

# **Research-Enhanced Learning and Teaching Project**

## **Final Report**

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Strategic Working Group on Research-enhanced Learning and Teaching**

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### **EXECUTIVE SUMMARY**

1. From 2000-2007 a strategic project on research-led teaching and the scholarship of teaching was carried out led by the Institute for Teaching and Learning. This report provides an overview of the project, details its achievements in changing teaching and learning in the University and in affecting students' learning experiences.
2. Outcome indicators suggest that:
  - 2.1. There was a dramatic increase in the proportion of open-ended comments on indicators of research-led teaching on the SCEQ from 2000-2005 indicating students are more aware of research.
  - 2.2. There has been an increase in students' experiences of research, but students are increasingly experiencing research more actively.
  - 2.3. Students' experiences of research and inquiry are statistically related to their overall satisfaction and the extent to which they think the teaching is good.
  - 2.4. Students feel they learn from active researchers.
  - 2.5. Increases in research-based learning experiences on the USE items show dramatic improvements in the Faculty of Economics and Business.
  - 2.6. Faculty performance on the Scholarship Index is statistically correlated with changes in faculty performance on the SCEQ on the good teaching, generic skills, appropriate assessment, clear goals and stands scales and overall satisfaction.
3. Process indicators suggest that:
  - 3.1 Faculty policies have increasingly taken on board research-led teaching, but some University policies have not maintained research-led teaching elements.
  - 3.2 The University now has research-led teaching written into its statement of Research Principles.
  - 3.3 Faculty developments have included changes to faculty strategic and teaching and learning plans, discussions of research-led teaching at faculty learning and teaching and research committee meetings, increased opportunities to discuss research-led teaching or of students to present research within faculties, and the development of research-led teaching practices within curricula.
  - 3.4 The Working Group proved useful in helping faculty representatives to share and develop initiatives.
  - 3.5 Benchmarking with Monash University highlighted some areas for improvement but University structures inhibited some developments.
  - 3.6 Internal and external grants for teaching developments were facilitative of change.
  - 3.7 Information on issues and suggested strategies for development were made available on a website which has been well-used internally and externally.
  - 3.8 There has been considerable variation in faculties concerning the extent to which research-enhanced teaching and learning has been adopted.
  - 3.9 The University of Sydney has been recognised as a leader in research-enhanced teaching and learning through numerous presentations in universities and conferences.
4. Conclusions
  - 4.1 Research-enhanced learning and teaching is now well embedded in some faculties. There is still a need to spread good practice to all faculties.
  - 4.2 What has been achieved has largely been done without significant amounts of central funding.
  - 4.3 There is now uncertainty regarding the future of the initiatives to develop research-enhanced learning and teaching at a time when many other universities are seeing this as an important area of work to develop.

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## 1. Background and Context

“A distinctive feature of study at the University of Sydney is its insistence on research-led teaching, both in content and delivery.” (Strategic Directions 2005-2010).

The University-wide project on Research-Led Teaching and the Scholarship of Teaching was established in 2000 by the Pro-Vice Chancellor (Teaching and Learning) to address aspects of the Strategic Plan related to the relationship between teaching and research. In 2002, a report was prepared and a presentation made to the University’s Teaching and Learning Committee spelling out the vision and the results of an investigation into best practice, and outlining progress to date. Teaching and Learning Committee endorsed the recommendations of the report, including the establishment of a Working Group consisting of faculty representatives nominated by the Deans, to discuss how to further this initiative at Faculty, School and Departmental levels and to develop a set of indicators based on international best practice whereby progress could be monitored.

The Working Group set about establishing a set of performance indicators for research-led teaching and the scholarship of teaching and carrying out an audit of them. Data from incoming students on how their perceptions of research in the university affected their choice to study at Sydney was also gathered in collaboration with the Marketing Department. The Working Group also investigated the educational output of cooperative research centres. A research-led teaching and scholarship of teaching website containing a database of teaching strategies to disseminate good practice was established. In 2001 and 2003 large events each involving over 100 academics were held to share good practice in the Scholarship of Teaching. During this period workshops, presentations and forums on research-led teaching were also held in a number of faculties and a pilot project on students’ experiences of research in the University of Sydney was undertaken.

In 2003, a statement on what was understood by Research-Led Teaching and Scholarship of Teaching was adopted as university policy by Academic Board which also agreed to monitor progress on the performance indicators and whether research and scholarship on teaching and learning were demonstrably being used in designing new curricula on an ongoing basis. In 2004 A statement on the ethics implications of research on teaching and learning was negotiated and agreed with the Ethics Committee. During this period the Generic Attributes of Graduates of the University of Sydney policy was also established as were the Vice-Chancellor’s Awards for Outstanding Teaching focused on research-led teaching. The Institute for Teaching and Learning established units of study in the Graduate Certificate in Higher Education which included discussion of how to progress research-led teaching and the scholarship of teaching and learning. In 2004 a formal benchmarking activity was undertaken with Monash University. This identified a number of areas requiring development including taking account of the interrelationship of research and teaching in personnel requirements such as probation and performance management, and in strategic planning, increasing the numbers of senior staff teaching at junior undergraduate levels and the need for mention of research-led teaching in internal and external communications (Brew & Weir J, 2004).

In 2005, rather than organise another large internal forum, the Higher Education Research and Development Society of Australasia (HERDSA) International Conference was held in the University with over 60 presentations by University of Sydney staff.

Widespread faculty representation in the Working Group ensured that faculties developed a range of strategies for the advancement of research-led teaching. These are summarised below.

One of the interesting facets of the development was the continual realization that the concept of ‘research-led teaching’ was by no means clear and that developing understanding needed to be continually worked on. In 2006, in consideration of the objectives of the University’s new Strategic Plan new Terms of Reference and a change of name for the Working Group to better reflect its focus were agreed. Academic Board accepted a new policy on Research-Enhanced Learning and Teaching at its meeting on 13<sup>th</sup> December 2006. This delineated three areas of activity:

1. **Research-enhanced teaching:** Teaching is informed by staff research. This includes the integration of disciplinary research findings into courses and curricula at all levels such that students are both an audience for research and engaged in research activity
2. **Research-based learning:** Opportunities are provided for students at all levels to experience and conduct research, learn about research throughout their courses, develop the skills of research and inquiry and contribute to the University's research effort.
3. **Scholarship of learning and teaching:** Staff and students engage in scholarship and/or research in relation to understanding learning and teaching. Evidence-based approaches are used to establish the effects and effectiveness of student learning, teaching effectiveness and academic practice (University of Sydney, 2007a).

In 2006-7 the project website was updated to include a scholarship of learning and teaching database as well as a database on innovations in learning and teaching both of which can be added to by interested academics. It also includes links to Faculty websites on teaching and learning and the scholarship of teaching and learning and numerous updated resources. In addition, a book to bring scholarship of learning and teaching initiatives in the University together was published by Sydney University Press. Chapters were refereed by an international panel of reviewers from 10 countries. Concern that research on higher education teaching and learning should not be neglected in the RQF discussions were held with the DVC (Research) and the Chair of the University's Research and Research Training Committee. Procedures for dealing with ethical issues in undergraduate research internationally was investigated and a need to change rules regarding postgraduate coursework identified. Needs, requirements and capacities of existing summer/winter scholarship schemes were investigated. This met with limited success in view of the ad hoc nature of a number of schemes operating within faculties. A set of questions about undergraduate research was prepared for researchers to use when visiting other universities on SSP. Faculty USE items related to research-enhanced learning and teaching were investigated and data shared.

## 2. Evidence of effectiveness

A key question is how effective the project has been in developing students' experiences and in bringing about cultural changes that ultimately enhance students' learning outcomes. Data on the effectiveness of the initiative comes from outcome indicators and process indicators.

### 2.1 OUTCOME INDICATORS

The following provide indications of the effects and effectiveness of initiatives to integrate research and teaching on students' experiences:

1. Analysis of students' open-ended comments on SCEQ 2000-2005
2. SCEQ research-aligned teaching and learning scale 2005
3. Specific SCEQ questions e.g. "I feel I learn from active researchers"
4. Students' responses on faculty-specific USE questions relating to research-led teaching
5. Comparison on changes in faculty performance on SCEQ and on Scholarship Index

These indicators explore in a number of different ways the extent to which students' experiences of research and inquiry have changed since 2000.

#### 2.1.1 Analysis of students' open-ended comments on SCEQ 2000-2005

Clear evidence that the activities to develop research-led teaching have resulted in improvements in students' awareness of research in the university is provided through an analysis of open ended comments on the University's student course experience questionnaire (Symons & Ginns, 2007) as demonstrated in the following graphs.

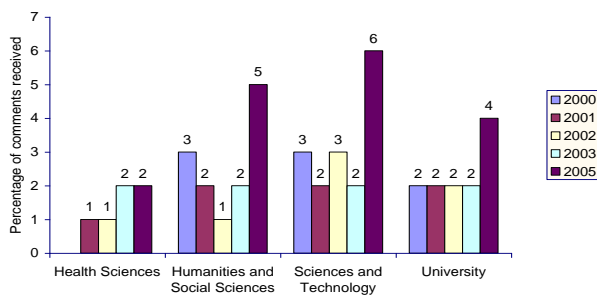


Figure 1. RELT comments as a % of total received: undergraduate

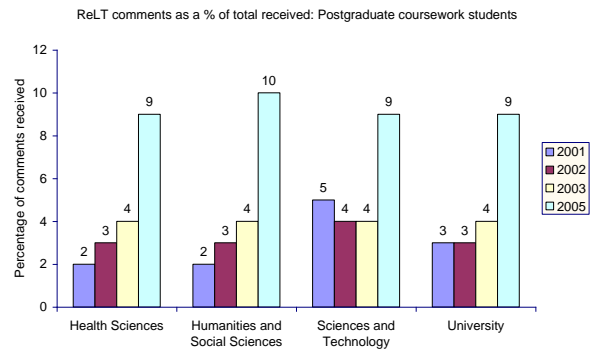


Figure 2. RELT comments as a % of total received: postgraduate

Source: Symons & Ginns 2007.

These graphs demonstrate dramatic increases in the proportion of comments on a number of indicators of research-led teaching:

“Based on the percentage of comments received, it is evident that research-enhanced learning and teaching is one of the most improved areas of the student experience. Between 2000 and 2003, an average of 1% of comments mentioned research-enhanced learning and teaching as one of the positive aspects of their degree experience; in 2005 this increased to an average of 5% university-wide. .... For the first time since the analysis of student comments commenced, research-enhanced learning and teaching appears in the top ten aspects of the student experience (fifth for postgraduate coursework students; ninth for undergraduate students)” (Symons, 2007).

Comments found were grouped into the following aspects of research-enhanced learning and teaching:

- a) **Integration of research into learning and teaching:** including comments about the presence of research components in the courses they were undertaking excluding the development of research skills which are included in the development of generic graduate attributes. For example:

*The research elements and the encouragement given by most lecturers. Some of the lecturers were inspiring in their methodology, content, and outlook, meaning I got more out of my degree than just the pure academic elements. Most lecturers are well researched, prepared and the assessments we did were interesting, involving, and in retrospect, I got a lot out of them.*

*Developed the ability to understand research and evaluation and why research needs to happen; better understanding of course content- structure of research and evaluation; very relevant to work and practical experiences- more complete understanding and outlook; if to apply for another job/position in research and evaluation would feel very confident.*

- b) **Exposure to research and latest developments:** students are exposed to research and latest developments in their field of study during lectures and/or tutorials or in course readings. For example:

*Access to latest research in the area and experts in the field. Meet others with similar interests in the area. Developing research and analytical skills and writing quality.*

*Being able to discuss and debate the validity of new research in the field of clinical psychology with fellow students and lecturers is important. It is also useful to be able to discuss how new research findings will affect clinical practice.*

- c) **Knowledge of research interests of staff:** lecturers make students aware of their research interests and include these in course subject matter. For example:

*Having staff who are active researchers and not only are willing to discuss their current research, but always take the time to encourage students to develop and hone their research skills and interests;*

- d) **Involvement in research projects:** students are involved in research projects, either with other students, or with staff members. This does not include individual research projects. For example:

*Another enjoyable aspect is the opportunity granted within each subject area to pursue independent research, brandish independent thought, and work with existing interests or specialities.*

*Undertaking research projects supervised by active research staff is great. It helps to give an idea of the practical application of our knowledge and gives me an exposure of the real world.*

- e) **Research into scholarship of teaching:** students are exposed to research into the scholarship of teaching, particularly those in the Faculty of Education and Social Work. For example:

*The stimulus to research in the first semester was very high because the tasks were authentic and challenging. The study has made me look closely at my own practice to the benefit of my students. The both halves of the course have given me impetus to build relationships based on respect and enquiry. I believe I have learned how to consider my teaching as more important in my research agenda.*

*The relative autonomy to explore and research pedagogical issues in education. This is important for me as I am a distance student and require study by flexible or independent mode.*

- f) **Independent research project:** includes comments relating to students' independent research projects; does not include group projects. For example:

*Stimulating research projects increased analytical skills and research skills - very useful for work in law firms and independent research is more interesting and enjoying.*

- g) **Research skills**

The change in the numbers and distribution of comments on each of these aspects is shown in Figure 3 where it can be noted that there is a substantial increase in the numbers of comments related to the integration of research into their courses, carrying out independent research projects and developing research skills. This suggests that there has not only been an increase in students' experiences of research, but also that students have experienced research more actively.

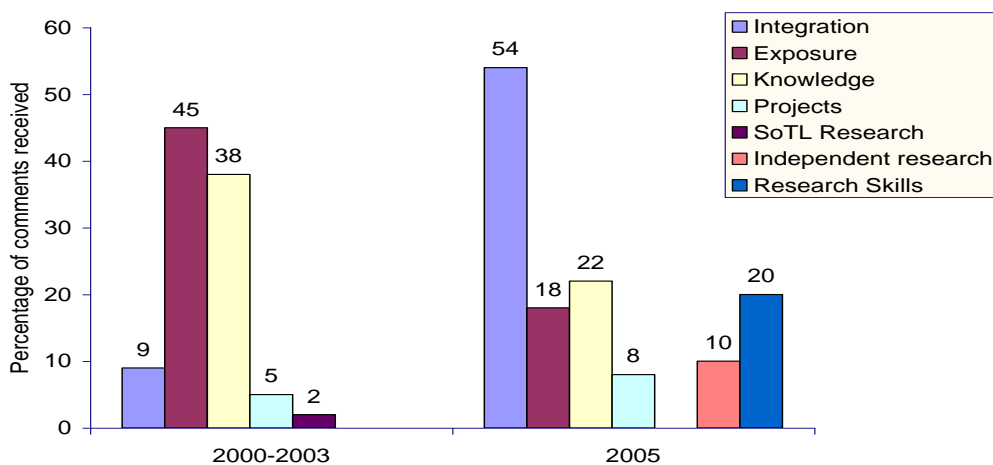


Figure 3. Distribution of comments on RELT: Undergraduate students.

### 2.1.3 SCEQ Research-Aligned Teaching Scale 2005

In 2005 a number of questions designed to form a research-led teaching and learning scale were included in the SCEQ. The questions were:

- 30. I feel I benefit from being in contact with active researchers
- 40. I am aware of the research interests of teaching staff in my degree course.
- 49. My teachers engage me in inquiring into aspects of teaching and learning.
- 46. I've come across ideas in my degree course that have helped me understand how I learn.
- 44. I have collaborated with other students to engage in research and inquiry.
- 47. Staff have involved me in their research.

Due to competing demands for data on student progress and retention this scale was not used in the 2007 SCEQ, so no comparative data is possible. Where appropriate we have utilised this data to support findings from other instruments.

		GTS 1 to 5 scale	RLT 1 to 5 scale	GSS 1 to 5 scale	Overall, I am satisfied with the quality of this degree course
GTS 1 to 5 scale	Pearson Correlation	1	.553(**)	.477(**)	.607(**)
	Sig. (2-tailed)		.000	.000	.000
	N	4046	4032	4043	4031
RLT 1 to 5 scale	Pearson Correlation	.553(**)	1	.573(**)	.524(**)
	Sig. (2-tailed)	.000		.000	.000
	N	4032	4033	4031	4025
GSS 1 to 5 scale	Pearson Correlation	.477(**)	.573(**)	1	.526(**)
	Sig. (2-tailed)	.000	.000		.000
	N	4043	4031	4044	4029
Overall, I am satisfied with the quality of this degree course	Pearson Correlation	.607(**)	.524(**)	.526(**)	1
	Sig. (2-tailed)	.000	.000	.000	
	N	4031	4025	4029	4033

\*\* Correlation is significant at the 0.01 level (2-tailed).

Table 1. Students' experiences of research-led teaching and generic skills related to good teaching and overall satisfaction.

While the changes in students' perceptions cannot directly be attributable to the activities of the Research-enhanced Learning and Teaching Project, the extent to which students experience research-led teaching is related to the extent to which they are satisfied with their degree experiences overall and with the extent to which they consider the teaching to have been good. This is indicated by the strong correlations between the research-led teaching scale and the overall satisfaction scale, and with the good teaching scale on the SCEQ as indicated in Table 1.

### 2.1.3 Specific SCEQ questions

A key test of whether students' experiences have been enhanced as a consequence of the initiative is whether students consider that they learn from active researchers. For the University as a whole, responses on the SCEQ question: 'I feel I benefit from being in contact with active researchers', improved by x% over the years 1999 to 2007. However, the Working Group considered that perhaps the toughest test was whether second year students felt they benefitted from being in contact with active researchers. Figure 4 presents this analysis. It shows considerable variability and while it can be argued that it does not take account of the strategies being used prior to the introduction of the research-led teaching initiative, it does show significant gains in some faculties. The Working Group

recognises that there are a number of reasons for the gains which can only be deduced through further investigation.

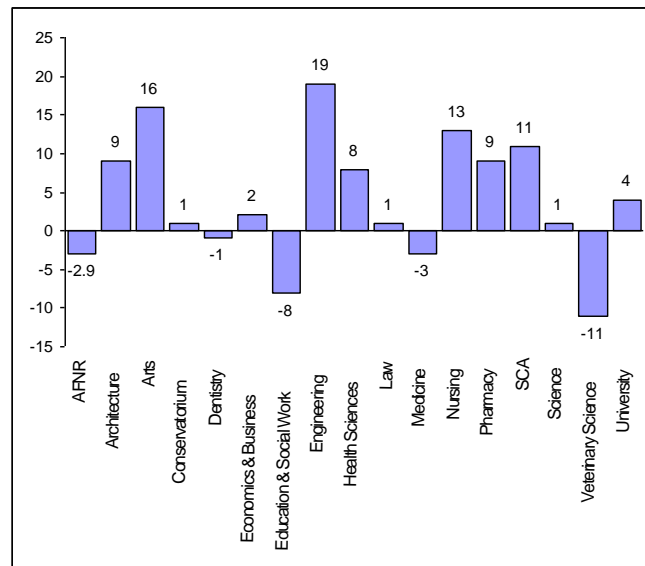


Figure 4. Percentage change in SCEQ responses 1999-2007 to question 30 'I feel I benefit from being in contact with active researchers (second year students).

In 2007 73% of students considered that their degree course had developed their skills of research and inquiry. This was an increase of 3% over 2005 when a question on this was first introduced.

#### 2.1.4 Students' responses on faculty-specific USE questions related to research-led teaching

Two faculties specifically included additional questions focused on the integration of research into teaching in their faculty-specific USE questions, namely:

'This unit included research-based learning experiences' (Economics & Business)

'This Unit helped me to understand more about how nurses use research' (Nursing).

No data for the Faculty of Nursing is available, however, overall responses to the question in Economics and Business indicates a steady and significant rise in % agreement as indicated in Figure 5. The question was not included in the 2007 USE.

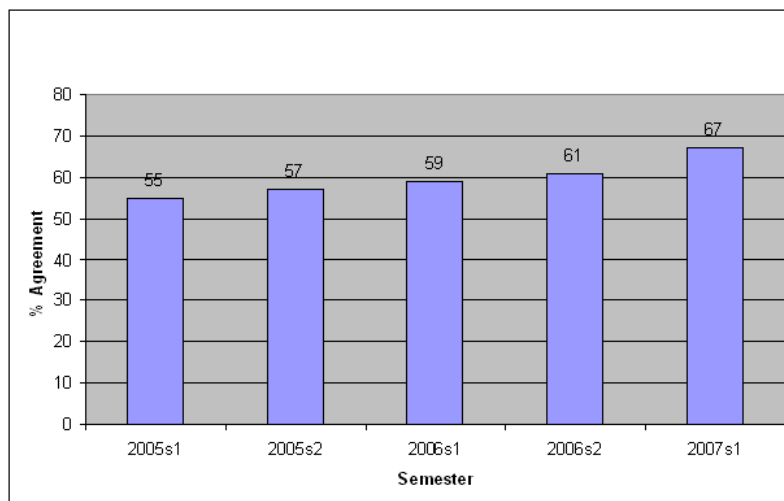


Figure 5. Faculty of Economics and Business student responses on USE item "This unit included research-based learning experiences."



It should be noted that even 1 1% increase in students' responses for any item on the USE is a demonstrable shift in students perceptions (Taylor & Canfield 2007). Here we see a 12% increase from 2005-2007 which indicates a significant level of improvement as Table 2 shows

	<i>t</i>	<i>p</i>	<i>d</i>
Faculty	2.6	0.009	0.18
Undergraduate	1.44	0.149	0.03
Postgraduate	2.17	0.15	0.23

Table 2. Levels of significance in .....Faculty of Economics and Business. (This implies if SI 2007 included then it would be significant – says Mark. [ what to make of this?])

### 2.1.5 Comparison on changes in faculty performance on SCEQ and on Scholarship Index

The University’s Scholarship of Teaching Index (part of the performance based funding system) has been facilitative of the development of this area of activity. The Scholarship Index rewards faculties on the basis of a set of weighted criteria which include qualifications in teaching and learning in higher education, awards for university teaching and publications and presentations on university teaching and learning. Overall measures of performance on the scholarship index show a steady rise in performance on the Scholarship Index from 2002-2005.

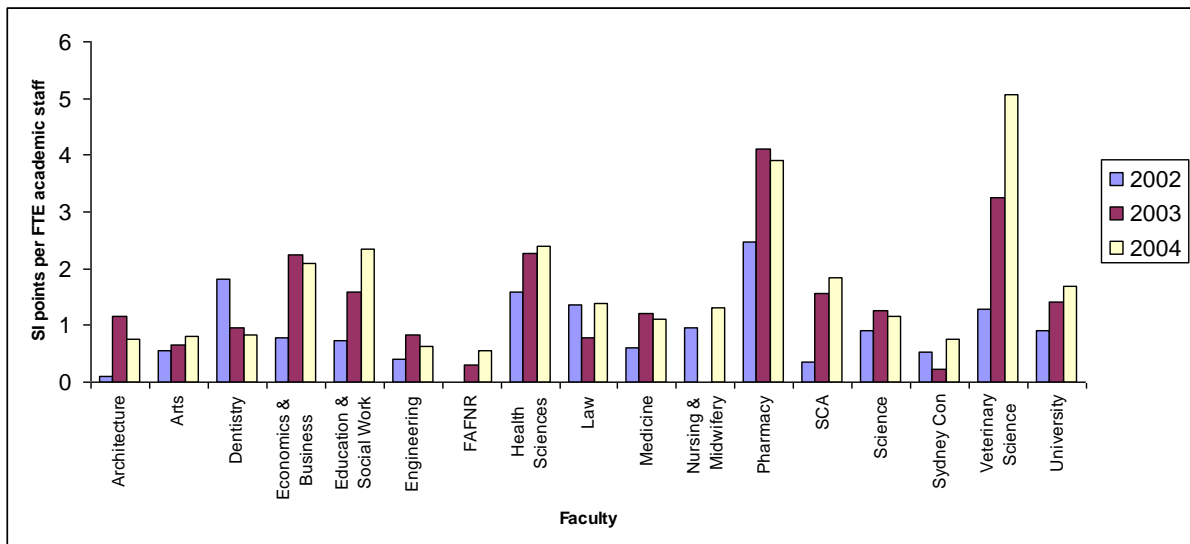


Figure 6. Faculty points on the Scholarship Index 2002-2004.

Faculty strategies to encourage the scholarship of teaching and learning include setting up competitive research grant schemes for research on teaching and learning, setting up faculty teaching award schemes which reward the scholarship of teaching and learning and making the ITL Graduate Certificate in teaching and learning in higher education mandatory for all new staff.

There is now evidence that performance on the Scholarship Index is statistically correlated with improvements in students’ experiences as demonstrated on the Student Course Experience Questionnaire (SCEQ) good teaching, appropriate assessment, generic skills clear goals and standards scales and on students’ overall course experiences (Brew & Ginns, 2008). Preliminary data suggests that qualifications in teaching and learning in higher education are significantly related to students’ experiences. Correlations are presented in Table 3.

Scale	SI overall	Qualifications in teaching and learning in higher education
Good Teaching	$r = .55, p = .018^*$	$r = .54, p = .016^*$
Clear Goals & Standards	$r = .49, p = .039^*$	$r = .49, p = .028^*$

Appropriate Workload	$r = .15, p = .298$	$r = .13, p = .323$
Appropriate Assessment	$r = .52, p = .020^*$	$r = .47, p = .032^*$
Generic Skills	$r = .63, p = .020^*$	$r = .57, p = .011^*$
Overall Satisfaction with Degree Quality	$r = .49, p = .038^*$	$r = .47, p = .032^*$

Table 3. Relations between the SI and change in student experiences (\* = statistically significant)

## 2.2 PROCESS INDICATORS

There are many indicators of changes in the levels of activity related to the integration of research and teaching in the University. This report considers the following sources of data:

1. Changes in outcomes on performance indicators for research-led teaching from 2003 to 2007
2. Research-enhanced learning and teaching website usage and faculty websites
3. Working group meeting reports demonstrating number of Faculty forums on RELT, levels of engagement of students in research-based activities etc.
4. Adapted USE evaluation of effectiveness of Working group in 2004 & 2007
5. Progress on Benchmarking outcomes with Monash University
6. Number of publications and presentations on RELT in international and national conferences and universities

### 2.2.1 Changes in data on performance indicators for research-led teaching from 2003 to 2007

In 2003 the Working Group agreed a set of indicators which were designed to provide a mechanism for auditing progress towards reaching the university's strategic goals for strengthening the relationship between teaching and research, and to encourage the development of research-enhanced teaching. The indicators were grouped under the following key criteria:

1. Student awareness of and active engagement with research
2. Academic staff capacity to integrate research and teaching
3. Curriculum designed to engage students in a variety of research-based activities, induct them into the research community and develop their awareness of research
4. Departmental encouragement for aligning research and teaching
5. Faculty support and encouragement for strengthening the nexus between research and teaching
6. College recognition and support for the development of the links between research and teaching
7. University commitment to the development of strong relationships between teaching and research

In 2003 an audit was carried out at faculty or school level for criteria numbers 1-5 and in the ITL for criteria 6 and 7. The information from this audit provides base-line data against which developments can be measured. (See Appendix 1 for 2003 performance indicators.) In 2007, in view of the time taken to carry out the initial audit and the fact that some of the measures were deemed to no longer deemed to be relevant, a shortened form of the audit was again carried out at faculty level and in the ITL.

In investigating University commitment to the development of strong relationships between teaching and research University documents were analysed. It was noted that the University Strategic Plan now explicitly states: "A distinctive feature of study at the University of Sydney is its insistence on research-led teaching, both in content and delivery." (Strategic Directions 2005-2010). Academic Board Reviews of Faculties clearly demonstrated that research-led teaching was being developed. Indeed, it could be argued that these reviews were a key driver for developments in this area. The University now has a policy on Research-enhanced Learning and Teaching. This was established as a direct result of the work of the Strategic Working Group which initiated and drafted the policy. The

policy on SSP now provides for the development of teaching as well as research. The University's teaching evaluation and quality assurance and enhancement processes have continued to be research-based. Students' engagement with research is a key aspect of student experience questionnaires as demonstrated above. The University's guidelines for good practice in teaching and learning indicate that staff draw on their research in their teaching. While it is noticeable that injunctions to integrate research and teaching have initially come from those interested in developing teaching and learning, after six years of strategic efforts to encourage the integration of research and teaching, a set of Research Principles at the university now refers to the fact that the University promotes research-led teaching (University of Sydney, 2007b). Criteria for awards for outstanding teaching and excellence in research higher degree supervision include:

**" Scholarly activities that have influenced and enhanced learning and teaching** This may include: showing advanced skills in evaluation and reflective practice; participating in and contributing to professional activities related to learning and teaching; coordination, management and leadership of courses and student learning; conducting and publishing research related to teaching; demonstrating leadership through activities that have broad influence on the profession" (University of Sydney 2008, p. 2)

The criteria for excellence in research higher degree supervision require contributions to scholarship in research training and supervision at a national or international level. Some faculties explicitly encourage research-enhanced learning and teaching and the scholarship of teaching through awards at faculty level.

More could be done to promote the link between teaching and research University advertising. Appointment, promotion, probation and tenure criteria do not explicitly require the teaching/research link to be addressed. Although some aspects of the integration of research and teaching are encouraged through requirements in promotion to demonstrate the scholarship of teaching and learning, more could be done to encourage the integration of research and teaching.

Data on the performance indicators collected from faculties indicate that faculties that did not have research-led teaching in their strategic plan in 2003 now include it. In contrast to 2003, most faculties now have funding allocated to pedagogical research. For example, some faculties now use Scholarship Index money to fund teaching and learning research, in other faculties teaching and learning research projects compete with other research and some staff have been successful in obtaining them. TIF and TIES grants have also enabled staff to carry out evaluation leading to publication and the University has been successful in obtaining national Carrick grants for research and development in teaching. Teaching Improvement Funds (TIF), Teaching and Improvement and Equipment funds (TIES) and Carrick Institute projects have led to some major curriculum developments. Many of these projects have been research-led in that they have enabled development on sound pedagogical principles or have taken a research-based approach to development. The University has done particularly well in obtaining Carrick grants for teaching development. A number of Carrick projects are collaborative with other universities.

Some of the highlights of this work have been compiled in a book edited by Angela Brew and Judyth Sachs (Brew & Sachs, 2007), which includes contributions by over 40 University of Sydney academics who are carrying out leading research on teaching and learning. The book, which was also designed to show how that work has been translated into actions to improve curricula, was launched in July 2007.

In the university there are now numerous programs of research seminars for postgraduate students and in many faculties there are also programs for Honours undergraduates. In many faculties undergraduate students are invited to attend departmental seminars. Seminar programs are most often notified by email (in some faculties on a weekly basis) and on noticeboards. The faculty web page and course handbooks are also sometimes used to advertise seminar programs. Comparison of the data from 2003 and 2007 indicates that there are now more seminar programs for undergraduate and

postgraduate students to engage in and students are now more likely to be included in seminar programs as presenters. These responses to the question: “Do undergraduate students engage in departmental seminars in any way?” from the Faculty of Agriculture, Food and Natural Resources in 2003 and 2007 illustrate the general trend towards more active involvement of students in departmental seminars:

*“Final year students are strongly encouraged to attend seminars.  
Good attendance of postgraduate students throughout the year.”* (AFNR Response 2003)

*“Presenters in the Faculty Seminar Series include visiting scholars, faculty staff and postgraduate students. The Faculty feels that this approach helps to foster a collegiate environment, where the postgraduate students are included into a program comprising of 'established' researchers/academics. The commencing Postgraduate presentations enable students to outline their proposed research, of which their progress and final presentations are included in the Faculty Seminar Series  
The Undergraduate program requires all fourth year students to present two seminars to the Faculty (in May to introduce their major research project and in Oct/Nov to produce their findings of their research)”* (AFNR Response 2007).

In all faculties there is now a public display of the research of teaching staff. This is available through faculty websites where the trend has been to add to listings on staff personal web pages by including more general listings to highlight particular expertise or research projects. In most faculties there is now a display of major works on noticeboards, posters in corridors or display cabinets and encouragement to include staff publications on course reading lists or as exemplars in course handbooks.

### 2.2.2 The Research-enhanced Teaching and Scholarship of Teaching website

This website(<http://www.itl.usyd.edu.au/rlt>) receives over 3000 hits a month from inside and outside the University. It was updated in 2007 to include much new material on research-enhanced learning and teaching in general and about the University of Sydney project as well as searchable databases which can be added to by anyone. Work is still needed to enhance academics' understanding and use of inquiry based learning approaches and to expand opportunities for undergraduates to participate actively in research within the curriculum.

Statistics of web usage of this site from September 2006 – April 2007 showed that it was accessed by people in 64 different countries during this six month period. 10 per cent of page requests for this period (i.e. 1,236 requests) were made by people in the University of Sydney. This suggests that the site is being used by staff of the University as well as internationally.

In addition to the ITL RELT website the Working Group explored the extent to which faculties now have a teaching and learning website. The number has increased dramatically over the six years of the project with most faculties now including information on teaching and learning on their websites.

### 2.2.3 Faculty developments

Widespread faculty representation in the Working Group has ensured that faculties have developed many strategies for the advancement of research-led teaching. These have included:

- a) *Changes to faculty strategic and teaching and learning plans, policies and procedures* to include research-led teaching and learning; faculty approval processes for new courses/units of study proposals including a requirement to provide information about whether and how the unit involves research-led teaching and learning experiences; research-led teaching and learning criteria included in faculty teaching awards.
- b) *Discussions of research-led teaching at Faculty Learning and Teaching Committee and Research Committee meetings.*

- c) *Increased opportunities to discuss research-led teaching or for students to present research* including forums for staff to showcase research to undergraduates/prospective students and introduce them to research in the discipline, undergraduate and higher degree research students' project presentations at research seminars and annual faculty teaching days.
- d) *Development of curriculum practices* including increases in lecturers presenting relevant examples of their current research during lectures; visiting lecturers, research leaders and artists presenting lectures, workshops and master classes for students; more units of study specifically related to research skills; final year research thesis requirement with research presentations; research-based assessment tasks; increased use of enquiry based activities e.g. collecting and interpreting data; wider use of exercises with unknown outcomes in selected units of study; selected advanced students undertaking research in their first year; spread of problem based learning to a number of different areas and increased emphasis on collaborative learning; student organized study groups outside of scheduled teaching sessions; and the use and publication of student generated materials.

#### 2.2.4 Effectiveness of the Strategic Working Group

Evaluation of the work of the Working group in helping to achieve faculties' aims for research-enhanced learning and teaching has been carried out in 2004 and 2007 through a modified Unit of Study Questionnaire. This provides an indication of the usefulness of the working group in developing leadership in teaching and learning, sharing of faculty initiatives, assisting with faculty strategic objectives, and supporting representatives in carrying out the work.

Item	% agreement (A&SSA)	
	2004	2007
My role as a Working Group representative has contributed to the development of my leadership abilities in teaching and learning.	86%	100%
Reporting at Working Group meetings has reflected my faculty's progress and achievements.	100%	100%
I can see the relevance of this Working Group in helping the faculty achieve its, and the University's, strategic objectives.	100%	100%
The facilitators were responsive to suggestions and ideas from the Working Group members.	86%	100%
The Working Group helps me to support my faculty in developing relevant initiatives.	83%	100%
The sharing of ideas in the Working Group has been valuable to me in my work in my faculty.	100%	100%
The topics discussed in this working Group were relevant to my faculty's needs.	86%	100%
I can see how the work of this Working Group will eventually lead to an enhancement of the Student Learning experience.	86%	100%

Table 4. Working Group members' responses on a modified unit of study questionnaire.

#### 2.2.5 Progress on Benchmarking outcomes with Monash University

Benchmarking with Monash University revealed that the University of Sydney was achieving a high level with respect to terms and definition, recognition and rewarding of teaching-research nexus (eg University Awards); staff development opportunities, and mechanisms to improve the extent to which teachers bring research into the classroom. However, performance was relatively poor in relation to strategies for the inclusion of the teaching-research nexus in performance management; strategies to encourage and reward disciplinary research projects that result from teaching; and strategies for inclusion of research-led teaching in recruitment documentation and probationary reports and promotion documentation.

Further room for development was also noted in processes for integrating research and teaching in strategic planning; and in planning documents including, for example, Learning and Teaching Plans, Support Services Plans, Research & Research Training Management Plans, Campus Plans, and

Faculty Operational Plans. In addition, performance of staff in terms of numbers of senior staff teaching at junior undergraduate levels; reference to research-led nexus in internal and external communications; strategies to encourage students and staff to participate in a variety of scholarly communities; and the extent to which strategies encourage students and staff to engage in discussions about the nature of the disciplinary area, the nature of research and what it means to study the subject, require further development.

In addition, at the University of Sydney there was found to be variation among faculties with respect to:

- a. processes for research-led teaching in terms of course approval, monitoring and review;
- b. identification of research skills and the ability to undertake research;
- c. extent to which faculty policy and incentives for curriculum development are informed by internationally based disciplinary and pedagogical research;
- d. faculty policies and strategies to build students' research and inquiry capabilities;
- e. the extent to which faculties implement a systematic and integrated approach to the teaching of research skills across the undergraduate curriculum and how faculties monitor this; and
- f. the existence of strategies to encourage research on teaching and to use this in curriculum development.

Some faculties were considered to be at a high level while others were thought to have some considerable way to go. (A summary of benchmarking outcomes is provided in Appendix 2.)

### **2.2.6 Number of presentations on RELT in international and national conferences and universities worldwide**

The reputation of the University as a leader in research-enhanced learning and teaching has been enhanced by over 70 presentations at national and international conferences and in universities in different countries including Australia that have been made by the project director to disseminate the project and the work of the Working Group.

## **3. Conclusion**

This report has demonstrated through the recording of a number of different sources of data, that research-enhanced learning and teaching is now firmly embedded in some faculties and that the achievements of this project are having effects on students course experiences.

It should be noted that prior to 2007 the outcomes of this project have been largely achieved without additional central funding to support it beyond the time of the Project Director and the administrator servicing Working Group meetings. In 2007, \$15,000 was provided for updates to the website and to prepare the book of examples of teaching and learning scholarship (Brew & Sachs 2007). Working group members have not received central funding to support their work and at times this has suffered from the fact that they are busy people with large teaching and learning improvement agendas to pursue.

The report has been compiled during a period of uncertainty concerning the future of this initiative. Given the University's commitment to research-led teaching it will be important that the momentum established by this initiative and the good will that exists for it throughout the university is maintained and strengthened. In moving forward, a key strategy will need to involve the spread of excellent practice in many faculties to all the faculties. Further work is needed if the University is to embed undergraduate research and inquiry within the curriculum. The University of Sydney has been a leader in the development of research-enhanced learning and teaching. However, that lead is likely to be lost unless further funding is available to support it.

## Acknowledgements

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**University of Sydney**  
**PERFORMANCE INDICATORS FOR RESEARCH-LED TEACHING**

**The purpose of the Performance indicators<sup>1</sup>** is to provide a mechanism for auditing progress towards reaching the university's strategic goals for strengthening the relationship between teaching and research, and to encourage the development of research- enhanced teaching.

**Key criteria for judging research-led teaching:**

8. Student awareness of and active engagement with research<sup>2</sup>
9. Academic staff capacity to integrate research and teaching<sup>3</sup>
10. Curriculum designed to engage students in a variety of research-based activities, induct them into the research community and develop their awareness of research
11. Departmental encouragement for aligning research and teaching
12. Faculty support and encouragement for strengthening the nexus between research and teaching
13. College recognition and support for the development of the links between research and teaching
14. University commitment to the development of strong relationships between teaching and research

These key criteria derive from the scholarly literature on research-led teaching. The indicators<sup>i</sup> are designed to focus on aspects that can be demonstrated and that would clearly distinguish good practice in research-led teaching. The table shows indicators of these criteria, and whose responsibility it would be for gathering and providing the information. It also suggests indicative audit requirements. Templates will be developed to ease collection of data.

**1. Student awareness of and active engagement with research**

**Performance indicators**

- 1.1 Undergraduate and postgraduate student awareness of the research culture of the university and the research being done in their School/department/faculty
  - 1.2 Student scores on the GSA particularly in relation to research-related skills
  - 1.3 Responses on the SCEQ and Unit of Study Questionnaires related to the University's research-based environment

**2. Academic capacity to integrate research and teaching**

**Performance indicators**

- 2.1 Proportion of teaching staff with PhD or research record
- 2.2 Proportion of higher degree research supervisors who are active researchers
- 2.3 Proportion of senior and active researchers engaged in first and second year undergraduate teaching

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<sup>1</sup> These indicators were compiled by the University of Sydney Working Group on Research-led Teaching and Scholarship of Teaching in reference to:

Hattie, J. (2001). Performance indicators for the interdependence of research and teaching. In *Towards understanding the interdependence of research and teaching: Occasional papers from the vice-chancellor's symposium on the research teaching nexus* (pp. 50-52). Palmerston North, NZ: Massey University.

Jenkins, A., Breen, R., Lindsay, R., & Brew, A. (in press). *Linking teaching and research: a guide for academics and policy makers*. London: Kogan Page.

Also: Record of discussion re Hattie (above) held in Faculty of Economics and Business and Angela Brew's presentation to the Teaching and Learning Committee 23 May 2002.

<sup>2</sup> In this document, "research" includes consultancy, performances, creative works, exhibitions, industrial and professional secondments and clinical practice.

<sup>3</sup> "Teaching" refers to all strategies used across the university to engage students in learning: lectures, tutorials, flexible, online and distance modes, clinical and bedside teaching, one-to-one and studio teaching etc.



3. **Curriculum designed to engage students in a variety of research-based activities, induct them into the research community and develop an awareness of research**

**Performance indicators**

- 3.1 Proportion of units where students engage in research-based activities
- 3.2 Specific reference to staff publications is made public to students
- 3.3 Research and scholarship on teaching and learning is demonstrably used in designing new curricula and monitored by Academic Board Committees

4. **Departmental encouragement for aligning research and teaching**

**Performance indicators**

- 4.1 Proportion of disciplinary research-active staff and pedagogically research-active staff vis à vis total staff numbers.
  - 4.2 Existence of an advertised student research seminar program or evidence of engagement of undergraduate students in departmental seminars
  - 4.3 TIF and Strategic development funds being used to strengthen the link between teaching and research
  - 4.4 Existence and use of benchmarking activities with other research-based institutions and the use of this in curriculum design and research development

5. **Faculty support and encouragement for strengthening the nexus between research and teaching**

**Performance indicators**

- 5.1 The links between research and teaching are explicitly encouraged in Faculty Strategic Plans
  - 5.2 The existence of funding allocated to pedagogical research grants
  - 5.3 Number of points on the Scholarship index

6. **College recognition and support for the development of the links between research and teaching**

**Performance indicator**

- 6.1 Strategic plans refer to the links between teaching and research

7. **University commitment to the development of strong relationships between teaching and research**

**Performance indicators**

- 7.1 University Strategic Plan explicitly states that the links are important
- 7.2 University advertising promotes the link between teaching and research
- 7.3 Research Management and Teaching Management plans refer to the importance of linking research with teaching
- 7.4 Academic Board Reviews of Faculties demonstrate research-led teaching is being developed
- 7.5 Appointment, promotion, probation and tenure criteria all explicitly require the teaching/research link to be addressed.
- 7.6 SSP Requirements include development of teaching and research
- 7.7 The University's teaching evaluation and quality assurance and enhancement processes are research-based
- 7.8 Teaching, Learning and Assessment Policies and Research Policies stress the importance of linking teaching and research
- 7.9 Criteria for awards for outstanding teaching and excellence in research higher degree supervision include currency of material and require the teaching/research nexus to be addressed
- 7.10 Audit of research-led teaching carried out on a triennial basis and benchmarked with other Universities.

**The University of Sydney and Monash University: Summary of Research-led Teaching Benchmarking Ratings July 2004**

<b>Comparison</b>	<b>Low level</b>	<b>Medium level</b>	<b>High level</b>	<b>Monash University</b>	<b>The University of Sydney</b>
Compare Monash and Sydney terms and definition.	No identification of teaching-research nexus.	Coordinated discussions on the teaching research nexus taking place.	Clear institutional definition.	Medium level, but moving towards high level	High level
Compare Monash and Sydney processes for teaching-research nexus identified in strategic planning.	No systematic institutional strategic planning of teaching and/or research.	Institutional strategic planning of teaching and research conducted independently.	Integrated approach to institutional strategic planning of teaching, research and the teaching- research nexus.	Upper medium level	Medium level
Compare Monash and Sydney identification of teaching-research nexus in planning documents including, for example, Learning and Teaching Plans, Support Services Plans, Research & Research Training Management Plans, Campus Plans, and Faculty Operational Plans.	Planning documents indicate distinct teaching and research activities with no concept of link.	Teaching-research nexus reflected in Learning and Teaching Plans.	Teaching-research nexus cascades into all relevant plans.	Medium level	Medium level
Compare Monash and Sydney processes for teaching-research nexus in terms of course: approval, monitoring and review.	Approval not related to teaching-research nexus, monitoring, review.	Approval documents mention the teaching-research nexus, monitoring, review.	Approval dependant on clear demonstration of teaching-research nexus, monitoring, review.	Low level	Medium level moving to high

Appendix 3

Compare Monash and Sydney identification of research skills and the ability to undertake research in graduate attributes.	No identification of research skills as desired graduate attribute.	Statements concerning importance of research as a graduate attribute.	Systematic mapping and development of research skills progressively through the curriculum.	Medium level with high level in some areas/faculties	Medium level with high level in some areas/faculties
Compare Monash and Sydney performance of staff in terms of teaching and research.	High proportion of teaching staff are not research active.	High proportion of teaching staff are research active.	High proportion of teaching staff are research active & the proportion of senior staff teaching at 1 <sup>st</sup> & 2 <sup>nd</sup> year levels is at least commensurate with numbers of senior staff in the total teaching staff profile.	Medium level	Medium level
Compare Monash and Sydney strategies for inclusion of teaching-research nexus in performance management	No recognition of link between teaching and research in performance management documentation.	Performance management documentation acknowledges teaching-research nexus.	Performance management practice recognizes and takes account of teaching-research nexus.	Low level	Low level
Compare Monash and Sydney recognition and rewarding of teaching-research nexus (eg University Awards).	No teaching and research awards.	Separate teaching awards and research grants.	Awards and grants require demonstration of teaching-research nexus.	Medium to high level	High level
Compare Monash and Sydney strategies for inclusion of teaching-research nexus in recruitment documentation and probationary reports and promotion	Teaching-research nexus not mentioned in recruitment, probation and promotion documentation.	Teaching-research nexus mentioned in recruitment probation and promotion documentation.	Teaching-research nexus demonstrated in recruitment, probation and promotion practice.	Low level	Low to medium level

Appendix 3

documentation.					
Compare Monash and Sydney staff development opportunities in terms of teaching-research nexus.	No staff development available on teaching-research nexus.	One-off, ad hoc seminars on teaching-research nexus.	Teaching-research nexus a strategic priority in staff development.	Medium to high level	High level
Compare Monash and Sydney reference to teaching-research nexus in internal and external communications.	Not mentioned in external communications.	Ad hoc, occasional reference to teaching-research nexus in external communications.	Frequent and systematic reference to teaching-research nexus in external communication.	Medium level	Medium level
Compare Sydney and Monash practices and mechanisms to improve the extent to which teachers bring research into the classroom.	Individuals incorporate research ideas into lectures and there are no faculty mechanisms to improve or evaluate practice.	Research ideas are incorporated in student activities/assessment and/or there are ad hoc faculty mechanisms to improve or evaluate practice.	Student learning is organised so as to engage students in research projects and/or there are systematic faculty mechanisms to improve and evaluate practice.	Medium level	High level
Compare Sydney and Monash faculty policy and incentives for curriculum development to be informed by internationally based disciplinary and pedagogical research.	Curriculum development may be informed by internationally based disciplinary and/or pedagogical research but there are no faculty mechanisms to encourage this.	Faculty policies provide encouragement for curriculum development to be informed by internationally based disciplinary and pedagogical research, but there are no strategies and incentives to facilitate this.	Systematic faculty encouragement and incentives for curriculum development to be informed by internationally based disciplinary and pedagogical research.	Medium level with high level in some faculties	Medium level with high level in some faculties
Compare Sydney and Monash faculty policies and strategies to build students research and	There are no faculty policies or strategies to ensure that research and inquiry capabilities are	There are strategies to build students' research & inquiry capabilities but they are not taught as an integral part of a	There are faculty policies and strategies to ensure that research and inquiry capabilities are taught as an integral part of a systematic approach to the	Medium level with high level in some faculties	Medium level with high level in some faculties

Appendix 3

inquiry capabilities.	taught.	systematic approach to the development of generic attributes of graduates & not monitored on a regular basis.	development of generic attributes of graduates and these are monitored on a regular basis.		
Compare Sydney and Monash strategies to encourage students and staff to participate in a variety of scholarly communities.	There are no faculty strategies to encourage students and staff to participate in scholarly communities.	There are faculty strategies to encourage students and staff to participate in a variety of scholarly communities.	There are faculty strategies to ensure undergraduate and postgraduate students participate with staff in a variety of scholarly communities.	Medium level	Medium level
Compare the extent to which Sydney and Monash strategies encourage students and staff to engage in discussions about the nature of the disciplinary area, the nature of research and what it means to study the subject.	Students and staff engage in discussions about the nature of the disciplinary area, the nature of research and what it means to study the subject on an ad hoc and infrequent basis.	Staff engage in discussions about the nature of the disciplinary area, the nature of research and what it means to study the subject, but there are no strategies to encourage students to participate in such discussions.	There are strategies to encourage students and staff to engage in discussions about the nature of the disciplinary area, the nature of research and what it means to study the subject.	Medium level	Medium level
Compare the extent to which faculties at Sydney and Monash implement a systematic and integrated approach to the teaching of research skills across the undergraduate curriculum and how faculties monitor this.	Research skills are taught across the undergraduate curriculum on an ad hoc basis.	Research skills are taught across the undergraduate curriculum and there is a spasmodic attempt to integrate, but faculties do not monitor this.	There is a systematic and integrated approach to the teaching of research skills across the undergraduate curriculum and faculties monitor this on a regular basis.	Medium level with high level in some faculties	Medium level with high level in some faculties
Compare the existence of strategies to	Research on teaching is not valued and/or does	Research on teaching is carried out, but there are no or ad hoc faculty strategies	There is an integrated and systematic program of research on teaching in faculties which is	Medium level with high level in some faculties	Medium level with high level in some faculties

Appendix 3

encourage research on teaching and to use this in curriculum development at Sydney and Monash.	not take place.	to encourage this and it is only used spasmodically in curriculum developments.	used to inform curriculum developments.		
Compare Sydney and Monash strategies to encourage and reward disciplinary research projects that result from teaching.	There is no formal recognition in faculties that teaching generates or influences research.	There is formal recognition in faculties that teaching generates or influences research, but no strategies to encourage and reward this.	There are faculty strategies to encourage and reward disciplinary research projects that result from teaching, including critical questioning by students.	Medium level	Low level