5 indicates that for every NI comment there are 1.5 BA comments, while an odds ratio of 0.5 indicates that there are only half as many BA comments as NI comments.

*PLEQ*. Perceptions of Learning Environments Questionnaire.

*Post hoc multiple comparison tests*. Tests that follow ANOVA in order to identify which particular groups within a set differ significantly from each other.

*Qualitative analysis*. A set of techniques developed to analyse qualitative data. They are typically used to search for relationships in non-numerical data. For example, content analysis or thematic coding is used to find patterns in text.

*Qualitative data*. Data that are not numerical in nature, from such sources as in depth interviews, direct observation, comments or texts.

*R<sup>2</sup> value / statistic*. In multiple regression, a coefficient summarising the strength of the linear relationship between the dependent variable and a set of independent variables.

*Regression*. The prediction of values of a dependent variable from knowledge of the values of one or more independent variables.

*Reliability*. The degree to which a measure repeats its results each time it is administered to the same person or group in the same setting.

*Retention*. A measure of the proportion of students who continue with their course from year to year until completion, in relation to the total number of students who began the course.

*RPL*. Recognition of prior learning.

*Sample / group mean*. An average value or score for a sample.

*Sample*. A set of actual observations. Subset of the population.

*Scale*. In a questionnaire or a survey, a set of questions which are supposed to measure different aspects of the same thing.

*SEEQ*. Student Evaluation of Educational Quality (survey instrument).

*Statistical significance*. Degree of rarity of a certain statistical result represented by *p* value, which identifies the probability that a particular outcome may have occurred by chance. For example,  $p < .01$  means that there is less than 1 per cent likelihood that a finding occurred by chance, and 99 per cent likelihood that it is reliable.

*Stepwise regression*. A method in multiple regression helping select those independent variables from a given set, which essentially contribute to the prediction of a dependent variable.

*T test / statistic*. Statistical procedure / coefficient used for comparing two sample means.

*Validity*. The degree to which a variable / scale / instrument measures what it is supposed to measure.