Efforts to bring teaching and research together are becoming more commonplace within higher education institutions. While the jury is still out on how best to bring them together, we can agree that part of this work is driven by changes within the sector itself – changes which have caused institutions to pause, reflect, and take stock of academic work. Part of the University’s response to these changes has been to put in place institutional mechanisms that recognize and reward the scholarship of teaching. For a number of years it has supported the scholarship of teaching through the VC’s Awards for Outstanding Teaching and this year, a new award was developed to incorporate Excellence in Research Higher Degree Supervision. Similarly, the University’s Scholarship Index rewards departments for activities that promote higher education teaching and learning. These kinds of institutional exercises are often ways of helping academics to see that the research potential of their teaching can be integrated with their subject disciplines in improving student learning. This is one notion of inquiry that can guide both staff and students toward pedagogical encounters that value them as part of what Ivey and Wenger (1993) call communities of practice.

Reflections from the Showcase

We consider the VC’s Showcase of Scholarly Inquiry in Teaching and Learning held in September to be part of exploring how communities of practice might work. While the Showcase is part of a larger project led by the ITL to forward the University’s strategic initiative on Research-Led Teaching, it is underpinned by a desire to enhance students’ learning experiences by progressing the ways that undergraduate teaching is informed by research. Importantly, the communities of practice model draws students into the research endeavour by encouraging them to inquire into their learning.

The Showcase presentations demonstrated considerable enthusiasm for bringing teaching and research together. A multitude of good work is already taking place within the University. Presentations were organised within five themes:

- Reports of scholarly inquiry into teaching and learning;
- Examples of teaching that uses evidence from research and scholarship;
- Examples of using disciplinary research in teaching;
- Examples of engaging students in inquiry in teaching and learning;
- Discussions on bringing research and teaching together.

Feedback from Showcase participants was overwhelmingly positive. As an exercise in valuing teaching, it helped academics to shape both a philosophical and a practical sense of how they might advance research-led teaching within their own contexts. A common observation was that teaching could be researched collaboratively to include elements of peer review as an alternative to the more traditional model of lone, solitary reflection.

With this in mind, it is with great pleasure that we have devoted this issue of Synergy to dedicated papers from the Showcase. Taken together, they are examples of the diversity of initiatives already occurring in the University. Understood separately, each paper raises a key issue common to higher education teaching and learning – improving students’ experience of the first year, curriculum planning and design, scholarly use of technology, professional practice etc. These papers are examples that turn the obvious research talents of academics to the important task of valuing and improving teaching.

Enhancing first year for Pharmacy students

Erica Sainsbury, Faculty of Pharmacy

In 1997, a four-year Bachelor of Pharmacy degree was introduced to replace the three-year program which had been offered by the University of Sydney for the past 37 years. Extension of the degree was prompted by rapid evolution of the pharmacist’s role, and the need to prepare graduates for expanded delivery of services in addition to dispensing medications. In 1999, a review of the first year curriculum was undertaken as the first stage of a progressive review of the new degree. While the student experience was generally positive, a number of student concerns were identified in that initial inquiry which have altered some of the teaching and learning practices in the Faculty.

The primary issue for students was a feeling of disconnection from pharmacy, as they had no contact with specialist pharmacy content in first semester, and did not set foot inside the pharmacy building until second semester. This situation had at least two significant consequences. Firstly, students felt isolated from students in other years and from pharmacy staff. Secondly, they were uncertain of the relevance of the content they were studying, as they had no “feel” for the bigger picture. These findings were largely consistent with recent research into the First Year Experience, but there was also clearly a need to fashion a response which was appropriate to the specific pharmacy context. A revised curriculum was designed in consultation with several of the external departments with teaching responsibilities for first year pharmacy students, and the new program was introduced in 2001.

The major design principles underlying the revision were:

- a strong emphasis on the development of peer support networks - both academic and social - through a focused use of collaboration;
- regular personal contact with pharmacy teaching staff;
- demonstration of curriculum relevance through an emphasis on the “big picture”;
- stimulation of interest in the discipline of pharmacy;
- development of identity as a health care professional;
- incorporation of generic skills within authentic contexts;
- clear expectations combined with early and frequent feedback.

The keystones of the revision were the introduction of a specialised pharmacy unit of study (Concepts in Pharmacy) in first semester, and customisation of the psychology content to ensure an appropriate mix of basic theory and specific applications. The latter involved designing a tailored psychology unit in first semester to be taught by the Department of Psychology, and a second semester unit (Social, Behavioural and Professional Pharmacy) taught jointly by the Faculties of Pharmacy and Nursing. The remainder of this article is devoted to a description of Concepts in Pharmacy.

Concepts in Pharmacy is a 3 credit point unit consisting of one lecture and a two-hour activity each week. In most weeks students take part in small-group workshops, but other activities include clinical placements and practical classes. The overarching objectives of this unit are to allow students to develop a more realistic appreciation of what pharmacy entails, and to stimulate their interest by allowing exploration of some aspects in a little more depth. The unit is structured around three themes:

- Patient and Pharmacist;
- Medicines from Cell to Society;
- Introduction to Dispensing.

These themes encompass much of the breadth of the discipline, and the clinical placements are designed both to facilitate the integration of these themes and to introduce students to elementary business aspects. Patient and Pharmacist focus on important aspects of communication and interaction between pharmacists and their patients. Medicines from Cell to Society introduces the scientific foundations of the discipline, and Introduction to Dispensing familiarises students with some of the physical skills and activities associated with the supply of medications. Extensive use is made of authentic scenarios and topics of current interest (eg the opening of Sydney’s first safe injecting room, the increasing availability of medications through the Internet). Use of these scenarios and topics highlights the relevance of the range of units studied in all four years of the degree, by demonstrating the need for pharmacists to possess a diverse range of knowledge and skills.

Assessment is largely based on group activities and projects although a major assignment is completed individually. The individual assignment allows students to choose a topic of interest, and also to some extent to choose a method of presentation. (Most students in 2001 chose to write an essay). Group assignments are usually based on experiential activities, and are closely intertwined with workshop tasks, with specific time available in the weekly workshops for students to collaborate on the production of the assignment outcomes. Generic skills such as reflection, ethics, organisational skills, evaluation of evidence and critical appraisal are built into the tasks and peer assessments. There is no formal examination for the unit, and the final assessment is based on the presentation of a portfolio of the semester’s learning.

Initial evaluation of the student experience indicated a high level of satisfaction with the unit, and it was apparent that the concerns identified in the original review had been largely addressed. Students expressed confidence in the relevance of their study, and commented frequently on feeling “like a future pharmacist”. The majority believed that the group work had enhanced their learning, and that the inclusion of topical issues was both interesting and useful. From the teacher’s perspective, this was a particularly enjoyable experience, and one in which development in student understanding was apparent throughout the course of the semester. The remaining challenge, however, is to find balance in assessment, so as to ensure appropriate levels of feedback without excessive and unrealistic demands on staff, however enthusiastic they may be!

Erica Sainsbury is Chair of the Faculty of Pharmacy Teaching and Learning Committee. She has won two University of Sydney Excellence in Teaching awards, as an individual in 1998 and as part of a team in 2001. In 2000 and 2001 she headed a team which was nominated by the University for the Australian Awards for University teaching. Erica holds a Graduate Certificate in Higher Education and she is currently conducting her PhD research in teaching and learning.
For several years we have offered an Honours unit of study in computer science education research. The stated goals of the unit are:

- To provide senior students with a chance to take a scholarly approach to their teaching duties, building upon existing knowledge, reflecting upon teaching and learning over the spectrum of their other studies, and evaluating the effectiveness of new initiatives;
- To provide an opportunity to read some literature from a range of research areas within computer science education;
- To provide an opportunity to work with staff on teaching initiatives within this department's teaching of programming and computer science more generally;
- To create a collegial atmosphere among those teaching programming; and
- To give students an opportunity to see the usual research processes involved in academic conferences: writing papers, reviewing them, preparing conference presentations and producing conference proceedings.

The course is run as a single large project per student. The main product of the course is a paper about some aspect of computer science education research.

The following table summarises the main elements of the unit and the assessment scheme. Commas-separated values represent the range available for student choice; students choose the weight within these.

<table>
<thead>
<tr>
<th>Assessment aspect</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research proposal</td>
<td>10</td>
</tr>
<tr>
<td>Literature presentation</td>
<td>0,10</td>
</tr>
<tr>
<td>Draft paper</td>
<td>0 - barrier</td>
</tr>
<tr>
<td>Final paper</td>
<td>50,60</td>
</tr>
<tr>
<td>Reviews</td>
<td>20</td>
</tr>
<tr>
<td>Poster</td>
<td>10,20</td>
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The draft is required but only the final paper is assessed for marks.

Some examples of the sort of projects undertaken include:

- Long term follow up of students in the PBL trial;
- Evaluation of an algorithm visualisation tool;
- Analysis of student learning in theory units;
- Development and evaluation of a resource that helps students debug programs;
- Evaluation of a white-box testing tool;
- Evaluation of a tool for teaching programming constructs from examples.

To illustrate the types of outcomes from the unit, we now give a detailed description of a recent student's work, that of the third author. The project explored syntax error correction. This is one of the skills that must be mastered in learning to program. It is the easiest class of program debugging. The motivation for the study came from observing that it could take considerable time, especially for beginners.

The project involved building a web-based reference guide, which catalogued a collection of common C/C++ compile errors. The errors came from personal experience as well as from contributions from fellow students.

The University of Sydney

Toby Greening, Judy Kay, Sarah Kummerfeld

Basser Department of Computer Science

An undergraduate unit in scholarly inquiry into teaching computer science

Jennifer Cox, Edwina Adams and Edward Caruana,
School of Medical Radiation Sciences;
Robert Heard, School of Behavioural and Community Health

Causes of first year attrition and failure in the medical radiation sciences

Staff in the School of Medical Radiation Sciences have been concerned that too many first year students are failing to progress to year 2. There is a well-established body of higher education literature on the first year experience that draws on the work of Craig McInnis and colleagues (1995, 1999). This work suggests the importance of a range of contextual factors that may go some way to explaining the reasons for non-progression.

The School of Medical Radiation Sciences (MRS) has three undergraduate degrees specialising in Diagnostic Radiography, Nuclear Medicine Technology and Radiation Therapy. These programs are similar with the major difference being that the units of study prepare students for professional practice. The attrition rate from first year 2000 to second year 2001 in Diagnostic Radiography was 15%, Nuclear Medicine was 21% and Radiation Therapy was 24%. This may be due to student failure, but other factors, such as the realization by students that they have chosen an inappropriate career, also could play a part.

In order to assess this problem, MRS first year teaching staff considered a number of factors that might increase first year - HSC results, students prior knowledge of the profession, academic performance in the first year units of study, the effect of a mid year clinical experience and students' interest and motivation. To draw conclusions about these factors we designed 3 questionnaires. The aim of the first questionnaire was to assess students' entry-level knowledge of the profession before any course work information was given. A second questionnaire early in semester 2 after students had completed a short placement in the workplace was used to assess the effects of their workplace experience. A final questionnaire in week 12 assessed their level of motivation to remain in the course. The MRS disciplines are highly science-based and it was seen to be useful to assess whether satisfactory Physics or Biology performance correlated with academic success in year 1. Ethics approval was obtained for the questionnaires and for information from the UAC and student administration databases.

To date some of the data has given us useful insight into the differences in stream cohorts but there is still insufficient data to allow conclusions about how to rectify the problem of attrition. Radiography has approximately 75% female students, Nuclear Medicine 54% female, and Radiation Therapy 65% female. The mean age for Radiography is 19.9 whereas Nuclear Medicine and Radiation Therapy is 17 years. Native English speakers varied substantially between the disciplines. Nuclear Medicine and Radiation Therapy groups are similar with about a 44% non-English speaking background (NESB) population, whereas Diagnostic Radiography has a 20% NESB cohort. Fewer than 50% of the Nuclear Medicine and Radiation Therapy students had attended a practice prior to enrolling in the course but Diagnostic Radiography had a 75% attendance.

continued on page 16...
Teaching relevance and requirements: Challenges in unit design
Gaynor Macdonald, Department of Anthropology

Teaching what our disciplines require is important at 1st year. Students need foundations and building blocks or we find ourselves not being able to extend or challenge them adequately at senior levels, returning to basics when we should be going forward. These basics can seem tedious, even irrelevant: Why are we learning this stuff? Why do we need this old literature? What’s this got to do with my life today? The gap between introductory material and actual research practice can seem vast.

So the other challenge is relevance. Relevance doesn’t come naturally: we need to work at linking the basics to the issues and methodologies driving our own research. One approach is to start where I and my students might want to arrive, rather than where they need to begin. I describe below an introductory course in Social Anthropology which started from this design principle - showing the steps I took to both design and test it. Part of this design process is understanding the journey of how best to bring together research and teaching in Anthropology.

Social Anthropology is the study of difference in the diverse worlds that human beings have developed for themselves over time and in all parts of the world. My task as a member of a teaching team is to help introduce a complex discipline, knowing it will make demands on their skills and their intellects which they will sometimes appreciate, sometimes find difficult and sometimes find boring especially if they don’t know why they are learning something. In the design of a half-semester segment introducing the discipline, I used my research into native title. My research served as one of Anthropology’s threads that could be followed and unraveled so as to get a glimpse into what it means to study and convey cultural practices and meanings different to one’s own.

This is not an example of how to use a case study to illustrate the content. Rather, the example of practice is the content, the analysis of which reveals principles that students need to acquire. The choice of research topic needs careful thought. Some research lends itself to this kind of analysis, some topics would produce too narrow a perspective to be useful. There will also be issues, themes, concepts not covered because they don’t emerge from the chosen topic. However, if a student has grasped (1) what is meant by the use of a concept as an analytical tool, (2) how one particular theoretical debate unfolded over a period of time, and (3) what is meant by critique, then their capacity to grasp other concepts, theories and critiques that I have not specifically referred to is enhanced.

Step 1: Select the research topic for the way in which it can address such questions as:
- What is interesting about my research for newcomers?
- What does my research contribute to the discipline of anthropology?
- What did I have to learn before I could do this research?

Step 2: Identify general aims (in my case, introducing the discipline). I need to cover:
- What is Social Anthropology? What do Anthropologists do? How is it distinctive? What does it contribute and to whom?
- Understanding anthropological practice: field work; ethnography; analysis; academic and applied work
- Distinctive approaches and concerns: theory and method; critique and debate
- Role and relevance of the disciplines’ history

Feedback confirms that using my own research as the teaching tool adds to the interest, engages students and enables them to grasp the relevance of the intellectual and methodological tools of trade they need to acquire. However, it is important that, in the design of the lectures, the more general aims are explicitly incorporated and that students are made aware of these along the way. It could be easy for the topic to take over from the aims of the course unit. I check the effectiveness of my design with a simple chart that reminds me where I need to stress certain things within lectures.

Step 4: Test the extent to which Step 3 is able to address Step 2 issues with a chart. I list the lecture topics (I do that in more detail than is apparent in this simplified chart) and then the aims I have for the course to see where they link up. The chart tests whether my lecture design does allow me to meet these aims and show me specifically where and how I can do this. The chart also enables me to track what I will be saying about, for instance, debates in the discipline or critical analysis, so I can draw these out and show the students this thread as they go and later during exam preparation workshops.

Even if you don’t use the research topic approach, the chart can help you identify whether, how and where your lectures are meeting your aims.

Meeting your aims
Dr Gaynor Macdonald is a member of the Faculty of Arts Teaching and Learning Committee, and she is presently developing web-based supports for 1st year students in Anthropology. Prior to joining the Faculty of Arts at the University of Sydney, Gaynor’s commitment to teaching and learning was recognized in a Teaching Excellence award from the University of Western Sydney.
Multiple (authentic) learning contexts: A vehicle for successful learning

Janette Bobis and Sharne Aldridge, Faculty of Education

Background

The Master of Teaching (MTeach) program within the Faculty of Education is a postgraduate initial teacher education course that adopts a case-based approach. This is an approach that typically provides students with an opportunity to research their own teaching and learning. Generally, the students are mature-aged, have established careers in areas other than teaching and bring with them a variety of life experiences.

Central to the MTeach program’s philosophy is the importance of developing reflective practitioners. We have redesigned our courses to integrate and encourage reflective practice within a constructivist approach. We anticipated that our students would be challenged to change not only the way they viewed mathematics, but the way they would teach mathematics.

Constructivism: What does it look like?

A constructivist approach to teaching and learning recognizes the importance of students’ prior experiences and uses these experiences to build knowledge of the field. It aims to create a learning environment in which peer tutoring and collaborative learning is highly valued. Associated with this is the idea that students need to have opportunities to engage in rich discourse as they share and build their knowledge. Another vital aspect of such an approach and central to the MTeach philosophy is the emphasis placed on reflection. For us, it is seen as a vehicle by which students might reconceptualise their knowledge and beliefs about mathematics.

Constructivism: Is it working?

The impetus for our research came about because of growing scepticism in the literature towards the application of constructivist principles to classroom-based practice. As we reflected on our own practice we were increasingly aware that there was a discrepancy between anecdotal comments from our MTeach graduates and those reported in the literature. We felt challenged to research our own practice!

Constructivism + Situated Learning

Our longitudinal study has led us to believe that adhering to constructivist principles in our teaching is a necessary but certainly not sufficient factor for engendering change in the way our teacher graduates view and teach mathematics to primary school children. We now recognize the crucial role played by our use of multiple learning contexts, situated in a variety of environments.

A situated perspective on learning acknowledges that all knowledge is situated, that some types of knowledge are best learnt in one context rather than another and that the more authentic the context, the more effective the learning. For example, at some point in a Dentistry program students situate their learning in a clinical context. This would be as close as is possible to an authentic learning experience without actually practicing dentistry.

Multiple Authentic Learning Contexts

Our students experience at least four contexts whilst undertaking our mathematics education courses within the MTeach program. The first places students in work-shops modelled on constructivist principles. A second context relates to in-school experiences associated with practice teaching. Students work in a school over an extended period (12-15 days) under the supervision of a practicing teacher. This not only reflects the context in which they will ultimately work, but it is also a fairly typical experience provided by teacher education programs across various institutions.

However, prior to undertaking their first traditional-style practical teaching experience we also provide our mathematics education students with another vital context for learning—one that is not typically used by other institutions responsible for teacher education. This is described as school-based small group teaching and is situated in schools (an authentic context) during normal tutorial timetables. Students work in small groups (encouraging collaboration and reflection) with two or three children who are assigned to them for five weekly sessions. They individually assess the children, analyze the results and collaboratively prepare a program of work to build on each child’s level of thinking. Students work with their children in one large area (usually an assembly hall). Our role is to facilitate the process by providing advice at each stage of the process. After each teaching episode, there is a debriefing session. This provides opportunities for rich discourse about the bridge between theory (University-based workshops) and practice (practice teaching). It leads to and encourages reflection on practice.

This is a very powerful experience for students! It provides them with an authentic context in which to situate their new knowledge (university-based workshops) prior to undertaking their first extended practice teaching experience.

The fourth context that we provide for our students is situated at the University in the Evelyn McCloughan Childrens Centre. Here children from nearby schools attend two sessions a week over a six week period. Children are assigned to our students in a one-on-one clinical setting. Students assess their child, analyze the results, plan and then implement a program of work designed to cater for the needs of their particular child. Only one third of the students working in this context teach mathematics (Numeracy Unit). The other students teach in either the Language Unit or the Early Learning Unit.

This fourth experience provides yet another context in which students’ learning is authentically situated. They are able to explore in depth how a child with learning difficulties builds their knowledge. As facilitators in this context, we may model teaching if requested, or simply offer guidance and support students as needed. Students also work together to share ideas, discuss teaching strategies, team-teach and generally build their knowledge about how children learn mathematics. The environment supports and encourages discussion and reflection.

Application beyond Teaching

The purpose for providing multiple learning contexts, to use a metaphor, is to build a bridge between theory and practice. Research into our teaching is suggesting that the more authentic the learning context, the stronger the links between theory and practice. We consider it reasonable to suggest that such an idea has implications for many different fields of study at the university, not just teaching.

Dr Janette Bobis is a senior lecturer in Mathematics Education. She is a member of the Teaching and Learning Committee and Co-Director of the Master of Teaching Program in the Faculty of Education.

Sharne Aldridge teaches primary mathematics methods courses in the Faculty of Education. She is particularly interested in early number development and the innovative teaching of mathematics in primary schools. In 1998 she received an Award for Excellence in Teaching from the Faculty of Education as part of a team. Sharne is a recipient of a 2001 Faculty Teaching Excellence Award.
Using information technology to promote scholarly inquiry in teacher education programs, and the impact of web-based discussion on student learning

Llian Merritt, David Reid, David Smith & Jennifer Simons
Faculty of Education

University graduates should be technologically literate. Education graduates have the added pressure that to enter the teaching profession they are required to be competent users of technology.

This research project was designed to explore how web-based discussion might model the use of a powerful teaching, learning and assessment tool. The project also set out to explore the potential of web-based discussion rooms to assist students to become more critically reflective about their practice.

A discussion room was trialled in first semester 2001 in the unit of study Teaching and Learning: Reflective Teaching and Curriculum Planning. An evaluative questionnaire was administered as part of the trial.

Students were required to critique six articles on reflection and reflective practice and participate in a web site discussion. Flexibility, cost and accessibility had to be prime considerations, since it was a potential model for schools. A discussion room was trialled as an asynchronous bulletin board using a public domain application called Conferweb.

Three different types of data were analysed. The first was the number and nature of the threads of discussion developed by the 82 students who participated. The second was data originating in the 37 evaluations fully completed by the participants. The final set of data derives from the analysis of the quality of the 208 pages of discussion room entries.

The discussion room was open for 40 days and 37 threads were opened. The number of entries in threads ranged from 1 to 35. The average number of entries per thread was 7. The majority of students participated in more than one thread with the maximum number of any one participant being 8. Of the 258 entries, 72 were posted in the am and 186 in the pm. In nine of the threads, entries were posted in the early morning (midnight and 2am). Threads remained current from 1 day (7 threads) to 40 days (1 thread).

The evaluation consisted of ten questions requiring a closed response and with opportunity to provide further comments. Evaluations were completed online. Because of technical problems only 37 fully completed evaluations were received.

Students reported using a mixture of approaches to enter the discussion room, including: ‘completed reading before entering the discussion room’; ‘tried to engage in conversation/argument with others’; ‘I planned what I was going to write before entering the discussion room’. These responses suggest the need for planning and preparation by students and a purpose in entering the discussion room to engage with the ideas of others. Overall the quality of the entries confirms the strong planning and preparation and, in at least some threads, a strong engagement with others.

The average time spent reading in the discussion room was reported as 5 hours. A similar pattern of results was recorded for amount of time spent writing. This does not appear to be an adequate time period. For example, our own involvement in responding to entries was probably more like 10-12 hours. Evaluation results suggested no significant difference was perceived by the students regarding whether the discussion room task took more time than a traditional essay.

Overwhelmingly the discussion room task was reported as more motivational than a traditional essay. The main reasons given referred to the social and interactive nature of the task: engaging with and getting feedback from others; responding to sources AND others; learning from each other. Some other important, but lesser recorded responses included: ‘new/fun’; ‘built confidence in using the technology’; ‘able to risk more easily’.

The 7 respondents who did not see the discussion room as more motivational reported a dislike or lack of skill in the use of computers and technical problems. Some of the Non English Speaking Background students said they were concerned about their ability to write English.

The overwhelming response was that the discussion room was powerful in generating reflection on issues arising from the readings. The most commonly enjoyed tasks were conversation with others and responding to different viewpoints about the same material which required focused thinking and justification of ideas. This resulted in better understanding and more powerful reflection. There is no doubt that the public nature of the task, together with the choice of anonymity utilizing student numbers, was a powerful stimulus to reflection about the issues.

Suggestions for improvement related mainly to correcting the technical problems. Other important recommendations included the need for more modelling and scaffolding, with more specific criteria and word limits for entries.

Overall the evaluation data strongly supports the notion that the discussion room is a successful strategy for both effective learning and powerful reflection. The establishment of 80 critical friends in virtual space appears to be a powerful strategy for challenging ideas and facilitating reflective writing.

A metaphor for what went on in the discussion room could be a cocktail party. In one part of the room a couple is arguing strongly for different points of view. In another corner an ‘expert’ is boring other people with his opinion. Some are tentatively trying out ideas on others. One person completely misses the point that three others are slowly establishing. A single person tries to open a topic that no-one wants to discuss. All in all, it supports the social constructivist position that knowledge is socially constructed through language and the other tools (including technology) of a society.

As Mayerfeld Bell says ‘We discover our boundaries and transcend them as we interact with difference in a collective act of dialogic improvisation’. One of the strengths of the discussion room task was creating a space for the voices often suppressed in the ‘real’ classroom.

Llian Merritt, David Smith, David Reid and Jennifer Simons all lecture in the Faculty of Education. They choose to collaborate in teaching and researching several courses in the Faculty, and each individually is an experienced researcher in their own areas of educational expertise. Llian, Jenny and David Smith are also members of the Faculty’s Teaching and Learning Committee, and Llian has recently been awarded a Faculty Teaching Excellence Award (2001).
The use of feedback to describe sustainability and growth of a teaching development initiative

Manjula D. Sharma, Kathryn Wilson and Rosemary Millar, School of Physics

Introduction
Workshop Tutorials were implemented in the School of Physics, University of Sydney, as a tentative teaching development initiative in 1993. They have evolved over the last ten years, moving through three distinct stages. From our perspective, systematic evaluations and feedback from the evaluations have contributed significantly to the success of this teaching development initiative.

The Three Stages in Evaluation
Stage 1 (Minimal to no evaluation, limited feedback)
The initial stages of the Workshop Tutorials, 1993 and 1994, were evaluated using fairly crude Likert scale surveys, open-ended questions and some anecdotal evidence. The evaluations had no research grounding and were prepared and analyzed by the initiator.

Stage 2 (Evaluation restricted in scope substantial amount of general feedback)
With time there was more evaluation, but the nature of that evaluation did not change. However a comparison between exam performance and attendance at workshops was done with the 1995 cohort and a paper published reporting the results. From 1995 to 1999, the evaluation of the workshop tutorials provided feedback that improved the teaching material and learning environment. Factors in the affective domain, such as student and staff enthusiasm, were evaluated using open-ended questions.

Stage 3 (Broad systematic evaluation feedback is specific, reliable, regulates growth)
From 2000 onwards a variety of evaluation tools has been used, including focus groups run by an independent researcher from the Institute for Teaching and Learning (ITL), minute papers and a specially designed Likert scale survey. In the focus groups, students have the opportunity to reflect with their peers on their own learning processes. Minute papers capture what is foremost in students’ thoughts as they leave the class. The Likert scale survey, developed in consultation with the ITL, evaluates how well the objectives of the Workshop Tutorials match student learning outcomes. Following our example, the Workshop Tutorials are now being developed and implemented at a number of tertiary institutions in Australia.

A Possible Model
Evaluation is a process which provides feedback. The structure of the feedback and the use of feedback can be varied. From our experiences we have identified three distinct stages. In stage 1 there is minimal feedback. In stage 2 there is substantial feedback, but there is no structure to the feedback and the uses have not been clearly identified. Although the feedback is sufficient to sustain the initiative, it is often sporadic, implicit, and difficult to extract. There is a cycle of evaluation, reflection on results and incorporation of results into the teaching development initiative.

Stage 3 describes a situation where there is a feedback loop over and above the cycle described by stage 2. This implies that the evaluation is designed to tease out certain aspects of the teaching development initiative. Specific data is siphoned off, analyzed and the results are fed back to prompt a change in the teaching development initiative. Feedback regulates the system. In comparison to stage 2, the issues are identified from the feedback. In stage 2 the issues have not been investigated thoroughly so the response is often not meaningful. From our experiences the feedback itself usually differed between stages 2 and 3.

Implications
A stage 3 evaluation does necessitate adequate resources. Success in competitive grants requires a firm research basis to an application and demonstrated competency with evaluation strategies. The latter can come from the evaluations described in stage 2. In our situation the stage 3 evaluation is part of a CUTSD grant.

The use of several evaluation strategies with the same group of students introduces the risk of over-surveying the students. We have large class sizes and the surveying is spread over two years. We have tried to keep students as well informed as possible of both the reasons for, and the results of, the evaluations. In contrast, a concentrated effort over a semester can produce significant results which continuous surveying over several years may not. The momentum may see analysis of data instead of surveys being filed away for analysis at a later date. There is often more time and effort invested in an intensive, shorter-term evaluation. This implies that the teaching development will benefit from this type of evaluation strategy.

Discussion
Evaluations of the Workshop Tutorials have provided valuable insights into the manner in which feedback is extracted and used. A well designed and well executed evaluation opens up the possibility of identifying definite features to be targeted. In addition, strengths can be identified by more than one method of evaluation. At a result the methods of evaluation and data analysis become more sophisticated and the parameters of the teaching development initiative define the evaluation requirements, rather than an arbitrary evaluation. The feedback has an objective and there is a defined feedback loop in the system. The feedback regulates the system. Data from education research findings can also be incorporated through this feedback loop. The use of feedback from evaluation allows the teaching development initiative to expand and grow beyond the initiators. The teaching development generates a life of its own.

Acknowledgements
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Rosemary Millar holds an MEd, is the Director of Junior Physics and leads the Science Faculty Education Research Group, SciFER.

Dr Kathryn Wilson is the Project Officer on the CUTSD (organisational) grant with interests in curriculum development and evaluation.

Dr Manjula Sharma has designed the Workshop Tutorials and leads the Sydney University Physics Education Research Group, SUAPER.
Searching, appraising and applying the literature: A model for lifelong learning

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Have you ever read a news report on a new medical finding and wondered if it applies to you? Have you ever searched for health information on the Internet? Have you wondered if the study was valid? If the report is reliable? What the statistics actually mean?

Evidence from the literature suggests that professional practice will not change unless learning and teaching is relevant to both consumers (eg patients and their families or other clients) and students (eg the soon-to-be-clinician, or other professional). In addition, teachers must be well prepared and teaching must be active and interactive. We believe that University programs must empower students to find and evaluate evidence from the literature throughout their learning and be able to incorporate it into everyday practice. We also see this as an example of students engaging in a kind of learning inquiry that is a model for lifelong learning.

We are now in the era of Evidence Based Medicine

Sackett et al (1996) defines evidence-based medicine as the conscious, explicit and judicious use of current best evidence in making decisions about the care of patients. Thus, competencies in formulating well-structured questions for searching the literature, critically appraising the literature and applying evidence are essential.

Why do we need evidence? Firstly, we need it for optimal practice in any profession. In medicine, 50% of information on therapy is outdated within two years! Secondly, we all need to deal with information overload. In the medical literature, there are 150 new publications daily. Medline - a huge electronic database, has more than 600,000 clinical papers, and the Cochrane library database has over 290,000 randomized controlled trials!

In the four year University of Sydney Medical Program, critical appraisal of the literature is an explicit curriculum component. There are clear learning objectives for evidence-based medicine (EBM) for each year level and, in the final year of the course, the emphasis is on finding and critically appraising summarized evidence (eg clinical guidelines and systematic reviews and meta-analyses) that synthesizes the findings of a number of clinical studies. Students are involved in evaluating the validity and applicability of these types of evidence for answering real patients’ questions in the context of problem-based learning tutorials and clinical attachments.

The first step is looking at the clinical question itself: Efficient searching for evidence depends on asking well-structured, answerable questions. How to ask a structured question is emphasized throughout the four years of the medical curriculum and there are plenty of practice opportunities for students. Strategic and efficient searching is what we are after. No professional has time to waste.

On our website we provide exemplar materials and useful tools for asking structured clinical questions, searching the literature, refining diagnoses, and understanding statistics, as well as downloadable criterion-based proformas for students to use in critical appraisal.

Criteria have been developed for the evaluation of most types of clinical study and we ensure that students gain practical experience with these. For example, if a student is evaluating a randomized controlled trial of therapy, s/he will carefully evaluate areas including randomization and its concealment, appropriate blinding, and patient appropriate outcome measures.

Application of evidence must take into account not only the research findings, but also the experience of the clinician, patient preferences and available resources. This is a key learning issue for students as the clinical component of their course increases. In the final year Child & Adolescent Health rotation, emphasis is on flexible content based on real cases rather than pre-determined topics and assessment based on application of skills.

What do our students say?

“The introduction of EBM into problem-based learning is good; it is more integrated - the cases were relevant and generated good discussion.”

“The web-based resources were a real lifesaver.”

“The choice of (evidence-based clinical) guidelines was appropriate and generated valuable discussions within the group.”

Students also commented positively on the role of student tutors for problem-based learning, in facilitating the integration of the learning of evidence-based medicine within and between the tutorials.

The emphasis for both students and teachers of evidence-based medicine is on obtaining practical skills - skills which are immediately transferable into the workplace and are essential for lifelong teaching and learning.

A/Prof Elizabeth Elliott has been involved since 1984 in clinical teaching at the universities of London, Leicester and Sydney, and recently she has initiated and developed a course for teachers of evidence-based medicine.

Prof Craig Mellis is head of the Department of Paediatrics and Child Health, Faculty of Medicine and chair of the Child & Adolescent Health rotation of the University of Sydney Medical program.

Wendy Oldmeadow completed a Master of Education degree in higher education and information technology at the University of Sydney in 2001, and she is Educational Support Officer for the Department of Paediatrics and Child Health, and a member of the Assessment Committee of the Faculty of Medicine.

Acknowledgement

The Vice-Chancellor’s Showcase of Scholarly Inquiry in Teaching and Learning showed that there was a very active, vibrant and scholarly community developing within the University aimed at studying and enhancing university teaching and learning. The success of the Showcase is due to a large number of people in the University who gave their time very generously.

In particular, I wish to thank:

- Members of the Showcase Advisory Committee: Professor Joy Higgs, Dr Karen Ginn, Fran Everingham, Associate Professor Mark Findlay, Jim Kazay, Dr Christine Crowe, Dr Lynne Bilton, Rosemary Millar, Professor Ann Sefton.
- All the excellent presenters, without whom the Showcase could not have happened;
- All the participants;
- Keynote speakers:
  - Dr Pat Hutchings, Senior Scholar, Carnegie Foundation for the Advancement of Teaching, and Director of the Carnegie Academy Scholarship in Teaching project
  - Professor Brian Stone, Mechanical and Materials Engineering, The University of Western Australia
  - Dr Tony Bates, Director, Distance Education and Technology, University of British Columbia
  - Jennifer Hines and her team from the Institute for Teaching and Learning;
  - Professor Ken Ellis and Professor Paul Ramden for their support.

Finally, I wish to thank Tai Popetu, the Showcase Administrator and Dr Angela Brew, the Showcase Director.

Michael Prosser
Associate Professor and Director, ITL.
Cultural Diversity


Clearly the editors and publishers of this collection of essays about the Muslim presence ’down under’ have an impeccable sense of timing! The writers confront stereotypes and reveal the history and diversity of the Muslims population in Australia. Of particular interest is Christine Anuar’s chapter ‘A Community on Campus: Muslim students in Australian universities’, which summarises research from the first national study of the experience of Muslim students. Official figures show that Australian Muslims - including women - are among the least well-educated, less able, and less likely to ‘fit in’ - a real consideration for those committed to inclusive curriculum design, teaching and assessment. Anuar’s research reveals that while Muslim students, especially women, may be cast as ‘oppressed’, the oppression they experience is often that of prejudice and stereotyping.

Online Teaching and Learning


Paloff and Pratt’s latest publication is organised into two thematic sections: Rethinking Education for an Online World, and Teaching and Learning in Cyberspace. This enables the authors to explore broad administrative and teaching and learning contexts. This is a ‘must read’ for administrators, lecturers and educational designers who know nothing, a little or a lot about online teaching and learning! KM
2002 CONFERENCES

WEBCT ASIA PACIFIC 2002 CONFERENCE
' a USERS conference: showcasing, demonstrating'
March 24-27, 2002
Melbourne, Vic.
http://www.webct.com/asiapac02.

QUALITY IN POSTGRADUATE RESEARCH CONFERENCE
'Integrating Perspectives'
April 18-19, Adelaide, SA
http://www.sapmea.asn.au/Postgrad/index.htm

BUILDING LEARNING COMMUNITIES THROUGH EDUCATION
Central Queensland University
June 16-19, 2002
Yeppoon, Qld.

ED-MEDIA 2002
World Conference on Educational Multimedia, Hypermedia & Telecommunications
June 24-29
Denver, Colorado, USA
http://www.aace.org/conf/edmedia

HERDSA 2002 CONFERENCE
'Quality Conversations'
Higher Education Research & Development Society of Australasia
8 - 10 July, 2002
Edith Cowan University, Perth, WA
http://www.ecu.edu.au/conferences/herdsa/

ITL PROGRAMS & EVENTS

The ITL ran its third 3-day program for 2001, 'Principles and Practice of University Teaching and Learning' at Cumberland Campus on 14-15-16 November. The program, which the University has now made mandatory for all new academic appointments, will be run four times in 2002, beginning on the Camperdown Campus on 20-21-22 February. Registration is from the ITL website.

Twenty-four members of University staff are currently completing the ITL's Graduate Certificate in Educational Studies (Higher Education), with a further 21 enrolled at the Canberra Clinical School. Completion of the Graduate Certificate earns points on the Scholarship Index for each graduate's department, for every year that they remain on the staff. Completion of the 3-day program is a requirement for those intending to enrol in the Graduate Certificate, and registration for both programs is from the ITL website.

WEBCT WORKSHOPS

University staff interested in registering for WebCT workshops should check the Flexible Online Learning Project site for information, dates and registration:

NEWS FLASH!

Congratulations!
The winners of the Vice-Chancellor's Awards for Excellence in Research Higher Degree Supervision 2001 were announced recently.

The recipients were:
Associate Professor Deirdre Coleman
Associate Professor Jennie Brand Miller
Professor Philip Kuchel

They join the ranks of the winners of the Vice Chancellor's Awards for Outstanding Teaching announced earlier in the year.

Individual awards:
Associate Professor Sybille Lechner
Dr Michelle Hyde
Dr Henry Collins

Group Award:
Ms Erica Scanbury
Dr Andrew McLachlan
Dr Susan Taylor
Dr Parisa Adami

The ITL would like to congratulate all winners of the 2001 awards. Information on these awards is available on the ITL website http://www.itl.usyd.edu.au/

Please send details of conferences on aspects of teaching and learning for listing on the Noticeboard to:
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