

ACADEMIC BOARD PHASE THREE REVIEW

REVIEW TEAM REPORT

Faculty of Science



1 April 2008

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SECTION I: PREFACE

(1) Background

The Academic Board reviews are intended to encourage in faculties an academic culture that values scholarship, free inquiry and intellectual rigour and honesty, supporting, in turn, the development and maintenance of high standards of teaching, scholarship and research.

In 2001, the Academic Board initiated a cycle of collegial reviews of the academic activities within faculties with a view to supporting faculties in developing effective academic quality assurance process. These were followed up in 2003 with a second phase of faculty reviews, which expanded the scope to include all elements within the University Strategic Plan.

The Phase 3 Review is based on the Faculty's Self-Evaluation Report (SER) which provides an overview of the Faculty's assessment of the culture which supports, and the processes that lead to, continuous quality improvement in the Faculty at the time of the Review. To guide the development of the SER, faculties were invited to address criteria adapted from the Baldrige Education Criteria for Performance Excellence 2007.

(2) The Review Process

The Faculty presented its SER to the Academic Board on 8 November 2007 along with a number of supporting documents and relevant data. The Review Team met on 14 November 2007 to consider these materials.

The review visit took place on 20 November 2007. The key purpose of the visit was to enable the Review Team to assess the robustness and validity of the Faculty's judgements.

This final report has been reviewed by the Learning and Teaching and the Research and Research Training Committees of the Academic Board and approved by the Academic Board. A copy will be posted on the University's quality assurance website at www.usyd.edu.au/quality

Implementation

Within six weeks of the date of approval by the Academic Board, the Faculty is required to provide the Board with a response to the Recommendations contained in the Review Report, indicating how the Faculty will build the Recommendations into Faculty planning processes.

Twelve months after the date the Report was approved by the Academic Board, the Faculty is required to provide the Board with a progress report responding to the Recommendations.

(3) Membership

Review Team

Professor Bruce Sutton, Chair

Dr Steven Cumming, Faculty of Health Science

Professor Alex McBratney, Faculty of Agriculture, Food and Natural Resources

Dr Gail Mason, Faculty of Law

Professor Huw Price, Faculty of Arts

Observers

Associate Professor P McCallum

Ms L Schofield

Senior Faculty representatives

Professor Tony Underwood (Director EICC)

Professor Greg Warr (HOS, Chemistry)

Professor Nalini Joshi (HOS, Maths)

Associate Professor Anne Green (HOS, Physics)

Associate Professor Arthur Conigrave (HOS, MMB)

Professor Michael Thompson (HOS, Biological Sciences)

Professor Sally Andrews (HOS, Psychology)

Dr Bill Pritchard (HOS, Geosciences)

Dr Hans Pols (Director, HPS)

Ms Jenny Henderson (Pro-Dean)

Dr Tom Hubble (Pro-Dean)

Students

The Review Team met with three groups of students: four undergraduate students; two postgraduate coursework students; and seven research higher degree students.

The Review Team acknowledges the need to be careful about generalising the views of a small group of students to the whole student body.

SECTION II: OUTCOMES

This section summarises the main findings and lists the commendations, affirmations and recommendations. It should be noted that, in addition, other favourable comments and suggestions for improvement are mentioned throughout the text of the Report. The report draws on the information provided in the Self-Evaluation Report as well as discussion with staff and students. In some places, text from the Self-Evaluation Report has been incorporated directly into the text of this report.

(1) Introduction to Findings

The Faculty of Science consists of seven Schools

- Biological Sciences
 - Chemistry
 - Geosciences
 - Mathematics & Statistics
 - Molecular & Microbial Biosciences
 - Physics
 - Psychology
 - the unit for the History and Philosophy of Science
- and eleven affiliated Centres and Institutes.

The Faculty has a major focus on international excellence in research, focusing strongly on fundamental science and also with strong industry links. The Review visit reinforced evidence presented in the Self-Evaluation Report of a strong and highly productive Faculty, with a keen sense of identity and focus on the future.

The Self-Evaluation Report and discussions with staff and students during the review visit brought out a number of issues which are addressed further within this Report, as follows:

1. While effective processes are in place across all activities, the size and diversity of the Faculty makes it difficult to ensure that all staff, particularly early career researchers, are kept well informed on all issues and strategic objectives.
2. Recent growth in the number of research-only staff, particularly in the School of Physics raises the question of the extent to which research-only staff can contribute to the teaching load of the Faculty.
3. The Faculty has had to manage increasing teaching loads along with a decrease in the number of teaching and research staff and general staff. This may impact on the ability of teaching and research staff to maintain their research output.
4. The Faculty has specific infrastructure problems with aging buildings and equipment, and insufficient teaching and administrative space. This impedes opportunities for growth in areas of significant research strength.
5. The clear focus of the Faculty is on research productivity. Low CEQ scores reflect to some extent the primary focus placed on research. However, the Faculty does have a range of strategies in place to encourage and reward good teaching and to seek and act on student feedback.
6. A summary of Commendations, Affirmations and Recommendations follows. Note that these are not prioritised by the Review Panel. They are listed below in the order in which the relevant issues appear in the SER.

(2) Commendations

Areas where the Academic Board commends the practices of the Faculty are as follows:

1. The Academic Board commends the Faculty for its plan to implement in 2008 a support pack for Heads and to develop a customised leadership course for all new leaders.
2. The Academic Board commends the Dean for his leadership style and the model for leadership and communication provided by the Dean's Advisory Committee.
3. The Academic Board commends the Faculty for its implementation of a scheme of leadership awards for students.
4. The Academic Board commends the Faculty for its implementation of effective processes for evaluation of outreach activities aimed at attracting the best students.
5. The Academic Board commends the Faculty for its plans to improve school leaver intake into the School of Geosciences through a dedicated high school program and appointment of a liaison officer.
6. The Academic Board commends the Faculty for establishing the position of Information Officer.
7. The Academic Board commends the School of Physics on its "Research Bites" program which engages research students in the broader research of the School.
8. The Academic Board commends the Faculty for the formation of discipline-based search committees to recruit high profile candidates.
9. The Academic Board commends the Faculty for the workshops it introduced in 2007 aimed at educating and informing early career researchers in grant availability, grant writing and publication.
10. The Academic Board commends the Faculty for its effective system of Teaching Excellence Awards.
11. The Academic Board commends the School of Chemistry for its implementation of a scheme for Postgraduate Teaching Fellows and notes that other Schools are considering implementing a similar scheme.

(3) Affirmations

Areas where the Academic Board affirms the Faculty's identification of the need for improvements to its practices are as follows:

1. The Academic Board affirms the Faculty's intention to investigate a new model of Faculty taxation on Schools to better manage the diversity in funding needs.
2. The Academic Board affirms the Faculty's recognition that it needs to take better account of cultural diversity in communicating the Faculty's expectations to both new staff and students as the University becomes increasingly international.
3. The Academic Board affirms the Faculty's intention to implement a mentoring scheme for all staff, and recommends that this program also provide a focus on teaching.

(4) Recommendations

Areas where the Academic Board recommends improvements to the practices of the Faculty are as follows:

1. The Academic Board recommends that the Faculty implement processes to monitor, improve and support participation in the Faculty's learning and teaching and research programs by Aboriginal and Torres Strait Islander students.
2. The Academic Board recommends that the Faculty give particular attention to pursuing its strategic objective of enhancing the efficiency of teaching, including through the rationalisation of units of study and ensuring that unit of study workload is appropriate for the number of credit points concerned.
3. The Academic Board recommends that the Faculty consider how it can develop robust mechanisms to ensure that Faculty and School-level planning are integrated with activities at all levels of Schools.
4. The Academic Board recommends that the Faculty consider how it can implement processes to meet its plan to target the postgraduate coursework market more effectively with the aim of improving its market share.
5. The Academic Board recommends that the processes for feedback through the Annual Progress Report be made more transparent to research students
6. The Academic Board recommends that the Faculty consider how it can better support research students in the development of their careers following completion of research degrees.
7. The Academic Board recommends that the Faculty consider how it can facilitate the provision of support to research students to attend overseas conferences during their candidature.

SECTION IV REPORT

(1) INTRODUCTION AND FACULTY PROFILE

The key theme that has emerged from the Review is the Faculty's focus on excellence in research and quality of student intake at both undergraduate and postgraduate levels. The key challenge for the Faculty is ensuring the sustainability of quality teaching in an environment of declining funding for teaching and specific infrastructure deficiencies.

The Faculty has drawn attention to a number of challenges, some of which are addressed below:

1.1 Managing diversity across Schools

The Review Team was particularly interested in exploring with the Faculty the ways in which it manages diversity across Schools and achieves internal collaboration and collegiality. It was noted that the size of the Faculty means that it can only work effectively through a number of highly developed Schools. The Review Team was impressed with the processes the Faculty has in place to ensure that good professional working relationships exist across the Faculty. Rather than creating difficulties, it was felt that diversity can bring a broader approach to problem solving. It was also acknowledged that strong leadership, which the Faculty has, is the key to managing diversity.

While the report does draw attention to the extent to which competition for resources can prevail over collegiality, the Review Team was pleased to learn that that this was not widely perceived to be a problem by either students or staff. There is a sense of a Faculty culture amongst staff and a sense of a shared community and cultural beliefs. Faculty-wide initiatives e.g. postgraduate scholarships which recognise the Faculty rather than the Schools, reinforce this. Not surprisingly, students, particularly postgraduate students, identified more closely with their Schools rather than the Faculty or wider University.

Affirmation 1

The Academic Board affirms the Faculty's intention to investigate a new model of Faculty taxation on Schools to better manage the diversity in funding needs.

1.2 Under-resourcing of leadership roles

In order to provide better resourcing for those in leadership positions, the Dean is implementing a package of support and developing a customised leadership course. The effectiveness of the Faculty depends on the effective leadership of Heads, Associate Deans and other senior leaders and the Faculty is commended for the initiatives it is taking.

Commendation 1

The Academic Board commends the Faculty for its plan to implement, in 2008, a support pack for Heads and to develop a customised leadership course for all new leaders.

1.3 Capacity of the faculty to administer change

The Faculty drew specific attention to the difficulties it faced in implementing new policies, including the Students at Risk policy. It was noted that the provision of support to Students at Risk was problematic. The Faculty has noted that those students attending events designed for "Students at Risk" were not the students that the Faculty was targeting. Further investigation needs to be undertaken into how the Faculty can engage, and support, Students at Risk.

1.4 Managing responsibility to students

It was noted that resource constraints could impede the delivery of optimal levels of support to students.

1.5 Promoting achievements
(see Workforce Focus section)

1.6 Renovation of building infrastructure and provision of new spaces

The Faculty's capacity to grow its research strengths is impeded by poor infrastructure and lack of space. This issue is also raised in other sections of this report, including Student and Stakeholder Satisfaction and Academic Process Management.

Infrastructure problems were also raised by students. There was concern that students who are paying fees are provided with very poor infrastructure. For example, Clinical Psychology, where there has been a recent significant increase in students, with no increase in facilities. Examples cited, include the need for 3-4 students to share each locker. Students feel the course is under-resourced.

1.7 Continuing to provide high quality graduates in a market of declining interest

The Faculty's overall strategies are working well and 1st preferences for 2008 have increased substantially. However, constant effort is required to maintain numbers, in a market that is experiencing a decline in interest in science.

1.8 Specific School challenges

Schools face a range of challenges. One of the most pressing of these relates to the success of staff in attracting research fellowships. This means that the School is required to make short term appointments to ensure teaching commitments are met. However, due to the short term nature of the appointments, staff cannot be allocated duties such as course co-ordination. This may impact on teaching quality in the long term if it is not addressed as a priority now. Other specific challenges relate to managing heavy staff workloads, current funding arrangements, declining undergraduate numbers and infrastructure problems.

(2) LEADERSHIP

2.1 How Senior Leaders Lead

(a) Leadership Environment

Leadership within the Faculty is delegated from the Dean/Executive Dean to two Pro-Deans, five Directors (who also have responsibility across the three faculties in the Faculties of Science), eight Associate Deans, seven Heads of School and one Director of Unit.

These leaders operate within a complex environment in which there are two significant leadership structures:

- Formal committees and processes, including, at the Faculty level:
- The Faculties of Science Management Committee
- Dean's Advisory Committee
- Budget and other specific planning meetings
- Informal discipline and personal leadership

The Review Team notes that the leadership style of the Dean and the way in which the Dean's Advisory Committee (DAC) operates are the keys to the Faculty's success. Heads agreed that there was excellent collegiality at DAC and it provided a supportive environment for discussion on issues critical to the ongoing sustainability of the Faculty.

In addition to leadership by staff, the Faculty encourages and rewards student leadership. Each year the Faculty gives leadership awards to students in recognition of service to the Faculty community that is above and beyond normal expectations. The awards are presented at the Scholarships and Prizes presentation ceremony involving family, friends and academic staff.

Commendation 2

The Academic Board commends the Dean for his leadership style and the model for leadership and communication provided by the Dean's Advisory Committee.

Commendation 3

The Academic Board commends the Faculty for its implementation of a scheme of leadership awards for students.

(b) Communication and Faculty Performance

There are robust processes for communication within the Faculty, although some doubt was expressed with respect to the effectiveness of mechanisms for the communication of information from University-level sources such as the Academic Board. There was also some concern that general staff were not always well informed on key issues. Along with DAC, other Faculty level committees are successful in ensuring that key Faculty issues are debated in a collegial and supportive environment. Through this committee structure, key issues are communicated back to Schools through School representatives. Also, Associate Deans are very accessible and provide a further focus for ensuring effective communication. The Review Team formed the view that Faculty level communication and leadership processes work effectively and information is readily accessible.

(c) Leadership Development

To promote leadership development, the Faculty encourages each Head to appoint a Deputy Head to provide support for the Head and facilitate succession planning. While learning and networking opportunities, such as the Vice-Chancellor's Forum for Heads, were welcomed, Heads felt that there was room for improvement in the training they receive before taking on the role. As noted above, the Dean is implementing a package of support and developing a

customised leadership course. The effectiveness of the Faculty depends on the effective leadership of Heads, Associate Deans and other senior leaders and the Faculty is commended for the initiatives it is taking.

(d) School level approach

The SER sets out the leadership processes, styles and strategies that operate within each School. Each School has adopted a leadership style that aims to motivate staff to achieve organisational and personal goals. The Review Team explored further the mechanisms in place within Schools to ensure that communication flows effectively to all staff. A range of structures and processes are in place to engage staff with committee structures generally mirroring those of the Faculty. The following was drawn to the Review Team's attention to supplement the advice provide in the SER.

Biological Sciences

The Head reports to all staff on a monthly basis following the DAC meeting; committee structures within the School ensure effective communication flows.

Chemistry

Information flows well, but there is concern that general staff are not as well informed as academic staff.

Molecular and Microbial Biosciences

The Head acknowledged that there was room for improvement in information flow across the perpendicular e.g. from Research to Learning and Teaching. However, it was also acknowledged that there was an infinite amount of information available and it was not possible to be fully informed on all of it.

Psychology

Staff understand the mechanisms available for obtaining information; the School Board receives reports from Chairs of all committees.

Mathematics

The Head has implemented a blog to engage all staff on current issues, and acknowledged that while communication was good, there could sometimes be problems in ensuring that information flowed effectively down to all levels.

Physics

Effective School-based structures are in place to facilitate communication.

Geosciences

Communication operates effectively, but in a more ad-hoc informal manner.

2.2 Social responsibilities

University policies regarding ethical behaviour are communicated to Faculty staff by way of University level induction processes and local induction processes in Schools and research groups.

The Faculty and Schools have a range of processes through which students are informed of their obligations to comply with University rules relating to their studies.

The Faculty drew attention to the need to improve its attention to cultural diversity in communicating the Faculty's expectations to both new staff and students as the University becomes increasingly international. The Review Team explored this issue with various groups. Senior staff advised that a major tool for communicating the Faculty's expectations is the Transition workshop but this is not always effective for international students due to timing issues. The Faculty indicated that measures would be implemented to address this. In general, it appeared that the Faculty does not have processes for managing cultural diversity. In particular, there was no evidence of strategies to encourage participation by Aboriginal and Torres Strait Islander students. This matter was also raised in the Faculty's Phase 2 Academic Board Review. In relation to international students, the Faculty felt that, with limited numbers of international students, it was difficult for a Faculty such as Science to implement specific programs.

Affirmation 2

The Academic Board affirms the Faculty's recognition that it needs to take better account of cultural diversity in communicating the Faculty's expectations to both new staff and students as the University becomes increasingly international.

Recommendation 1

The Academic Board recommends that the Faculty implement processes to monitor, improve and support participation in the Faculty's learning and teaching and research programs by Aboriginal and Torres Strait Islander students.

(3) STRATEGIC PLANNING

3.1 Strategy Development

(a) Faculty level

The Faculty's draft strategic plan 2003-2005 was developed by the Dean and Leadership Team. Following this, selected key staff had an opportunity to participate in the development of the plan through the Faculty Forward Focus Forum. Following the appointment of the current Dean in 2005, key goals for the Faculty were developed in a series of workshops for the Dean's Advisory Committee and a number of key senior staff. The Faculty has processes in place to ensure that its strategy is aligned with the University plan. The Faculty's focus is on research and academic excellence, in accordance with University goals. There was certainly room for growth in research but this was constrained to a large extent by infrastructure inadequacies.

The Review Team explored with senior staff the Faculty's strategies for maintaining teaching quality in the face of diminishing resources for teaching (this issue is also addressed elsewhere in this Report). It was noted that one of the Faculty's strategic objectives is to enhance the efficiency of teaching through fewer degrees, fewer units of study and collaborative teaching between Schools, faculties and other institutions. It was also noted that some units of study had not been cut back to the appropriate workload content following the move to university-wide 6 credit point units of study. There was ongoing concern that resources and infrastructure are inadequate for the implementation of new, improved approaches to teaching. Discipline Reviews were important in the achievement of strategic goals, for example in the move away from named degrees in some areas.

Recommendation 2

The Academic Board recommends that the Faculty give particular attention to pursuing its strategic objective of enhancing the efficiency of teaching, including through the rationalisation of units of study and ensuring that unit of study workload is appropriate for the number of credit points concerned.

(b) School level

The process for integrating School strategic planning into Faculty and University plans has been moving more slowly but progress is being made. A formal ongoing cycle of School reviews was concluded in 2005 and replaced with a process of targeted School level strategic planning and interdisciplinary reviews.

Individual Schools are at various stages of the strategic planning cycle. It was acknowledged that there have been inconsistencies across the Faculty in ensuring that School-level planning is integrated into all activities across the School.

Recommendation 3

The Academic Board recommends that the Faculty consider how it can develop robust mechanisms to ensure that Faculty and School-level planning are integrated with activities at all levels of Schools.

3.2 Strategy Deployment

The SER indicated that the Faculty achieves strategy deployment through the leadership and governance structures outlined in Sections I and II of that report.

(4) STUDENT AND STAKEHOLDER FOCUS

The Faculty operates in a highly competitive environment, with growing competition for the top students, and decreasing interest in the study of science from School leavers. The Faculty aims to attract the most capable students to study within the Faculty, train to become top researchers and contribute internally to the University and the Faculty as well as encouraging students to contribute and engage externally with Schools, science organisations, employers and the wider community. A particular challenge for the Faculty is to continue to attract students in an environment of diminishing interest in science amongst school leavers.

4.1 Knowledge of students and stakeholders

(a) School Leavers

The Faculty has a range of effective processes aimed at attracting School leavers. Interviews with students confirmed the success of the outreach programs offered by the Faculty during the later years of High School, which encouraged them to choose the University of Sydney. The Faculty has processes in place to evaluate outreach activities; review outcomes and review conversion rates. The Faculty also has a range of academic programs designed to attract top performing students including the Talented Student program, for which the entry requirement is 99.00.

Commendation 4

The Academic Board commends the Faculty for its implementation of effective processes for evaluation of outreach activities aimed at attracting the best students.

The Faculty also acknowledged that those schools which have dedicated high school programs and liaison officers tend to be more successful in attracting school leavers and plans to implement this in Geosciences with a view to improving school leaver intake.

Commendation 5

The Academic Board commends the Faculty for its plans to improve school leaver intake into the School of Geosciences through a dedicated high school program and appointment of a liaison officer.

(b) Postgraduate Coursework

The Faculty has acknowledged the need to implement specific strategies to target the postgraduate coursework market and improve its market share. Postgraduate coursework currently has a relatively low profile within the Faculty.

Postgraduate coursework students confirmed that their choice of the University of Sydney was driven by the reputation of both the University and the Faculty. However, the two students interviewed had made their decisions to attend the University independently of any specific marketing activities. Web-based information was very useful to prospective students but more targeted advertising could be productive.

Recommendation 4

The Academic Board recommends that the Faculty consider how it can implement processes to meet its plan to target the postgraduate coursework market more effectively with the aim of improving its market share.

(c) Postgraduate Research

Postgraduate research students indicated that they were attracted to study in the Faculty either to work with a specific staff member, or because of the research excellence and reputation of the School in which they wished to work, and the topic choices available.

(d) **International Market**

The Review Team explored the Faculty's processes for capturing a greater share of the market for international research students. The Faculty acknowledged room for improvement in its own marketing, while drawing attention to the need for the University also to operate more effectively in this area. University international recruitment focused largely on undergraduate and postgraduate coursework students.

(e) **Information Officer**

The Faculty has an Information Officer who answers queries via telephone, email and the web. This position assists the Faculty enormously in identifying areas of interest for prospective students and associated groups including teachers and parents as well as staff and current University students and the public. The Review Team noted, however, that the undergraduate students were not aware that this position existed.

Commendation 6

The Academic Board commends the Faculty for establishing the position of Information Officer.

4.2 Obtaining and integrating feedback

The Faculty has a range of feedback mechanisms, including:

- Faculty website: web generated feedback
- Faculty of Science Counter and Associate Deans
- Information Officer

The Review Team found that these mechanisms work well and this was confirmed by students. Some Schools have their own Learning and Teaching Committees and processes are in place that enable Schools to ensure that students obtain timely and appropriate feedback and that in turn their feedback to Schools is acted upon. Undergraduate students drew attention to the need for more lecturer involvement in web-based discussion forums. It was noted that it is often difficult to pitch feedback at the right level and financial constraints made it difficult to provide individual support.

Research students had some particular issues with feedback. They were not clear as to the purpose of the Annual Progress Report, which is a Faculty-form. This appears to relate to the fact that research students relate more closely to their research groups and Schools rather than the Faculty as a whole. As referred to elsewhere in this report, the Faculty feels that the establishment of a University-level Graduate School would assist to address such issues.

Recommendation 5

The Academic Board recommends that the processes for feedback through the Annual Progress Report be made more transparent to research students.

4.3 Student and stakeholder relationships and satisfaction

(a) **Building relationships and growing student and stakeholder satisfaction**

The Faculty hosts a range of programs and key events to ensure that relationships are maintained and nurtured. The Review Team found that undergraduate students were generally satisfied with the processes for communication that exist within the Faculty. Faculty Office support was found to be good, though most students initially sought and obtained support at School level. Students were confident that they could find help when they needed it. It was noted that students were more likely to be under financial than academic stress and that the reasons for students dropping out of courses, including honours, were often not specifically related to academic issues.

(b) Building a sense of community

In a large and diverse faculty, students' primary relationship is with their Schools. This is even more so at postgraduate level. Postgraduate coursework students confirmed that they feel involved in their groups, though less so at either Faculty or University level. However, they did not see this as a problem. Communication strategies work well across the Faculty and individual Schools. The review team found that research students tended to work in some degree of isolation. It was recognised that this was difficult to address because of the specialised nature of the research they are undertaking. Research students may choose not to attend seminar or colloquium series because they are seen as not relevant and take away from the time they wish to spend on their research. Students were given the opportunity to present their own research though the number of such opportunities varies from School to School. Physics students found that the Physics Bite series of short seminars worked very well, as they provided brief, high level overviews which conveyed concepts rather than specialised detail.

Commendation 7

The Academic Board commends the School of Physics on the "Physics Bites" program.

(c) Determining student and stakeholder satisfaction

This is addressed in more detail in the Academic Process Management Section – Coursework Design and Delivery. Student and stakeholder satisfaction is captured through a comprehensive range of mechanisms, both formal and informal.

(5) MEASUREMENT, ANALYSIS AND KNOWLEDGE MANAGEMENT

The Faculty uses data from a range of source to measure performance and support Faculty decision-making and innovation.

5.1 Selection and use of information and data

The Faculty uses these data to help set goals and evaluate progress towards goals.

5.2 Analysis and review of performance

This issue is also referred to elsewhere in the report.

(6) WORKFORCE FOCUS

6.1 Workforce Engagement

(a) Recruitment

To attract high performing staff the Faculty has implemented a number of strategies. These have included the formation of discipline-based search committees whose task is the proactive identification and ‘wooing’ of high profile candidates. In all cases, the focus is on excellence in scholarship/research with strong communication skills. The success of these strategies is demonstrated in the School of Chemistry where the criteria have been rigorously applied and as a result the School has developed a very strong, high performing workforce.

Commendation 8

The Academic Board commends the Faculty for the formation of discipline-based search committees to recruit high profile candidates.

(b) Performance Management and development

The Faculty finds that the PM&D provides a formal avenue for creating a link between individual and organisational aspirations to plan for performance. Heads indicated that PM&D a useful tool but as an annual review is not necessarily useful for mentoring and performance development which require more ongoing review. Similarly, PM&D does not provide effective mechanisms for dealing with under-performance. the Heads felt that PM&D is a useful tool with which to plan for improvement but there was little that could be done when those plans do not achieve desired outcomes.

The Faculty recognises the need to have a more formal induction process for all staff.

Commendation 9

The Academic Board commends the Faculty for the workshops it introduced in 2007 aimed at educating and informing early career researchers in grant availability, grant writing and publication.

(c) Mentoring

The Review Team notes that the Faculty is implementing a formal mentoring scheme for all academic staff with the aims of developing staff, identifying future leaders and implementing succession planning. Initially, the program is being rolled-out to all new staff and will be progressively implemented for existing staff. Under the scheme all new staff are allocated an academic mentor to provide support and advice for both the transition to the University and for academic matters. The program will be run in conjunction with the HR Talent Management Program when this is implemented.

In addition to the formal Faculty scheme, all Schools provide high level mentoring support for staff. The Review Team explored with Heads and other staff the current mechanisms for mentoring within Schools. Mentoring for research was being undertaken on a wide scale. However, this was less likely to occur for teaching. The Review Team was particularly impressed with the scheme operating in Biological Sciences, where ever member of staff is allocated a mentor, and occasionally two mentors. There are also formalised research groups which mentor formally in Schools. In Physics, ARC grant mentoring has been introduced for all levels of staff. There is informal mentoring for new staff but at present this is only being picked up through the PM&D process.

Other mentoring strategies include:

- Senior students mentoring junior students
- Formal mentoring for casual teachers in the School of Mathematics
- Mentoring between heads on management issues

It was agreed that a Faculty policy would be helpful, but that it should not be too formal and prescriptive, but focus on the requirements of individual staff members.

Affirmation 3

The Academic Board affirms the Faculty's intention to implement a mentoring scheme for all staff, and recommends that this program also provide a focus on teaching.

(d) Communication and consultation

(see Leadership section)

(e) Recognising and rewarding staff

For many years the Faculty has operated a system of Teaching Excellence Awards in parallel with the University-wide awards for Outstanding Teaching. While the Faculty and Schools have given particular attention to mechanisms for rewarding good teaching, the Dean also plans to institute new awards within the Faculty to recognise and reward excellent classroom practitioners and citations for good teachers.

The Faculty also wishes to investigate mechanisms for the reward of excellent teaching that is not necessarily tied to innovation.

Commendation 10

The Academic Board commends the Faculty for its effective system of Teaching Excellence Awards

6.2 Workforce Environment

(a) Strategies for teaching support

The Faculty has drawn attention to the increasing tensions between maintaining and improving research excellence and achieving quality in teaching. Schools have implemented a range of programs designed to provide teaching relief and support to academic staff.

The Review Team explored the extent to which research-only staff contribute to teaching given the high numbers of research-only staff in some Schools. It was noted that, in general, teaching, particularly first year teaching, is undertaken by the full-time and fractional teaching and research staff, with a limited amount being undertaken by casual staff. The view was expressed that the best use of research-only staff in teaching was for the TSP and advanced students. Research-only staff were often keen to teach, particularly if they are given full responsibility for a course. However, it was clear that with diminishing resources, some of the best researchers were choosing to reduce their teaching loads where that option was available to them.

In 2005, the School of Chemistry implemented an innovative scheme for Postgraduate Teaching Fellows. The scheme is open to postgraduate students enrolled full-time in a PhD or Masters. Appointments are advertised nationally, are highly competitive and are based on a 0.2 fractional appointment. Teaching Fellows work with the School's first year cohort of approximately 1800 students. They prepare and deliver four one hour tutorials per week, review assignments at a weekly meeting with the lecturer, and contribute to examination marking. Other Schools were considering introducing a similar scheme.

Commendation 11

The Academic Board commends the School of Chemistry for its implementation of a scheme for Postgraduate Teaching Fellows and notes that other Schools are considering implementing a similar scheme.

(b) Workload Model

The Dean has developed a formal workload model for Schools and is encouraging all Schools to use this. It was noted that there were some issues in some Schools relating to allocations of workload to non-research active staff. This could be addressed to some extent through the PM&D process where triggers for underperformance could be utilised.

(7) ACADEMIC PROCESS MANAGEMENT

7.1 Coursework program design and delivery

The Faculty's approach to academic process management is based on the principle of decision-making taking place at the School level where core competencies are held, but providing a governance structure that supports the co-ordination of programs towards common goals.

(a) Coursework Program Design

The Faculty has three key undergraduate student groups:

- The Talented Student Program and the Advanced degree programs (approximately one-third of the BSc cohort)
- Combined degree students (often the brightest students)
- General BSc students.

The Review Team acknowledged the excellence of the programs in place for advanced students and was interested in exploring the Faculty's processes for managing the general BSc students. It was clear that the students themselves perceived a significant difference between students in Advanced streams and those in the standard degree. However, many students in the general BSc can take advanced subjects and it was noted that a significant proportion of this group also went on to honours. Schools have a range of programs in place to support general BSc students. Students appreciate that the BSc does not provide a specific entry to the workforce and that they will need to continue with some other form of professional training or research. All students are exposed to the best researchers in Australia at some point in their studies, and all have access to exchange programs and scholarships.

The Faculty had put some effort into the development of generic skills and the CEQ outcomes in this area, which are above University averages, are testament to their success in this. The development of critical thinking skills was a particular attribute of science teaching and there is a focus on reasoning in many subjects. It was not clear to the Review Team, however, that undergraduate students had a clear idea of generic skills and how they are acquired in their courses.

Given the size and diversity of the Faculty, student experience in respect of coursework design and its impact on workload tends to be variable. However, no particular concerns were identified with respect to student workload or assessment practices.

(b) Research led teaching

All Schools undertake research-led teaching with a range of initiatives identified in the SER. All research and teaching staff teach in first year. Postgraduate coursework student are satisfied with the availability of research –led teaching, but it was clear that this was not necessarily always wanted by students, who are keen to receive their clinical training. (The postgraduate students who addressed this issue were both from courses that require accreditation)

(c) Coursework Program Delivery

The Review Team found that the processes are in place to ensure teaching quality across the Faculty work effectively. Students are satisfied with the quality of their teaching. Students appreciate the personal interactions from lecture attendance. Of particular interest to the Review Team was the students' preference for 'traditional' style teaching, such as using a whiteboard. Students indicated that this style of lecture delivery was the best way of ensuring that the learning pace of a lecture was appropriate to students. Web-based material is most frequently used to supplement or enable revision of face-to-face lectures, and there was no sense that students favoured a move to more web-based delivery of teaching. Student engagement in tutorials is variable and depends on the skills and experience of

tutors and the size of classes. Staff also felt that over-reliance on web-based materials contributed to the disengagement of students.

The Review Team explored the Faculty's response to its relatively low CEQ outcomes. It was clear that the relevant committees were proactive in addressing the information provided from the CEQ but it was not always possible to identify clearly what the results mean. There is good integration between Faculty and School level committees which facilitates collaboration and communication.

The Associate Deans raised a number of issues in relation to the sustainability of good teaching. These included:

- Concerns at the value of teaching relative to the value of research in the Faculty;
- Faculty has been slow in moving to address teaching and learning issues. These are being largely driven by the University. It was felt that there could be more efficiencies in teaching, for example through rationalisation of units of study and a generic first year.
- Schools operate differently from each other
- Good teaching is very labour intensive and it is difficult to maintain the highest quality in times of diminishing resources for teaching and increasing staff workloads. The Faculty has concerns about its ability to maintain staff-student ratios at an appropriate level.
- There is a perception that the current generation of students and staff is bearing too much financial responsibility for overall University infrastructure improvements and that it is time to redress this and allocate more funds for teaching.
- Administrative support has largely disappeared and academic staff have much heavier administrative workloads than in the past.
- The ongoing sustainability of the Faculty depends on research performance. Chemistry could grow more – it has the funds to grow in its research but no infrastructure. Infrastructure is a major problem if the faculty wants to grow its postgraduate research numbers.

The issue of parallel teaching of undergraduate and postgraduate coursework students was raised during the visit. There was generally a view that there was no problem in this where the same subject matter needed to be covered

7.2 Research and Research Training

(a) Core Competencies

Core research competencies are generally determined at the School level, and relate to the Faculty's vision and mission.

(b) Research

The Faculty has an outstanding track record for research and is generally ranked second in Australia, after the ANU. The Schools of Physics and Chemistry have achieved both national and international recognition for the excellence of their research, with substantial research income.

(c) Research Training

Research students receive some teaching training during their candidature and all have the opportunity to undertake teaching, though not all do so as it can impede the time available for their research. There is a 1-day Faculty training session and some School-specific training. Generally research students have aspirations for academic careers and enjoy teaching and the experience they develop from this.

Research students also expressed some desire for better support in career development. Generally this was only at a supervisor level, but it was felt that more could be organised at a

School level. Students might need advice on moving into the commercial world; how and where to look and how to write an application. The Faculty was clear, however, that such support would be more appropriately placed within a University-wide Graduate School which could package all appropriate information.

Recommendation 6

The Academic Board recommends that the Faculty consider how it can better support research students in the development of their careers following completion of research degrees.

PhD students raised the following issues during the review visit:

- Access to funding to attend conferences: it was noted that PRSS funds are available, but they are limited both in amount and availability. Attendance at overseas research conference is critical for researchers and they felt that that the Faculty could be more supportive, given the very high costs. Schools pointed out that they did have additional funds for which students could apply. The Dean felt that the University should be more proactive in developing schemes to match student expectations, and that such issues should be handled through the establishment of a Graduate School. (This comment applies equally to early-career staff but the Faculty has one of the most generous schemes in the University for the support of new staff)
- Some problems in sharing laboratories.
- Diversity of approaches to safety – e.g. between Chemistry and Molecular and Microbial Biosciences. The Faculty should be more proactive in ensuring that safety procedures were instituted uniformly across all Schools.

Recommendation 7

The Academic Board recommends that the Faculty consider how it can facilitate the provision of support to research students to attend overseas conferences during their candidature.

(d) **Research Supervision**

Students are generally very happy with the quality of their research supervision.