synergy

Issue 20 November 2004

Institute for Teaching and Learning
supporting the scholarship of teaching & learning at the University of Sydney

RESEARCH SUPERVISION

PEER MENTORING

LIFELONG LEARNING

2005 HERDSA CONFERENCE

E-MODERATION IN WEBCT

TOOLS FOR SELF-STUDY

about synergy

Synergy is a scholarly forum for the discussion and debate of higher education teaching and learning at The University of Sydney. Produced by the Institute for Teaching and Learning (ITL), Synergy is published twice per year, usually May and October and is circulated to staff through academic and research departments. *Synergy* is edited by Tai Peseta in consultation with the Director and staff of the ITL.

Contributions to *Synergy*

The Editor welcomes contributions from the university community all year round. *Synergy* particularly welcomes contributions written collaboratively by staff and students that:

• report on, or are critical reflections of an aspect of your teaching or your students' learning
• report on a teaching, learning or curriculum initiative designed to engage students in active learning or inquiry
• use disciplinary research/concepts to develop ideas about teaching and student learning
• report on curriculum initiatives designed to bring teaching and research together to improve student learning

From 2004, scholarly and research-based contributions to *Synergy* attract points on the University's Scholarship of Teaching Index. Unless negotiated with the Editor, contributions must be limited to 2000 words, adhere to the American Psychological Association (APA) guidelines for referencing, and be accompanied by a 300 word biography outlining significant teaching and learning research interests, publications and projects, and positions of leadership.

Publicising your event in *Synergy*

Staff and students of the University are welcome to publicise forthcoming higher education teaching and learning events in *Synergy*. These might be conferences, public lectures or seminars by visiting scholars relevant to higher education teaching and learning. However, the Editor reserves the right to negotiate such publicity.

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Contact the Editor

For further information about *Synergy*, visit the website – http://www.itl.usyd.edu.au/synergy, or contact the Editor, Tai Peseta on (+61 2) 9351 4657 or email synergy@itl.usyd.edu.au.

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contents

editorial ■■■■■■■■■■

It's been an unusually busy year for teaching and learning at The University of Sydney. With the second round of Academic Board Faculty Reviews now in full swing, we also anxiously await the findings and recommendations of our Australian Universities Quality Agency (AUQA) review. For this issue of *Synergy*, we invited Assistant Pro-Vice-Chancellor Professor Ann Brewer to offer her reflections of the lead-up, the process and an anticipation of the likely outcomes for the university community. No doubt, the report will provide us with much to think about.

We were thrilled to receive such a large number of submissions for this November issue. Each one represents a genuine commitment to enhancing the learning experience of students, and each challenges us to rethink or grapple with aspects of university teaching and learning in slightly different ways – from online learning, to peer mentoring programs to improving opportunities for clinical practice. This variation seems to be a hallmark of the stimulating and scholarly work taking place across campus.

To this end, we open with a paper by Alyson Simpson and Lesley Harbon - colleagues in the Faculty of Education and Social Work. Their work as e-moderators in *WebCT* points in part to a changed and changing learning context for students. It showcases two aspects of a scholarly inquiry process: one is in how university teachers might design a research study to explore and theorise the complexities of student engagement; the other is in their emphasis on how teachers might use metaphor to comprehend their shifting roles and identities in an online context. Next, we highlight a collaboration between Hugh Miller and Marc Raimondo – a student and academic respectively, involved in the Maths and Statistics Talented Student Program (TSP). Consistent with the literature on the teaching-research nexus, the challenge as their paper suggests, is in how we might move from seeing students as primarily an audience for the outcomes of our research, to providing them with more authentic opportunities to engage in inquiry themselves at all levels of the undergraduate curriculum. As Brew (1999) suggests, this is clearly an ongoing challenge. Fiona White from Psychology then shares her journey through the university's Development Program for Research Higher Degree Supervision. With the university's new policy on supervision training now in circulation since the beginning of the year, Fiona's piece reminds us of the merits in adopting a scholarly, research-based and pedagogical rationale for our work as supervisors. As we continue to explore in detail, the scholarship of teaching and learning, might it now be time to turn more explicitly to a scholarship of supervision development?

Colleagues from Medicine - Andrew Holland, Dianne Campbell and Wendy Oldmeadow outline an intervention designed to further develop fourth-year medical students clinical practice skills. We then move to Joe Kachan's slightly ironic Induction Manual for new academic staff. While the piece may prove slightly suspicious for those of us working hard to embed a student-focused approach to learning (Prosser & Trigwell, 1999) consistent with university policy, Joe was encouraged through his work in this year's ITL Graduate Certificate course to experiment with his academic experiences in writing as a form of critical provocation. His U-GABBLE manual ought to be read and engaged with as a similarly eccentric kind of experiment – one we hope will act as a basis for a whole host of public conversations about the sorts of academic and cultural practices that both enable and delimit a focus on student learning. In the Maths

Learning Centre, Sue Gordon unpacks her pedagogical work with a mature-age Psychology student– and notes the multidimensional power of self-study as a method for contributing to scholarly inquiry and enhanced teaching and learning practice. Biologists Mary Peat and Charlotte Taylor invite us to consider the place of virtual learning as an authentic attachment to the face to face context; Mark Freeman and Jill Skelton from the Centre to Advance Learning in Economics and Business (CALEB) report on the processes and outcomes of a new Peer Mentoring Program, while Danielle Merrett, Susanna Smith and Michele Cotton describe the work UniServe Science & the Post Graduate Foundation in Veterinary Science have been engaged in to develop a lifelong learning context for veterinarian graduates. This is a very full issue of *Synergy* so be sure to contribute your impressions at the online discussion forum located at the website.

As in our previous issue, the *Regulars* section profiles the work of a key individual working to enhance teaching and learning – this time, Mark Freeman, Director of the CALEB. With more and more faculties looking at the intersections between teaching, learning and disciplinarity, the early CALEB experience reveals a commitment to evidence-based cultural change. We also draw your attention to a key teaching and learning event - the 2005 HERDSA Conference to be held on this campus, 3-6 July 2005. We invite you to start thinking about the kind of contribution you might make. With a broad focus on 'higher education for a changing world', the conference is likely to attract researchers, scholars and practitioners from across the globe - a perfect opportunity to share some of your scholarly initiatives and develop new collaborations. We have also included the usual list of conferences, a book review, and we continue to highlight some of the individual and institutional research taking place in the ITL.

I welcome your feedback, comments and ideas for contributions. In particular, I welcome your thoughts about what we can do to improve Synergy so that it better reflects the teaching and learning initiatives and critical discussions within your context. Please feel free to drop me a line at synergy@itl.usyd.edu.au or visit our website at http://www.itl.usyd.edu.au/synergy.

My thanks again to each of the contributors who took the time to purposefully reflect on and write about their work. *Synergy* is only ever possible through your generosity and valuing of what teaching and learning might mean.

Tai Peseta, Editor
Institute for Teaching and Learning

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Prosser, M. & Trigwell, K. (1999). *Understanding Learning and Teaching: the experience in higher education*. Buckingham, UK: Open University Press & Society for Research in Higher Education.

I have two vivid recollections of the AUQA Audit week (26-29 July 2004): first, the continuous flow

Reflections of the recent AUQA audit

Ann Brewer, Assistant Pro-Vice Chancellor

I think some staff and students were concerned about this and felt that the Panel process used in the

2004 with a further two week period for our response to AUQA. Before departing the campus, the Audit Panel provided a brief oral report to the Vice-Chancellor at the conclusion of the week and some of the points made included:

of people criss-crossing the Quad, from the meeting room to the Senate Room, as they met with the Audit panel; and second, the overwhelmingly positive interactions from all who were involved in the process.

The AUQA preparations engaged a cross section of the community, including students, staff and management, who came together in the months leading up to the Audit visit to reflect on what the University stands for, as well as to identify its achievements and the improvements we want to make in the future. A lot of this work had been achieved by Deans and Heads, working with staff in carrying out the reviews of their faculties and organisational units in our routine program of self-assessment and quality improvement.

Throughout the entire process, which commenced a few years ago, I think there has been a surge of social learning and discovery within and about the University experienced by many staff and students, and this was transported into the AUQA preparations, accompanied by a feeling of conviviality. The advantage of sharing knowledge – *knowing-how, knowing-why and knowing-what* – in this way is fundamental to achieving high standards of quality assurance and continuous improvement outcomes.

The quality reviews captured both the complexity and dynamism of the University in a way which could not be optimally represented in the essentially bureaucratic nature of the AUQA Audit process itself.

AUQA visit did not provide enough time to hear about their experience. Nevertheless almost everyone emerged feeling that they had been able to put a good case forward.

All the indicators used in the development of our Performance Portfolio showed that the University is progressing well. Progress and innovation go hand-in-hand with some mistakes, and it is important that we learn from these and that they do not impede our willingness to investigate, experiment and discover new ways of doing things.

Collegiality is an integral part of life at the University of Sydney and, at times, can be such an all-encompassing and familiar experience for us that we take it for granted. This can also camouflage the community spirit, a strong part of everyone's experience of this University. I think the AUQA preparations provided me with an opportunity to reflect on these special attributes and bring them into explicit focus, because they are a strong foundation of the University's capability and outreach.

At the end of the AUQA Audit week, we all emerged a bit weary with review fatigue, but with a reinforced understanding of the University's credibility (trustworthiness); competence (knowledge and skill) and reliability (consistency of performance) which far outweighed the audit process itself.

Many staff are interested in the outcome of the Audit and we expect to receive the report in October

- • The value of the interdisciplinary nature of the Colleges as a major stimulus to education, scholarship, research and innovation and in providing a community for students and staff.

- • Academic Board Reviews had been a thorough and important contribution to strategic planning and to driving change.

- • Improvements in the First Year Experience – data collection, quality assessment (general), working groups with Faculties involved, training for new academic staff, video orientation for international students.

- • Success in international and national research grants, the effective system of ethics reviews, Sesqui Programs and support for grant writing and shaping.

- • Effective staff orientation, teaching, performance management & development processes, the Library and its culture of service, digital repository, access for people with disabilities to physical and online resources, signage.

- • Comprehensive liaison through professions, Koori Centre, sport, arts, culture.

- • The positive impressions of rapid change and improvement over the past five years and the evident forward momentum for the future.

The AUQA process itself is costly in time and money, so we need to be convinced of the benefits. The University anticipates a positive outcome. But regardless of how we fare, everyone involved, both directly and indirectly, need to be acknowledged for their contribution to an important part of the University's quality assurance and improvement strategy.

T&L *snapshots*

HERDSA *Higher Education Research & Development Society Australasia*

**2005 HERDSA Conference Theme: Higher Education in a Changing World
3-6 July, 2005
Eastern Avenue Auditorium, The University of Sydney**

The theme of the 2005 conference *Higher Education in a Changing World* will provide an opportunity for participants to engage with some of the challenging and fundamental questions about the nature of higher education in contemporary society.

The conference will be a vibrant scholarly space to critically and creatively engage with new ideas and research about teaching and learning. It will be a conference where students, teachers and policy makers can meet and share their experiences, research, ideas and reflections on higher education in a changing world.

Call for contributions

We invite you to start to think about how you might contribute and participate in this exciting conference. We will be calling for contributions in a variety of formats. As well as the traditional research and theory papers - with plenty of time for discussion - and showcases of innovative practice, have you ever thought about discussing your ideas over wine, cheese and a walk with the keynotes? How about talking about teaching and learning in an 'ideas marketplace'? You may find

the following sub-themes helpful in determining the kind of contribution you would like to make.

1. Changing higher education communities: learners and teachers

• New visions of the academic community

• Universities as learning organisations: fostering change

• Ethics and values in a time of change

• Diversity: imagining a new inclusivity

• Disciplinary cultures and organisational change

2. New teaching for new students in a new context: pushing the boundaries

• New learning needs new teaching

• Inhabiting the virtual learning space

• Reinventing the university classroom

• Teaching as a scholarly activity

• Teaching and learning on a world stage

3. Higher Education and the public: participating in changing agendas

• Responding and shaping agendas

• Creating a future role for higher education

• Meeting new purposes and contesting accountabilities

• Opening new spaces for critical inquiry

• The politicising and theorizing of academic development

Who should participate?

The conference will be of interest to those working in a range of Higher Education settings. It offers a forum for the presentation of cutting edge research in the field as well as the opportunity for scholarly engagement with the practice of teaching and learning in higher education. The conference welcomes the involvement of all groups - students, academics teaching in the disciplines, staff who provide support for teaching and learning including information and communication technology experts, librarians, learning skills staff, academic developers as well as university managers and policy makers. The theme of the conference is one that challenges us to rethink higher education in the context of our changing world. We hope it will be an opportunity for the all members of the higher education community to exchange ideas and work together and in doing so to move outside of familiar networks and establish new collaborations and relationships across the sector.

For further information, visit the conference website at:
http://www.herdsa.org.au/2005

This article emerges from a collaborative study we undertook as colleagues belonging to the same Research Cluster group in the

our teaching in higher education contexts to date. Our units of study made use of traditional course

drawbacks of ICT use impacting on student learning, have been identified in an ever-increasing list of research reports (Mitchell & Mayer, 2002; Thomas, 2003; Breuleux et al., 1998; Morgan, 2001; Snyder, 1998, Kippen, 2003). Being teacher educators, we were also

The emerging role of the e-moderator: a research report

Alyson Simpson & Lesley Harbon, Faculty of Education & Social Work

Faculty of Education and Social Work. Our teaching in higher education has provided us with an opportunity to utilise the on-line course management program *WebCT*, and in particular, the Discussion Board tool. This Discussion Board course tool on *WebCT* allows asynchronous discussions between teacher and students or students and students. For both of us, the Discussion Board allowed more "time on task" on top of the regular face-to-face classes for their students.

While we are aware that a common experience in the use of Discussion Boards has been "*product* as outcomes", an additional, unexpected element of learning emerged from our work with students on-line. This element was the building of a community of learners. So our research focused on the role of the e-moderator in the complex construction of learning communities, in particular, investigating the pedagogical implications for teaching and student learning. We designed our research to analyse more closely, the patterns of interaction in the Discussion Boards. This research is informed by current theory on learning communities and teachers' on-line pedagogies. It also represents a framework for developing the scholarship of our teaching.

Introduction

In framing and planning what is essentially a form of research-led teaching, we reflected and analysed

delivery in face-to-face tutorials as well as on-line delivery using Discussion Boards. In units where modes of delivery were blended, we experienced different levels of student engagement with the learning experiences and assumed that these were due to the different modes of delivery. But we suspected that there was "something more" going on than just attributing this difference to a mode of delivery. After critical reflection and a number of conversations, our emerging roles as e-moderators in Discussion Boards grew to be a viable topic of research. We noted other scholars who have interrogated the term 'community' from various perspectives in learning contexts (Salmon, 2000; Wenger, 1998; Wells, 1999; Amit 2002; Mitchell & Mayer 2002; Morgan, 2001). We planned a collaborative study that would compare the role of the e-moderator in the construction of learning communities in two different higher education scenarios, and that would allow us to examine emerging models of e-moderation in order to inform our teaching.

Aims and significance

Previous research on learning in educational contexts has suggested that strong, active learning communities enhance 'the social' and thus student learning outcomes. Such research had been carried out in traditional teaching scenarios and therefore we hypothesised that something similar might be true for "virtual" teaching and learning scenarios. The benefits and

familiar with literature such as the UNESCO report, *Information Communication Technologies in Teacher Education: a planning guide* (UNESCO, 2002, p. 34), which states that "[s]tudents should experience innovative technology-supported learning environments in their teacher educations programs". There was no doubt that ICTs were going to be a continuing feature of our teaching contexts.

In our initial conversations about on-line teaching, the importance of social relationships to students was continually emphasised. We shared memories of how students utilised the WebCT Discussion Boards: to post message topics about such varied topics as assignment deadlines, to recent movies to health problems. These student discussions seemed to us a major influence on the success or failure of online teaching: social interaction. What was made possible in the on-line context was the construction and continuation of interpersonal engagement through "virtual" communication. While we acknowledged that communication also took place in face-to-face tutorials, we also recognised that limitations of time and physical space could not create the same kinds of interactive opportunities now being offered in "virtual" time.

We decided to integrate Discussion Boards in two teacher education units of study as a means of enhancing students' learning experiences

in on-line communities. Although initially planned to fulfill university goals (graduate attributes to include familiarity with ICTs), this work became the basis of our current research study - a comparative analysis of the different experiences of two disparate groups in the use of Discussion Boards. If the research about educational contexts is correct, and "the social aspect" is a contributing factor to the success of student learning, then this research is significant because it aims to show how the e-moderator may affect the construction of social interaction in on-line learning communities.

The remainder of this article describes the structure of the study, the methodology and findings to date.

Stages of research

The table below sets out steps in the research as key points in the research process.

Stage 1
Initial discussions, December 2002, about common patterns of interaction among students in online discussion boards when ICT was introduced within existing units of study
Early conceptualisation, January 2003, of research framework from e-learning and community building theory
Stage 2
Application, February 2003, for internal research funding - $500
Stage 3
Collection of email data, March to June 2003 (AS) and March to November 2003 (LH) and end of unit survey/interviews
Initial findings from data for presentation at Joint Symposium (English, Languages & Literacies) with University of Melbourne colleagues, September 2003
December 2003, abstract prepared and accepted for international conference, Jonköping, Sweden, July 2004
Stage 4 (in process)
Coding of data according to analysis frame Writing up of findings

Methodology

Content analysis and the grounded theory (Strauss & Corbin, 1990) method are at the basis of this study and informed the modes of data collection and analysis.

Participants

Two groups of education students participated in the research: the first group, five postgraduate doctoral students enrolled in a Doctor of Education (EdD) program, and the second group, fifteen pre-service foreign language education teachers, enrolled in both the Combined BA/BEd and MTeach programs. These groups of students participated in on-line discussions mandated as part of their course requirements, and also completed questionnaires and focus-group interviews.

Instruments

Participants completed an initial survey, requiring them to indicate their prior experiences, if any, with WebCT Discussion Boards, and asking them to comment on their expectations for what would occur through their participation in the Board. Participants also completed an end-point survey, requiring them to indicate their reactions towards their experiences of writing on the Discussion Board, about the e-moderator's role, and about the learning community and the perceived impact the Board had on their learning outcomes. All participants were offered the opportunity to provide more reflective reactions to these questions through their participation in an end-point interview.

Data collection and analysis

By using the inductive, grounded theory approach (Strauss & Corbin, 1990), we have created early indications of models of on-line e-moderators' roles. Creating the models has been a two-step procedure (as the data analysis is currently being finalised). First, the initial coding of written responses on the WebCT Discussion Board has been examined for emerging themes, concepts, and dimensions of those concepts (Strauss, 1987; Strauss & Corbin, 1990). These concepts (emerging roles for e-moderators) are:

- E-moderator as course facilitator/administrator;
- E-moderator as empathic listener; and
- E-moderator as joint builder, alongside students, of a learning community.

There has also been some linguistic analysis using systemic functional linguistics (Halliday, 1994) as it allowed us to trace the interpersonal construction of a learning community. As we continue to code, they emphasise that these are still early indications of models. In order to exemplify what data are emerging, some are reproduced in the next section.

Emergence of roles

One pattern of interaction that has emerged is the *e-moderator as course facilitator / administrator*. As lecturers in their units of study, we both had the responsibility of ensuring that all students worked successfully in the on-line environment, involving an understanding of the processes involved in the unit of work. The construction of this role can be seen in examples below.

Sample set A:

"Yup, you're online. Looking forward to hearing more from you." (May 2003, Lesley)

" During the week, read some of the postings on this question reflect on your own hopes and thoughts and post a response to the range of issues " (February 2003, Alyson)

The topic of the message in Sample set A is focussed on administrative matters and technical details. However, there are also markers of interpersonal relationship such as the exclusive naming of student as "you" as distinct from inclusive use of "we" later in the discussion thread. Clearly, we are encouraging the students, yet the choice of personal noun acts to separate lecturer from student. Alyson also signals a position of power over the student by the use of a series of direct commands ordering the student to carry out a series of tasks.

A second pattern of interaction that has emerged is the *e-moderator as empathic listener.* We include comments which indicate shared understanding of student problems. The construction of this role can be seen in examples below.

Sample set B:

"Yes, John. The stress and strain of us teachers ALWAYS having to beat our last best lesson!" (May 2003, Lesley)

"I hope I have tailored it [a question] to be relevant to all." (April 2003, Alyson)

The topic of the messages in Sample set B is focussed on emotional problems and the importance of considering all students' needs in the learning experiences. The interpersonal markers in the response from Lesley are inclusive use of "us" and "our" as well as direct naming of an individual,

"John". Alyson retains her position of expert singular with the use of "I". Although she does use the inclusive term "all", the reference does not include her.

A third pattern of interaction that has emerged is the *e-moderator as joint builder*, alongside students, of a learning community. We both encourage students to make links to prior learning by shared recollection or references. By taking this stance, we are making spaces for students to construct their own learning. The emergence of this role can be seen in examples below.

Sample set C:

"Do you recall any of your languages courses proceeding according to any one or more of these methods? Tell us a little bit about what you remember being a student in courses based on certain methods." (May 2003, Lesley)

"Hi all, as this week is not an official WebCT postings week I am starting a thread where you may just begin to reflect on the EdD process." (March 2003, Alyson)

The topic of the message in Sample set C is focussed on memory and reflection. The interpersonal markers in the message from Lesley are a mix of inclusive and exclusive. She shifts between direction as powerful moderator using commands "tell" and separating herself from the group "you" to including herself as part of the group "us" and asking questions instead of commanding "do you recall?" By contrast, Alyson maintains her separation naming the others as "all" and herself as "I". Although she is still directing their work she now makes use of modality "may" to 'hedge' her indirect command.

Discussion

From the above glimpse at this study's initial findings, it is pos-

sible to see that there are patterns of interaction being set up by the e-moderators as they take up different roles in the two learning communities. It is also possible to see from these examples that there are different social relationships being constructed. The researchers may eventually argue that Lesley is less formal and behaves as an equal in the group, whereas Alyson is less inclusive and more likely to set herself aside as the leader. Linguistic analysis is ideal to track the construction of these roles.

The data sets sourced from both the pre-service teachers and the postgraduate education students are suggesting that at least two distinct models of learning set up in both inclusive and hierarchical learning communities can be orchestrated by conscious efforts of the e-moderator. And necessarily, each learning community context will require different models to be constructed. However, it is noted that whatever the model of learning, both e-moderators encourage teacher-student interaction through their own "humanness" (Kippen, 2003 p26) and this strongly supports the creation of a learning community.

There is a growing trend to include on-line components in teacher education courses in Australian universities that supplement or replace face-to-face work. Alongside this trend is an increasing amount of research-led teaching aimed to investigate the impact of such on-line work. Questions are being asked about whether the use of on-line teaching brings about the beneficial results for students. Evidence is sought which will demonstrate that on-line discussions can "diversify and enrich quality teaching practices, enhance student learning, as well as facilitate high educational outcomes for all stakeholders" (Simpson &

Harbon, 2003): all this while creating a sense of community. There are more questions yet to be asked and future course design using WebCT within different programs needs to be carefully considered and evaluated.

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NB: All students' names have been changed to obscure their identity.

Alyson Simpson is a Lecturer of English for preservice primary teachers in the School of Education and Social Work. Her current research interests include the use of online discussions in both higher education units of study and in primary schools. She coordinates units of study in the undergraduate and post graduate programs as well as the EdD within the Research higher degree program for the faculty. She is currently working on a TIF project to improve flexible delivery of the EdD through the use of the Internet.

Lesley Harbon also lectures in the Faculty of Education & Social Work in second language acquisition methodology units for the preparation of pre-service language teachers. Her research includes projects on intercultural languages education, immersion languages teaching as well as this beginning interest in research-led teaching such as is found in this paper. Lesley is the Editor of *Babel*, the peer refereed journal of the Australian Federation of Modern Language Teachers' Associations and she was recently a writer for the Commonwealth Asian Language

Professional Learning Project. She is the Master of Education coursework coordinator for the faculty.

Both Alyson and Lesley are members of the Teaching and Learning Committee in the Faculty. They have presented a paper and a poster on the topic of their research respectively at a joint symposium with the University of Melbourne and at the recent Information and Communications Technology showcase. Because of their common membership of the English Language and Literacies Cluster in the School of Development of Learning and their shared commitment to scholarship in teaching, Alyson and Lesley plan to continue their dialogue in order to maintain a practical connection to research led teaching.

You can engage with Alyson and Lesley in a conversation about their work by visiting the online discussion forum at:
www.itl.usyd.edu.au/synergy/forum

or email Alyson at:
a.simpson@edfac.usyd.edu.au

The Talented Student Program (TSP), available through the Faculty of Science at the University

The Talented Student Program: an integrated learning solution

**Hugh Miller and Marc Raimondo,
School of Mathematics and Statistics**

of Sydney, is a unique program which allows outstanding students to tailor a degree to suit their own interests. Participation in the TSP is offered to high performing undergraduates in all years of their degree. Students have the opportunity to takes courses early, or even accelerate their degree. Exceptional students in third year may undertake a research project supervised by a member of staff.

This year Hugh Miller (3rd year TSP student in mathematics) has undertaken such a project on 'Change-Point Analysis of Hydrological data' under the supervision of Marc Raimondo (lecturer in statistics). This project aims at detecting significant changes in the pattern of Australian rainfalls over the last century. In this article, we give our respective views on the Talented Student Program.

A student perspective – *Hugh*

One of the major benefits of the project has been the chance for me to develop mathematical research and independent learning skills. The ability to find, read and understand relevant textbooks isn't something to take for granted and isn't part of a typical lecture-tutorial course. The project has also improved my data-gathering skills, having to find sources for meaningful hydrological data to analyze. Mathematics, like most other disciplines, does not occur in a vacuum, and the ability to research concepts and data is a skill that will prove invaluable in many spheres of life.

I have appreciated how the one-on-one supervision and the less pressurized assessment procedure really allow the learning process to flourish. Many ideas are able to be worked on concurrently and the pace of learning is flexible to my needs and understanding. It is refreshing to learn in a way that focuses on a broader project outcome rather than learning for the sake of doing well in the next assessment or exam. In this way I feel that the learning process is far more natural and satisfying.

Finally this project has given an opportunity to work on an area outside the normal syllabus. The stimulation of learning about topics that are less well known combined with the opportunity to apply it to new areas and real world problems like water supply provides a perfect taste of what life as an academic researcher is all about. It is certainly fantastic preparation for an honours year, and whatever lies beyond it!

A supervisor perspective – *Marc*

When students enroll at the university, they are told that lecturers and professors are active researchers. This is one of the major differences between university and a typical school education. The interaction between active researchers and talented, highly motivated, students is one of the most interesting features of university education. In early years, however, university courses are (understandably) following classical textbooks and it is often difficult for a student to imagine what research is actually like. In mathematics and statistics students usually have to wait until honours year to have their first experience in research.

At this stage however, there is a strong pressure for students to finish their degree as well as to produce a significant research work in a short time frame rather than more open-ended research tasks.

The TSP offers a fantastic opportunity for motivated students to undertake an individual research project during their undergraduate years. For a lecturer, this is an excellent chance to extend the scope of a lecture course to research activities. In 5 weeks, Hugh has collected some very interesting data, developed his computer programming and simulation skills and researched some advanced probability theory from the mathematics library. These types of exciting scientific activities are hard to include in a typical undergraduate statistics course.

Over the last 4 years I have supervised 3 TSP students in statistics and I have been amazed by the results. TSP students are very committed and the quality of the research output is impressive. Hugh's feedback in the previous section summarises very well the positive response of students regarding the TSP and illustrates that for motivated undergraduate students, research activities are a very stimulating part of academic studies and academic life. There is now a large literature on the teaching-research nexus in higher education and while there appears to be opposing views regarding a positive relationship between teaching and research (Elton, 2001), one has to agree with Hounsell (2002) 'that this relationship is more complex, interesting and important than it may first appear'. From a student perspective, Zamorski (2002) argues that 'a key distinction was made between teaching which simply placed students as audiences of the research carried out by their teachers and teaching which

engaged students directly in the research activity'. Undergraduate students may often feel excluded from the research community and the impact of research on teaching may be questionable. On the other hand, integrated research activities (such as TSP) can help students to better understand the research and teaching processes. I think that this is a critical point for the development of a positive link between teaching and research. White the TSP goes some way to involving students in inquiry, following Brew (1999), the challenge will be in how we can integrate research and inquiry in more innovative ways in the undergraduate curriculum as a whole.

For information on the TSP within the School of Mathematics and Statistics contact Daniel Daners at: d.daners@maths.usyd.edu.au

…a key distinction was made between teaching which simply placed students as audiences of the research carried out by their teachers and teaching which engaged students directly in the research activity (Zamorski, 2002)

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The Link Between Teaching and Research http://www.bournemouth.ac.uk/academic_services/centre_for_ap/teaching_research.html

Hugh Miller attended high school at Barker College in northern Sydney, completing his HSC in 2001. Accepted into the University of Sydney on a Distinction Scholarship for a BScience (Advanced Maths)/B Commerce degree, he has enjoyed the learning opportunities presented to him. Through the TSP he has been able to take third year subjects early as well as the current research project. In January to February 2004 he undertook a vacation scholarship in the department of mathematics, where he was able to learn and research in financial mathematics with Dr Peter Buchen in a one on one supervised position similar to the present. The continued enthusiasm of lecturers and researchers in supporting his endeavours has been an integral part of Hugh's success and mathematical development.

Marc Raimondo is a Lecturer at the School of Mathematics and Statistics. He is involved with the coordination of all third year statistical courses. He has supervised TSP-students projects similar to the present in areas ranging from fractal activity features in financial data to extreme value modelling of rare events. His research and teaching activities include collaborations with University of Paris VII, the Australian National University, Lund University and Stanford University.

You can engage with Hugh and Marc in a conversation about their experiences with the TSP by visiting the online discussion forum at: **www.itl.usyd.edu.au/synergy/forum**

or email Marc at: **marcr@maths.usyd.edu.au**

Supervision has always been of paramount importance to me throughout my academic career, both as a student and now as an academic. However, I did not realise how much I took my supervision practice for granted until I participated in the Development Program for Research Higher Degree Supervision offered through the Institute for Teaching and Learning (ITL). Through its workshops and modules, the Program has developed my awareness of the multi-dimensional aspects of what I once thought was quite a straightforward uni-dimensional relationship - between the student and their supervisor. Two main issues have become particularly salient to my current supervisory experience - the importance of structuring student feedback in a constructive way and secondly, dealing effectively with the new and emerging primary-associate supervision relationship. I believe that these issues present important challenges that I will need to explore in order to continue my development as a supervisor. These two issues were the focus of the reflective case study I completed as part of the Program's Recognition Module. I share some of that work below.

Structuring effective and constructive student-supervisor feedback

A common element to all student-supervisor relationships is the issue of feedback - be it verbal or written. Feedback helps students gauge the development of their ideas and research progress. Some students, depending on their personal needs may require more guidance from their supervisor. It may seem to them that the nature of this feedback can either make or break their research degree experience. So, feedback needs to be constructive.

Developing as a research supervisor

Fiona White, School of Psychology

'Constructive feedback' is in great demand by students but at the same time can prove a difficult challenge for supervisors. Similarly, identifying what constitutes 'too much' or 'too little' feedback is also important. Either way, how a student perceives feedback will depend on a student-supervisor relationship that is based on clear communication and negotiation. Here, students should be encouraged to make clear their goal(s) for each meeting and these should be evaluated collaboratively. They should also have an opportunity to articulate the type of feedback most useful to them. This is about openly discussing students views of the nature of both written and verbal constructive feedback, together with any past experiences with helpful or unhelpful feedback. For me, this would be a useful induction strategy to help set the scene for developing a productive student-supervisor relationship.

In thinking about how I can apply these ideas about effective feedback to my own supervisory practice, I as the supervisor need to consider a student's work worthy of comment. If I were to provide only vague encouragement on a draft of a student's work, it may leave them feeling dissatisfied and possibly hamper their future writing and learning. Not surprisingly, there is a significant literature on 'effective feedback'. The Program module *Helping your student write* introduced me to several important pieces of research. For example, Boud (1991) has written extensively on providing students with construc-

tive comments that help them learn more effectively. He argues that *helpful feedback* focuses on the student's needs rather than the needs of the critic, whereas *unhelpful feedback* is global and does not suggest alternatives. Feedback should be seen as more descriptive and less judgemental than criticism. In addition, Brinko (1993) identifies several factors which can help determine the nature of the feedback I can provide to my students. She argues that I need to consider the needs, concerns and commitment of each of my students; the policies and conventions of my School and Faculty on guidelines relating to student feedback; the requirements of an external body and finally, my own time. I want to provide a structure for students to enjoy their writing experience so they can progress smoothly to completion.

One strategy I will take up is to talk to colleagues in my School about the strategies they use to provide effective and constructive feedback to their students. They may use methods that I too could implement. Feedback from my colleagues may be useful if I am having concerns about the student's written work, or the feedback I have written. My colleagues, particularly some of the professors with extensive supervisory experience can offer their expert views. Another option would be to encourage student self-assessment and compare my feedback with their own self-assessment. Self-assessment can be very useful as most students are known to routinely test themselves before they present a piece of work to their supervisor. Finally, and most importantly, encouraging students to give me written or verbal feedback on my constructive comments provides me with a useful record of the 'feedback process'. I can use students' feedback as a measure of the effectiveness of my supervision.

If I improve my practice in these ways then it may help to reduce any anxiety students have about previous experiences of unhelpful feedback from past teachers and lecturers. It may also reassure students that academics are interested, and do take time to carefully read their work. I hope that this will also encourage students to perform and improve their writing ability and overall learning experience. Along with documenting my reflections in a Supervision Journal, there are several strategies that I will employ to make these changes possible.

- Ask students how they think they are going and encourage them to self-assess their first chapter

- Provide both specific and general feedback in order to give students a focus (the specific comments) and overall (the general comments) picture of progress

- Discuss any written feedback I provide to students

- Ensure that feedback is balanced and that it includes strategies for moving students forward in their research as well as encouragement and praise

- Try and give feedback as regularly and as frequently as possible.

Clarifying the primary-associate supervisor relationship

I have been concerned for some time now about how to best manage the primary-associate supervisor relationship. This supervisory arrangement is now common within the School of Psychology, and seems to be the preferred model across the whole university. There appears to be several benefits in this model. It brings together supervisors who are experts in different fields in order to benefit the student's project. For students engaged in interdisciplinary work, co-supervisory arrangements can be ideal. But in order for this model to be effective, it is essential that these roles are clarified for both the supervisors themselves and the student. In many cases, this is not the norm. There is also a need for some understanding, clear communication and rapport in the relationship between the primary and associate supervisor. Finally, for effective co-supervision, 'boundary-setting' ought to be negotiated - that is, deciding when it is appropriate that one supervisor or both supervisors need to offer their input or be present for meetings with the student.

For instance, a neophyte supervisor who takes on the role of associate supervision will need to negotiate their contribution to the project. I would need to consider how a shared supervisory arrangement will benefit the student. I may also need to collaboratively establish some appropriate roles and responsibilities for working with the other supervisor. These should incorporate the School's guidelines and University regulations for 'shared supervision'. And most importantly, we ought to solicit student feedback and monitor the effects of these negotiated roles and responsibilities. Finally, whenever I am unsure of my co-supervisory role, I will endeavour to ask the postgraduate co-ordinator for clarification on shared supervision and my expected role in the relationship.

There are several strategies that I could employ to improve the clarity of the primary-associate supervisor relationship. I could invite my co- supervising colleague and my student complete the 'Role Perception Rating Scale (in the 'Preparing for Supervision' module) and the 'Functions of Supervisors Survey' (Moses, 1992)
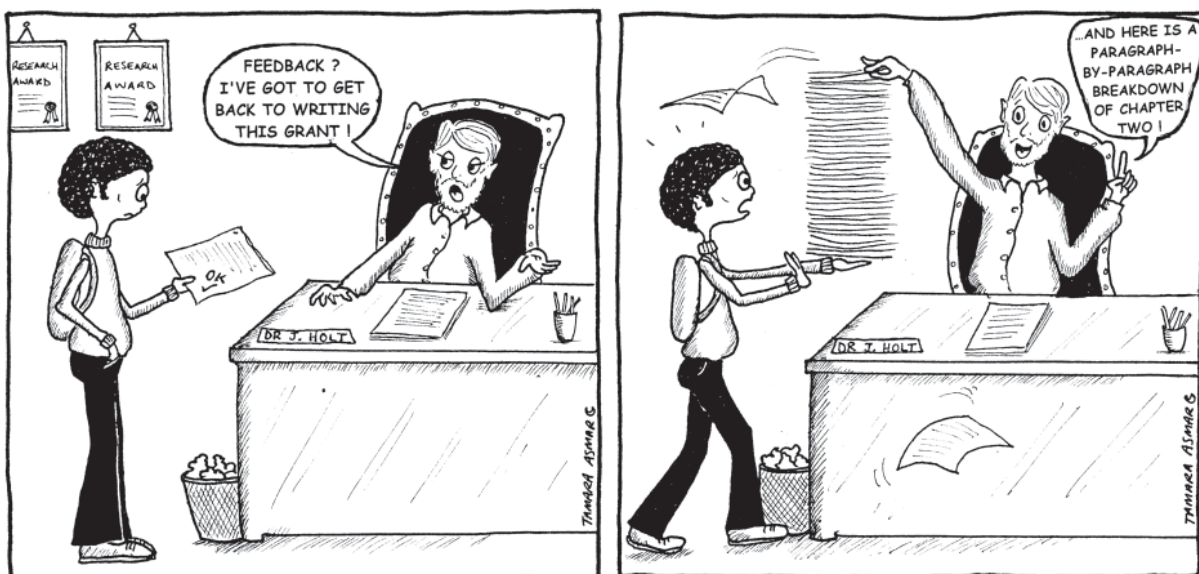
with me, and then compare and evaluate each of our responses as a mechanism for discussion. These tools are useful for teasing out where differences in perception of the relationship actually lie. Also, whenever I provide feedback to my student, ought to make this transparent to my co-supervising colleague and visa versa. This can be done relatively easily by way of email attachments or via face-to-face regular group meetings. I can then draw on my Supervision Journal to document my reflections of my colleague's responses, student feedback and my impressions of how I can improve my practice.

Overall, the Recognition Module case study process has highlighted issues about my present and future supervisory experiences. I look forward to reading these ideas again in a year's time to note whether my future aspirations have been transformed into the present supervisory experience that is effective and enjoyable for myself and my students. It has been an essential for my ongoing development as a research supervisor.

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...there is also a need for some understanding, clear communication and rapport in the relationship between the primary and associate supervisor.

Fiona White is a Lecturer in Psychology and is currently the primary supervisor of four PhD students and the associate supervisor of one. Fiona is a member of the School's Teaching and Learning Committee, the Distance Education Officer and WebCT project manger for the School of Psychology and the Psychology representative on the Faculty of Science Teaching and Learning Committee. Fiona and her research associates have been awarded several teaching grants – i) a Faculty of Science Teaching Improvement Fund (TIF) entitled *Managing group work and assessment* and ii) a Teaching Development grant entitled *Flexible modes of delivery for first year Psychology*.

In her capacity as Distance Education Officer, Fiona has also overseen an evaluative study of the effectiveness of several education technologies to the Orange campus - including Video Conferencing (VC) and Digital Video Taping (DVT) of Introductory Psychology lectures. These findings are to be published in the peer reviewed journal *Teaching and Learning of Psychology*. Finally, Fiona and two of her colleagues have written a textbook titled Developmental Psychology: from infancy to adulthood which is currently in production. Fiona's rationale for writing this book was her genuine interest in improving the pedagogy of developmental psychology textbooks for students in Australia.

You can engage with Fiona about her research supervision development by visiting the online discussion forum at:
www.itl.usyd.edu.au/synergy/forum

or email Fiona at:
fionaw@psych.usyd.edu.au

Visit The Development Program for Research Higher Degree Supervision at:
http://www.itl.usyd.edu.au/postgrad

ITL *focus*

Achievements in short

Michael Prosser

Keynote at the Responding to Student Needs in Scottish higher education conference, Scottish Quality Assurance Agency, Glasgow, June 2004.

Invited presenter at the First International Conference on the Scholarship of Teaching, Indiana, USA, October, 2004.

Associate Editor, British Journal of Educational Psychology

Christine Asmar

Keynote – Cultural difference in Western universities: Intercultural and internationalised responses to a changing world. Improving Student Learning Symposium, Birmingham, UK, Sept 2004

Simon Barrie

Keynote - Graduates for a Changing World. Griffith University. Oct 2004

Improving Student Learning Symposium: a conference report

Heather Middleton and Paul Ginns recently attended the 12th Improving Student Learning Symposium at Jury's Inn Hotel, Birmingham, 6-8 September. Heather co-presented "Complex coherence in the experience of teaching and research - metaphors of lived experience", on results from a current ARC project. Paul co-presented "Associations between postgraduate research

students' experiences and learning outcomes", also discussing results from a current ARC project. The conference was enjoyable, challenging and collegial, and Birmingham itself held many surprises for lovers of both modern and Victorian architecture, not to mention hand-pumped beer. You can read more about the conference at: http://www.brookes.ac.uk/services/ocsd/1_ocsld/isl2004/abstracts/.

Recent ITL staff publications

Applebee, A., Ellis, R., & Sheely, S. (2004). Developing a blended learning community at the University of Sydney: Broadening the comfort zone. *In Beyond the Comfort Zone. Proceedings of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE) Conference*. Perth, Western Australia, 5-8 December.

Barrie, S.C. (2004). A research-based approach to generic graduate attributes policy. *Higher Education Research and Development*, 23(3) 261-276.

Ellis, R.A. & Calvo, R. (2004). Learning through Discussions in Blended Contexts. *Educational Media International*, 40(1) 263-274.

Ravelli, L.J. & Ellis, R.A. (Eds.) (2004). *Analysing Academic Writing: Contextualised Frameworks*. London: Continuum.

Heng Kiat Tan and Prosser, M. (2004) Qualitatively different ways of differentiating student achievement: a phenomenographic study

of grade descriptors, *Assessment and Evaluation in Higher Education*, 29, 267-282

Prosser, M. (2004). A student learning perspective on problem-based learning. *European Journal of Dental Education*, 8, 51-58

Trigwell, K. and Prosser, M. (2004). Development and Use of the Approaches to Teaching Inventory. *Educational Psychology Review*, 16, 409-426

Conference presentations

Peseta, T. & McShane, K. (2004). On being reflexive: journal writing and researcher subjectivity in the PhD. Paper presented as part of the symposium 'Changing Knowledges, Gender and the Doctoral Process' at the Annual Meeting of the American Education Research Association (AERA). San Diego, USA, April 12-16.

Peseta, T., Manathunga, C., Sutherland, K. & Barrie, S.C. (2004). Liminality, identity and hybridity: on the promise of new conceptual frameworks for re-theorising faculty/educational development. Symposium at the International Consortium for Educational Development (ICED) Conference, University of Ottawa, Canada, June 21-23.

For further information about the research work of the ITL, visit our website:

http://www.itl.usyd.edu.au/research/

During their training, graduates of the University of Sydney are expected to acquire the knowledge to apply theory to practice in familiar and unfamiliar situations, in addition to the practical skills appropriate to their discipline (Chair, 1997). The ability of medical students to obtain adequate experience with practical skills is particularly important and has been made a course requirement by regulatory bodies (General Medical Council, 1993). Students enjoy learning practical skills, particularly when there are clear and specific goals with prompt, constructive review of the student's technique (Trigwell & Prosser, 1996; Ramsden, 1992).

Despite these requirements, medical students find it difficult to obtain experience in simple interventional techniques (Carr, Tregonning, & Carmody, 2001; Celenza, Jelinek, Jacobs, Kruk, Graydon, & Murray, 2001). There remain practical and ethical issues regarding access to appropriate patients, especially when such procedures are invasive, involve intimate areas or children (Carr, Tregonning, & Carmody, 2001; Lane, Ziv & Boulet. 1999). In addition, students may perceive intense performance pressure when dealing with patients, parents and other professionals (Probert, Cahill, McCann, & Ben-Shlomo, 2003). This potentially highly charged environment greatly reduces their learning ability (Biggs, 1999; Trigwell & Prosser, 1996).

The research study

We postulated that medical students would value practical training, using appropriate mannequins and mod-els, in paediatric basic and advanced airway skills and urinary catheterisation. Fourth-year medical stu-

Learning practical paediatric clinical skills

Andrew J A Holland, Dianne Campbell & Wendy Oldmeadow, Paediatrics & Child Health, Children's Hospital at Westmead Clinical School

dents in the University of Sydney Medical Program undertaking a nine-week Child and Adolescent Health Rotation in 2003, were invited to attend optional small-group workshops on basic and advanced airways skills and urinary catheterisation in children. Groups of four to six students were taught basic and advanced airways skills or urinary catheterisation by academic paediatric clinicians in thirty minute stations. Before and after each station, students completed a one-page questionnaire on their confidence levels and were invited to comment on aspects of the teaching they found most valuable.

What did we find?

Between June and November 2003, 73 out of 113 students elected to participate. There was a 93% response rate for submission of the questionnaire. Where completed, students self-evaluated their levels of confidence pre and post workshop as shown in the Table below.

Students clearly valued practical paediatric skills training using a mannequin and urinary catheterisation model in a safe, supervised environment in which they were able to ask questions. Typical comments included "systematic and clear instruction in a very important skill", "great practical hands-on experience and preparation for internship", "very thorough explanation of skills", "actually doing it with real-time feedback".

Interestingly, several students made comments indicating that the skills learned at practicum promoted and encouraged them to engaged in a deep approach to learning paediatric clinical skills. Some students commented that it became "more relevant and easier to remember afterwards when we actually do the procedure", and that "immediate feedback made me really think about the procedure" (Ramsden. 1992; Trigwell & Prosser, 1996).

Concluding remarks

Fourth-year medical students greatly valued practical teaching by clinical experts using simple models to practice paediatric skills. As a result of this initial study, this practical component of the course has now been made compulsory and extended to

Self evaluation	Pre-workshop	Post-workshop
Basic airways (n=73)	Low 37 (51%) Moderate 36 (49%) High 0 (-)	Low 0 (-) Moderate 28 (34%) High 45 (62%)
Advanced airways (n=73)	Low 61 (84%) Moderate 7 (11%) High 1 (1%)	Low 2 (3%) Moderate 44 (60%) High 26 (36%)
Urinary catheterisation(n=72)	Low 44 (79%) Moderate 11 (20%) High 0 (-)	Low 0 (-) Moderate 30 (41%) High 37 (51%)

include more teaching stations (spinal immobilisation, venous access and listening / recognition of cardiac murmurs). Ongoing evaluation of student confidence levels pre- and post- sessions is in progress. We are also working towards assessment of these skills as part of the clinical examination process, promoting the concept of constructive alignment (Shortland & Davies. 1995; Biggs. 1996). Evaluation of past students in their first postgraduate year might also allow us to evaluate the effectiveness of this approach to promoting deep learning of these skills.

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Andrew J A Holland is a Senior Lecturer in Paediatric Surgery and Urology at The Children's Hospital at Westmead Clinical School and a VMO in Paediatric Surgery at Royal North Shore Hospital, Northern Clinical School. He has a PhD in Paediatric Trauma and his research interests include surgical education, particularly curriculum design, distance learning and procedural skills. He completed a Graduate Certificate in Educational Studies last year through the Institute of Teaching and Learning.

Dianne Campbell is a Senior Lecturer in Paediatrics at The Children's Hospital at Westmead Clinical School and at the Northern Clinical School. She is also a Staff specialist in Immunology at the Children's Hospital Westmead. She has a background in Paediatric Immunology and has a PhD in cytokine dysregulation in atopic disorders. Her teaching interests include procedural skills teaching, curriculum design and assessment. She is the Discipline co-ordinator for the Paediatric Units of Study of the Sydney University Professional Masters of Medicine Programme (SPMMP).

Wendy Oldmeadow is a Lecturer in Education at The Children's Hospital at Westmead Clinical School. She has a Masters degree in Education (incorporating the Institute of Teaching and Learning Graduate Certificate units of study) and her areas of interest include teaching and assessment of clinical skills and evidence based medicine. Postgraduate teaching activities include collaborative development of units of study for the new Sydney Professional Master of Medicine Program and contributions to the Master of Medical Education program within the Office of Teaching and Learning in Medicine, with which she is an Honorary Associate.

You can engage with Andrew, Dianne & Wendy and others in a conversation about their study. Visit the online discussion forum at:
www.itl.usyd.edu.au/synergy/forum

or email Andrew at:
andrewh3@chw.edu.au

profile

Mark Freeman
Director, Centre to Advance Learning in
Economics & Business (CALEB)
Faculty of Economics and Business

In a previous life, Mark Freeman worked as a financial analyst and accountant. Asked by various friends and relatives to help them learn about finance, Mark found himself enjoying the process. It was his first experience at teaching finance as a Senior Tutor in 1984 at Kuringai CAE (now part of UTS) which led him to realise that how students learn was equally as important as what they learn. "I distinctly remember staying up late one night preparing loads of overhead transparencies and being bitterly disappointed the next day at how much time I had wasted when the students' difficulties that needed addressing was only 25% of the curriculum I had prepared". This experience led Mark to exploring the literature on higher education teaching and learning and since then, his energies have been focused on finding different ways to help students learn. He has experimented with team-based tests and online role plays and published extensively. But as new challenges have emerged across the higher education sector generally – particularly increased class sizes and student diversity, Mark has found that he has needed to "try some different things just to keep sane". In his work with The Institute of Chartered Accountants redesigning their nationally accredited postgraduate program, one of the largest units contained 3500 students. This reality had led him towards the use and integration of learning management systems such as *WebCT* and *Blackboard*.

Now firmly ensconced at the Faculty of Economics and Business as both Associate Dean (Teaching and Learning) and Director of CALEB, Mark leads a team whose mission is to "be the leading learning community in business, economics and government in Australia and its region". He describes the role in the following way - "part of it is outward looking in that we hope to forge strong benchmarking relationships with the equivalent teaching and learning unit in the Faculty of Economics and Commerce at the University of Melbourne along with comparable peers overseas. I am also establishing a network of Teaching and Learning Associate Deans for the Australian Business Deans Council". Mark is clearly excited by the wealth of talent and support for teaching and learning across the Faculty. "We have a project team of academics and general staff working on using audience response systems to promote learning and engagement in classes. Some people may have seen these as part of 'Who wants to be a Millionaire?' where the audience gets to indicate their response. I distinctly remember having this reflective moment during one meeting as we were discussing the literature on how this technology can optimise learning when students are engaged in reciprocal peer learning before they indicate their response. I thought - wow, we are all really engaged, not with the technology but in wanting to help students learn and we are using an evidence-based approach to teaching like we do in our normal research and people are really listening to each other."

Single initiatives like these appear to sit within a much larger plan to improve the learning experiences of students in the Faculty. Along with Peer Mentoring Programs for students, there are a number of Teaching Improvement Fund (TIF) projects exploring groupwork and diversity, another promoting foundational skills including academic literacy and academic honesty. An additional collaborative project with the Faculty of Education and Social Work supports academics' professional development around mentoring and leadership. Mark emphasises that the renewed focus on teaching and learning should be seen alongside attempts to transform the culture of the faculty. He notes particularly, the work of Dean Peter Wolnizer, and other senior managers in encouraging an environment conducive to innovation. Mark hopes that the teaching performance indicators, SCEQ results and points accrued on the Scholarship of Teaching Index will reflect the faculty's commitment to student learning. "We will be making real progress when students feel part of the learning community" and "fewer appear in the 'at-risk' category. I also want to see staff enjoying their teaching and taking an evidence-based approach to evaluating and improving it". However, there are challenges ahead. "The first, is balancing the workload of increasing class sizes and a diverse student cohort. The second, will be in continuing to engage the faculty in discussions that promote a scholarly and research-based approach to teaching and learning improvement rather than a rationale based solely on compliance and information-transmission. The third will be in energising engagement and participation in a change process when people have been participating in so much change has already."

For further conversation with Mark about key teaching and learning initiatives in the Faculty of Economics and Business, visit the online discussion forum at www.itl.usyd.edu.au/synergy/forum, or email Mark at m.freeman@econ.usyd.edu.au

Preface

I wrote this piece as part of my study in the Institute for Teaching and Learning (ITL's) Graduate Certificate in Higher Education this year. Asked to reflect on my learning in the course and encouraged by ITL staff to experiment with writing differently about university teaching and learning, I wanted to be a little bit cheeky about some of my impressions and experiences of being a university teacher working in a research-intensive institution. Linda Brodkey (1996:30) writes that "one of the pleasures of writing that academics rarely give themselves - is permission to experiment". This piece is a result of taking Brodkey's invocation seriously. It is intended as a scholarly provocation – a challenge to those of us who care about teaching and learning, to take seriously and develop the sort of academic cultures and practices which foreground the importance of student learning. It takes into account Paul Ramsden's (1992) ideas about incorporating students' perceptions of their learning within the way we think about the design and organisation of our teaching, and John Biggs' (1999) work on the 3P (presage, process, product) model, together with the idea of constructive alignment. The piece actually foregrounds the merit of the student learning perspective in considering a wider purpose for university learning which I understand, is now reflected in the promotions structures of this University. I am pleased that this is the case. I hope this piece will be read as advocacy for better understanding student learning.

Welcome to U-GABBLE, one of the most prestigious and successful Universities in the Southern Hemisphere. This manual is a compilation of career advice for new junior staff members to a fast track personal chair. This document is a summary of the collected wisdom of many of our distinguished professors from a majority of the University's faculties.

Induction manual for new staff members to the University of gone a bit backward learning environment U-GABBLE

Joe Khachan, School of Physics

At U-GABBLE, we define success to mean that you are able to bring substantial external funding to support your research. Everything else must be considered secondary to this objective. Unfortunately, there are fewer avenues for funding and less prestige in education research. In fact, you will be viewed by many of our successful academics as having failed in your academic duties if you pursue this line of research and have a high chance of being unsuccessful in your promotion applications.

Naturally, you must also undertake the necessary evil of teaching since this justifies our existence to the community who are generally unaware of our research. Our general recurring funding from the government is determined by the number of students that we attract. Consequently, we must create a smoke-screen of being outstanding in our teaching. This does not mean that you don't seriously carry out this activity but be aware of what is considered to be teaching excellence by misguided individuals. This will hold you in good stead when applying for promotion as you will be able to convincingly talk about having carried out good teaching practice without anyone being any wiser.

Note that being able to attract external research funding will take most of your time and effort and therefore you cannot apply the same effort to your teaching. We will now discuss the time consuming teaching pathways that you may inevitably fall into if your conscience gets the better of you.

1. Do not ever consider teaching from the students' perspective

Make sure all your ideas about teaching are centred on your own experiences as a student. You will find this will save you months of planning for your courses. Otherwise you will find that there is a diversity of student perceptions regarding your teaching. These are usually perceptions that you would not even have considered. Becoming conscious of these perceptions spells danger. You may decide to invite a colleague to sit in on your lectures to provide you with feedback. Most likely, they will comment that you need to address the diversity of student learning approaches. Be aware of this. If you prefer speaking to the blackboard, your colleague may ask why. They may even suggest that you need to work on asking more questions, making more eye contact, or structuring the class differently so that it engages students in active and inquiry based learning. Let's not hope that you become slave to new curriculum ideas such as problem-based learning too early in your career.

Heaven help you too, if you ever develop a rapport with students! They are likely to turn up at your office door unexpectedly. This is basically a career killer because your valuable daytime hours will be wasted. So try to keep your lectures as formal as possible and maintain a healthy distance from your students.

The colleague you have asked to sit in your lectures can help you to do this. Invite them to provide you with feedback on being disconnected from students. Even if they surprise you by saying that you have a natural rapport with students, ignore it. Inviting colleagues into your classes will also look good on your promotion application because it creates a myth that you have a commitment to teaching excellence. But tell no one of the outcomes of your colleague's comments. Keep them to yourself. And especially, don't even think about telling students!

2. Don't waste any time reading the research on teaching and learning

People who have tried it have emerged with quite a bit of insight into other people's teaching practice and the student learning experience. There is a danger that you may spend unnecessary time trying out alternative teaching and learning strategies or developing projects to research your students'

learning. After you read the literature, you will probably feel the need to spend time outlining to students what their learning outcomes are. You'll also notice that the literature will encourage you to explicitly spell out your teaching strategy. You will need to actually spend time phrasing the goals using verbs that are student-centred. Save yourself a great deal of trouble by simply reiterating the content students are expected to learn. If they do not measure up to your standards, then they shouldn't be in our elite institution. They clearly are below our intelligence requirements and it would serve them best to find alternative careers elsewhere. You have to be careful of comments from under-performing academics (who also write the teaching research literature) who will tell you that students' backgrounds influence the way they learn. That is not your problem – it's theirs. Remember, the more you keep students in the dark, the less teaching preparation you will have to do.

3. Now for the most unpleasant activity you can do as an academic – student assessment

If you have saved yourself enough time by adopting our teaching practice then you may have become successful in attracting grant funding, part of which should be set aside for teaching relief. Use this funding to pay postgraduate students to carry out any assessment that is required. It's also best to stick to the traditional tasks such as assignments and exams. Don't be enticed by those new forms of assessment like peer and self-assessment. They take up far too much time. Make sure you set short answer questions that can be marked as either right or wrong. Do not allow questions or assignment tasks where students can explore ideas using their own initiative. These dangerous sorts of questions will enable students to piece together the subject as an integrated whole and give them a wider perspective than you may have initially intended. They may start to question your expertise. The time you will spend marking these questions is really a waste of your precious time. Even if you paid your own research students to mark them, it is time better spent by them writing papers for you.

Second, be careful about ever telling students the standards of assessment you expect. Putting together grade descriptors is incredibly time consuming since you will have to explore all the possible ways students will answer questions and whether they are in alignment with the learning outcomes. Just let your research students mark questions as being right or wrong and then give

> I WOULD APPRECIATE IT IF YOU COULD FILL OUT THESE EVALUATION FORMS AND RETURN THEM TO ME... NO PRESSURE!

students a mark out of 20 depending on how many correct questions they obtained. If possible, set arbitrary multiple choice questions. That way, you can use your teaching relief funds to simply run the answer sheets through a computer.

4. Tell your students about your research – but only to those who will understand it and are likely to promote your research interests

Note that it will pay dividends for you to seek out and help students that show outstanding initiative. These students are ripe for the picking as future postgraduate students that will enable your paper publication rate to be maintained. Make sure you give these students extra research projects that will get them acquainted with your research area. Get them to give talks and attend conferences. This is a small investment that will pay dividends in the long term. It will also look like outstanding teaching on your promotion application since this addresses some of the generic attributes associated with scholarship and global citizenship, as well as preparing students for life-long learning. Although it is true that you will be carrying this out for a minority of students, you will have to use your creative writing skills, which have served you so well in writing your grant applications, to make it look like that you do this for most of your students. It will give the illusion that you are concerned with bringing your research and teaching in closer alignment in a way that actually benefits undergraduate student learning. Remember, this is about telling your students about your research – try not to involve them in it too much.

5. You will eventually meet the dreaded student course evaluation sheets

At U-GABBLE, these operate at two levels. There is a departmental evaluation, which tends to concentrate on your performance as a teacher.

This is optional so you don't have to give it out. Remember, it is anonymous. You always have the option of placing it in your desk drawer and ignoring any constructive comments from students. You will be told that student feedback is an essential resource for course improvement. Browse over only a few comments and keep in mind that the students who write terrible feedback have really misunderstood the purpose of the course. Take students comments seriously only when you are applying for promotion. It will give the teaching part of your application some substance and sincerity.

In addition, there is the University's unit of study evaluation which tends to concentrate on the unit itself. You don't have to worry about this evaluation either since it occurs once every three years and you are not personally held accountable – particularly if you are not the unit of study coordinator. Make sure you go on sabbatical every three years as this will guarantee the loss of ownership of a unit and therefore the responsibility of improving it rests on other people's shoulders. It will also give you more time to increase your publication rate without the burden of teaching.

Most importantly, remember that no matter how lacking your teaching is, you will not have many problems in achieving promotion as long as your research output is high. Promotions committees are usually stacked with people that have had their success in research. Any teaching oriented people on the committee are there as token representation.

Remember, if at any time your conscience drags you down to take teaching seriously and therefore reduce your productivity, remember that no one has ever conclusively proved that we make any difference as university teachers.

Good luck with your time at U-GABBLE.

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Joe Khachan is a Senior Lecturer in the School of Physics. Some of his responsibilities in the School are Senior Physics Laboratory Coordinator, Chair of External Relations, Prospective Student Advisor, Head of the Physics Lecture Demonstrations Unit, Radiation Officer, and doormat. Aside from his research into fusion energy, he has conducted research into interactive lecturing in large lecture classes using student operated electronic keypads, funded by the University's Teaching Improvement Fund (TIF). As part of his focus on research-led teaching, he continues to develop undergraduate experiments that make the state-of-the-art research in the School accessible to all physics undergraduate students with the help of the University's Teaching Equipment Fund. He is currently undertaking the Graduate Certificate in Educational Studies (Higher Education) course.

You can engage with Joe in a conversation about his fictional Induction Manual by visiting the online discussion forum at: www.itl.usyd.edu.au/synergy/forum

or email Joe at: khachan@physics.usyd.edu.au

Background

The context of my teaching is the Mathematics Learning Centre, a unit in Student Services at the University. I am one of three mathematicians who make up the permanent academic staff of the Centre and who are committed to helping students understand and appreciate the mathematics they are studying. The Centre assists students of the university who, for diverse reasons, are not adequately prepared for their first level mathematics or statistics courses or experience particular difficulties. Students attend the Centre voluntarily. The Centre was set up as an equity initiative to help students who may not have had the opportunity to study the mathematics prerequisite to their courses at university or who entered the university in ways that differ from the traditional school-based route. These students bring rich and diverse life experiences to their tertiary study.

An important and cherished area of my teaching is assisting Psychology students who attend the Centre to learn statistics. One of my major concerns is to develop teaching methods that are innovative and appropriate for these students — arguably among the most anxious and unappreciative of university students concerning the study of a mathematical subject. One such student, who attended the Centre regularly, wrote this summary of her feelings about learning statistics:

- I don't feel confident with statistics
- I don't plan a career that would involve statistics
- I don't enjoy statistics

I present a brief case study on teaching and researching the learning of a mature student, Sandra (pseud-

Tools for self-study and developing teaching in a Mathematics Learning Centre

Sue Gordon, Mathematics Learning Centre

onym), who attended the Centre to get help with learning statistics for second year Psychology. Building on this example I examine three different interpretive tools for examining and transforming teaching practice. The three forms of reflection are (a) learning by teaching — learning with and from students; (b) insights provided by research into education and (c) institutionally prompted reflection and self-evaluation.

Method

We begin with the story of Sandra and how reflections on teaching Sandra and researching her learning contributed to development and transformation of my practice. The more general and transferable aspects of the self-study will then be examined by focussing on possible methodological tools for self-study.

The investigation of Sandra's learning statistics was part of a case study on mature students learning statistics (Gordon, 1993). The data collection for the case study included observations and field notes made while participating in the students' learning, audio taped interviews, short surveys and questionnaires relating to the students' attitudes to and strategies for learning statistics, students' written evaluations of the teaching and environment of the Mathematics Learning Centre, demographic information and assessment results. The research on Sandra's learning was amplified by close psychological contact with her as she spent considerable and regular time in the Centre according to her own needs. Hence I had many

opportunities to view her written work and to observe her strategies for learning while I was engaged in teaching her individually, or while she worked with colleagues or participated in small group tutorials in the Centre.

Exploring Sandra's story, as her learning developed, was a catalyst for self-study motivating reflection and major changes in my practice. My actions researching my own practice are developed from reflections on how to assist Sandra in learning statistics. Hence Sandra's journey was a journey of hope for both of us — to challenge our weaknesses and develop our strengths.

Outcomes

Sandra's Development

Sandra was pursuing the study of Psychology for vocational reasons to work as a psychologist and so was trying to gain entry into the Honours strand of Psychology. Sandra was already working in a crisis clinic, and aimed to get the required qualifications in psychology, in order to get better pay and because she was "not comfortable doing crisis counselling as a non-professional — as much for my clients as for myself". This meant satisfying highly competitive criteria during her second year of undergraduate study to gain entry into the Honours strand of Psychology. She was an exceptional student who, in the end, achieved a High Distinction grade for second year Psychology. The statistics component of the psychology course presented a considerable challenge as her background in mathematics was limited.

Prior to commencing the statistics topic Sandra completed a written questionnaire on her feelings about learning statistics and perceptions of statistics. She reported that at school she was bored and confused by mathematics. She attributed this to having gone to fourteen differ-

ent schools, in different countries, where the educational systems did not match. Her perception of statistics, as she expressed it in this questionnaire, was that statistics was "useless and dull". She initially appraised the statistics lecture notes as "daunting" and described herself as "resistant" to learning statistics.

As she progressed through the statistics course Sandra reported her way of learning mathematics as a gradual accretion of knowledge. She described the importance of my tutorials at the Centre, where: "I feel free to ask questions, in a comfortable, supportive atmosphere; working through examples — talking about it". Sandra alerted me to the importance of a collaborative approach to tackling statistics without the authority or even presence of a teacher. She was working regularly with two of her colleagues, and was also helped by her husband whom she felt understood statistics. "We worked through examples for hours, our 'tutorial' sheets, to learn how typical these things are, to understand". This collaborative approach evidently alleviated some of the anxiety Sandra was experiencing as her comment below indicates.

I didn't work a great deal on my own, although I did at the end. I had to go through it on my own — but I felt frightened working on my own.

By the end of the year Sandra reported in an interview that learning statistics had resulted in personal development. She reported:

It's almost like two separate things in the statistics course we've just done. You could have actually just got the steps and maybe not understood why you were doing it. I wanted to understand what I was doing.

By the end of the year I thought, it doesn't really matter how I go in this exam. I'm not going to let the exam mark dictate to me my knowledge.

Because I knew I had a better grasp at the end of the year and I really felt that if I was doing experimental work I could work out what to do with my stats. It felt very good, it felt a lot like growing up. All my life it felt like I had this dark secret — that I felt really stupid about this area. I'd cover it up so no-one would know. It really felt like growing up.

Outcomes of the Self Study

How did teaching Sandra and researching her learning transform my practice? The first arena for transformation was the experiential area of teaching students who lack confidence in learning mathematics. In this area of my practice self-development as a teacher and student learning are interwoven. My focus in teaching statistics broadened from wrestling primarily with how to enable students to understand the mathematical concepts and skills to a realisation that teaching statistics provides me with opportunities to promote each student's personal development beyond discipline knowledge.

I try to make statistics more interesting and relevant to students' lives. This means drawing on the students' life knowledge and connecting the statistics to their experiences. Encouraging students to use metaphors and analogies to explain statistical concepts to each other is one powerful way of achieving this.

- I aim to enable students to see statistics as a tool that they can use to understand, interpret and critique information in their studies and lives as numerate citizens. This includes discussing economic and medical information current in the media.
- Importantly, I try to help students move towards and promote their self-authorship — the capacity to internally define one's belief system, identity, and relations with others (Baxter Magolda, 2003). Sandra's experiences illuminated

this little acknowledged, yet significant, aspect of learning a mathematical topic.

Ongoing Reflection

To what extent is this framework evident in my teaching? How can I make this framework more evident in my teaching? A major way of developing my skills as a teacher is to research students' learning of statistics. Teaching inspires my research and research informs my teaching in ongoing developmental spirals. Further, by researching the learning of Sandra and other students I was learning to investigate questions in a way that is acceptable to the research community. This includes providing a coherent and explicit chain of reasoning and detailed descriptions of methods of data collection and analysis. In this arena central questions are: what constitutes data and what evidence is there for my interpretations? Rather than assuming my perceptions are universal and accurate I acknowledge that my analysis of the data is interpretative and tentative. I try to identify limitations and bias, alternative explanations, acknowledging the complexity of the issues faced and aiming to indicate the dimensions of that complexity, as well as to stimulate reflection and dialogue. Most importantly my findings are disclosed in research publications to encourage professional scrutiny and critique.

By conducting research I develop my capacity for interpreting evidence, making arguments and establishing valid grounds for strategies and reform. Applying these ideas I reflect on how research changes my emphasis from the craft of teaching to the science of research.

The third arena for examining my practice and reflecting on how to improve it is institutionally prompted. One opportunity for self-appraisal is the annual Performance,

Development and Management Review conducted throughout our university. This institutional device of reflection requires academic staff to think about and evaluate our teaching, research and service to the university as well as personal qualities such as team-work and professionalism.

Sandra's evaluations enabled me to identify weaknesses in my teaching and attempt new ways to challenge yet support students at the Centre. This included organising activities in which students were encouraged to take responsibility for their own learning and even make mistakes without my blocking their process of discovery in my eagerness to ensure that they got it right. Experiments in teaching carry a risk — students may not be comfortable with unusual ways of teaching, and may resent the increased time needed for a deeper approach to learning, which includes cooperative problem solving and communication with peers. In addition the institutional environment for reflection is ambivalent at least. Abbas & Mclean (2003, p. 74) put it succinctly as follows: "In general, official attempts to improve teaching do not countenance ambiguity, contradiction or hesitation. We must be seen to succeed". This could be at odds with the tools for self-study which emphasises reflective and critical self assessment.

Discussion

Risking self-study in my practice entails reflecting on and re-interpreting practice in ways that benefit students who may be studying mathematics reluctantly or anxiously. The educational needs of these students and other non-traditional students are not necessarily viewed with empathy in an academic environment, yet understanding and enhancing the mathematical learning of students with different backgrounds is not only an ethical priority but is also increasingly

necessitated by the growing diversity of students groups in higher education.

I have considered three possible methodological tools for self study: reflections on teaching, insights gained by researching student learning and examination and evaluation of practice through institutional performance reviews. Reflection on teaching requires articulating my own aims and strategies but acknowledging that all actions to improve teaching are negotiated with students. Paths to understanding are: listening to how students teach each other and to colleagues' ways of teaching, and interpreting and implementing their expressions in my practice. Secondly, research extends my experiential and anecdotal knowledge of student learning but changes the approach. There is a fundamental shift from understanding the particulars of individual learning at a specific time and place towards making sense of "complex problems posed by trying to understand social interactions embedded in institutional structures" (Labaree 2003:14). There are conflicting worldviews between teachers and researchers with core elements of this conflict being about transformations from "normative to analytical, from personal to intellectual, from the particular to the universal, and from the experiential to the theoretical" (Labaree, 2003:16).

The messages from our institution on professional development contain, in the terms of Houston & Studman (2001), a deafening clash of metaphors. A key issue is the compatibility of quality management concepts with images of an academic organisation held by the participants. In management terms quality is seen as the solution to problems of economic viability, competitiveness, efficiency and cost. In contrast, perceptions of a univer-

...Experiments in teaching carry a risk — students may not be comfortable with unusual ways of teaching, and may resent the increased time needed for a deeper approach to learning.

sity by students and staff depict the university as a social system that is a "complex mess", poorly structured, with complex and interlinked dilemmas and issues (Houston & Studman, 2001). An initiative on "Best Practice" in higher education is based on a model (Burnett, 2001) that focuses on customer/student satisfaction and success and added value with each person-to person transaction. The importance of brand and trend, as portrayed on the University Website, are put forward as "an institution's currency". In contrast, Houston & Studman (2001) maintain that quality improvement in higher education has not been well defined by the people it purports to serve.

Acknowledging the ambiguities and contradictions within institutionally prompted reflection and development, I construct the Performance, Development and Management Review process as providing some ways of developing professionally:

- making invisible work visible
- celebrating success in any of the academic areas
- outlining goals for the next year and articulating constraints.

Conclusion: Systemic Overview

The different interpretive tools in the three arenas outlined above contribute to a holistic evaluation of self and student co-development and could contribute to ways of developing self-study methods. Paying attention to students' voices helps me teach statistics in more meaningful ways. Researching students' learning helps me evaluate their experiences according to scientific criteria. Findings may be at odds with my expectations and jolt me into changing my teaching. The quality management perspective stimulates me to negotiate understandings of my position with my supervisor, make tensions known

and acknowledge achievements — the credibility of self-evaluation is enhanced by this process. Each facet of the reflective process is implemented in practice which leads to renewed evaluation and attempts to improve and develop teaching and research in an ongoing spiral.

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Sue Gordon teaches Mathematics and Statistics in the Mathematics Learning Centre and have an Honorary Appointment in the Faculty of Education and Social Work. My research is closely linked to my teaching and draws on cultural historical activity theory. I utilise quantitative and qualitative methodologies including phenomenographic approaches. Current (collaborative) research projects include: statistics teachers' ideas about teaching and learning statistics at university; students' experiences of statistics in service courses; memorising in learning mathematics and science at university and teacher development in practice. Additional activities include PhD supervision in the Faculty of Education and Social Work and reviewing papers for a number of research journals and international conferences. I was an Associate Editor of the Mathematics Education Research Journal 2000-2003. My publication list available at: http://www.usyd.edu.au/stuserv/academic_support/maths_learning_centre/SGinfo.shtml.

You can engage with Sue in a conversation about self-study and her work in the Maths Learning Centre by visiting the online discussion forum at:
www.itl.usyd.edu.au/synergy/forum

or email Sue at:
sueg@mail.usyd.edu.au

Introduction

One of the debates within biology teaching is the appropriate use of animals and plants to enhance the learning experience. In particular significant amounts of time are often set aside within curricula for relevant practical experiences, including dissections, drawings, microscopy, experimentation and discussions with peers and staff. For many reasons, an increasing number, albeit a minority of students are disinclined to handle biological materials, whilst financial cutbacks are making the provision of them more difficult. This makes teaching the discipline using practical activities increasingly difficult.

Information and communications technology (ICT) in the form of computers, television, literature databases, and audiovisual materials have been available for teachers in all disciplines for many decades. So what is different about the high-tech learning environment of the 21st Century? Several factors have developed simultaneously to change the potential of IT as a learning tool. The most important is the ubiquity of computer networks, which has opened up the world of knowledge. Additionally, a convergence in digital technology has provided user-friendly multimedia instructional platforms, as well as the emergence of a cognitive learning theory which emphasises inquiry, and a marked change in the needs of society which has had an impact on the education process. Awbrey (1996) argues that educators need to encourage the work force of tomorrow to develop the skills of abstraction, system thinking, experimentation and collaboration. ICT provides greater educational flexibility by creating learning environments that are accessible to individuals with a variety of learning styles at anytime and anyplace. Technology can assist

Virtual biology: how well can it replace authentic activities?

Mary Peat & Charlotte Taylor,
School of Biological Sciences

in overcoming barriers faced by students of all descriptions such as the distant learner or physically impaired. However, certain questions arise in this context.

- Do we include meaningful ICT experiences in the curriculum?
- How do we use computers to help our student learn?

The delivery of our large (approximately 1700 students in 2004) first year biology course has changed markedly during the last decade, to cope with an increasing heterogeneity of students. A starting point for this change was the introduction of computer-based learning materials in 1992. These are enhanced by delivery via a Virtual Learning Environment (http://FYBio.bio.usyd.edu.au/VLE/L1/). Resources available online for the first year students include learning modules (tutorial-style programs), self-assessment modules (offering four levels of conceptual complexity or difficulty for self-assessment), lecture presentations, course information and web links. In addition many virtual learning experiences are available, which can be completed in the laboratory, from home or from the University computer access centres. Included are virtual field trips, virtual microscopy, virtual dissections, virtual experiments and virtual communications designed primarily to enhance the hands-on learning experience of students. We have developed several of these modules to enable students to appreciate the skills required for a professional biologist.

Hands-on versus virtual biology experiences – advantages & disadvantages

The advantages of hands-on biology experiences are many and varied. With real lab materials students are obviously provided with a more realistic and arguably more stimulating appreciation of the biology. The real material is three-dimensional, it can usually be handled and used to stimulate group discussions and is the best way to develop the manipulative skills of the discipline such as dissections, microscopy and use of scientific equipment. The disadvantages of using real materials are often managerial and cost-related. The materials themselves may be expensive to buy or collect, the laboratories have to be maintained and teaching staff must be provided. Other disadvantages are associated with the limited flexibility of the modern student. They are often not able to attend on-campus, for a variety of reasons and there may be ethical ethnic or cultural considerations when working with biological materials.

The use of virtual biology experiences poses a different set of advantages and disadvantages. Virtual experiences can be obtained anytime/anyplace, and in this mode they are usually obtained on one's own. They may be "quicker" than traditional activities, such as field trips and experiments, which may suit many students. They may be less expensive to sustain as an activity, once the initial costs of production have been met. They may be used in a classroom situation by groups of students to help stimulate discussion and to develop communication skills and critical thinking skills. They may be available in the classroom as pre-hands-on "training" or as an alternative (opt-out) for

hands-on experiences such as dissections for students who have cultural objections to this. A virtual biology learning experience may in fact be better for some aspects of learning biology than the real experience, and vice versa. Ultimately, in some situations, virtual biology learning experiences may be better than the hands on learning experience.

Virtual field trips

To recreate a field experience electronically allows students to take part in a time honoured biological learning experience in a more time and cost effective manner. We have used such programs in our bridging courses where it is not possible to take students into the field. This has provided them with multiple perspectives, by allowing them to access and collect information and construct their own understanding of the basic topics covered. Our experience of these activities supports Bitner et al., (1999) who found that the use of virtual field trips increases students' abilities to solve real world problems. More recently we have tried to use a virtual field experience to involve students in data collection and provide background information to the real-world question which is more interesting and engages the student. In effect the field site for the investigation is brought to the students since it is impossible for them all to go to the field to survey and collect biological samples. When samples for labs are collected we take along a camera to collect pictures of the site, sample areas, and show ecological conditions during the collection time. This may include video of sampling soil moisture. Students work in the lab with the samples and collect data for analysis, which is posted on the virtual filed pages. They can then use the virtual information to help them interpret data and answer the original question. Everything can then be brought together in a class or online discussion.

Virtual microscopy for interpreting prepared microscope slides

It takes time and practise to develop the skills of microscopy to the level that the process of using a microscope does not impede the study of the biological material. Increasingly students are being shown the "equipment", in this case a microscope, but they are not being given the time to develop the appropriate technical skills to make most effective use of it. Here at Sydney, in a general biology course there are potentially hundreds of microscope slides of specimens that could be used by students. We have taken some of the conceptually more difficult microscopy materials and produced a virtual tour of them. For example, we have dealt with the difficult area of cell division and produced small modules that consist of a series of photomicrographs of the process of cell division, each with a companion drawing and with the provision to add the labels to either the micrograph or the drawing. A small amount of descriptive text is available and the menu design takes the students through the material in a logical sequence which helps reinforce the cell cycle concept as well as the division process. For the students they have the advantage of consistent material and interpretation to be done anywhere/anytime. For us we are no longer required to provide and set up this very expensive material.

Virtual experiments

Virtual experiments, like virtual field trips, can offer students activities and exposure to content in ways that are not always possible in the classroom. Virtual experiments have been shown to provide a learning experience which is considered to be as effective as "wet" practicals for knowledge and understanding (Hughes, 2001). We have designed experiments that are integrated into the curriculum and can be used both by groups of students together in class or alone (at home) for revi-

sion. Experiments can be designed to generate data that is collected by a group of students for discussion or for writing a report. One of our experiments simulates the effect of light on photosynthesis looking at both the effect of light intensity and wavelength of light on the rate of photosynthesis of a plant. The students collect data from the simulations and then plot these data in their workbook. The experiments are simple in concept but would require multiple sets of expensive equipment to do in the classroom with such large numbers of students. The advantages of virtual experiments include the time factor (often the real experiment takes too long to generate sufficient data for a useful discussion to take place), their relative low cost in terms of materials, rapid data collection and potential to instigate group discussions in the limited time of the class.

Virtual dissections

The use of dissections, especially of mammals, is becoming more controversial, leading teachers and students to reconsider the value of these procedures in the classroom. In some institutions dissections have been abandoned, partially in response to 'animal rights' issues (Heron, 1992). Alternatives to using animals for dissection are 3D models, slide-tapes, videotapes, videodiscs and computer simulations (Kinzie, Strauss and Foss, 1993; Langley, 1991; Quentin-Baxter and Dewhurst, 1992; Strauss and Kinzie, 1991). Also it has been shown that when students are offered an alternative to a rat dissection (like models and charts), their performance in examinations is no different from those students who completed the dissection (Downie and Meadows, 1995). We have developed several modules that can be used as alternatives for dissections.

We have also investigated use and usefulness, to the student, of a range of computer-based resources. Many of these investigations were designed

to provide us with feedback for the ongoing iterative development of our own materials and a better understanding of how the students use the resources. These have been reported elsewhere (Franklin and Peat, 2001; Peat, 2000; Peat and Franklin, 2002; Peat, Franklin and Mackay-Wood, 1997). Prominent in these investigations are studies on the value of the resources in student learning, including the use of computer-based dissections in enhancing learning.

More recently we investigated the use of real dissections (cat cadavers) and virtual dissections by 800 first year biology students with a new module designed to be used for new learning, revision or as an instructional alternative for those students who had animal rights issues and ethnic/cultural sensitivities to animal dissections. Whilst there were 15% of students using the material as opt-out, there were 36% of students using both the real and virtual materials. Students who had used both the real virtual materials indicated that both real and computer-based dissections were useful for their studies, illustrating the value of offering a diverse range of materials to provide students with a rich learning environment. While indicating how different media can be used for different inputs/outcomes, many students remarked, in open-ended responses, that cadaver-based dissection was probably more useful for understanding structure and interrelationships, and computer-based dissection was probably more useful for function. However our results suggest that opt-out schemes are viable and that the continued development and provision of these types of materials is warranted. In the longer term the trend for removing animal cadavers from laboratory classes is likely to continue with added pressure from both increasing student numbers and community objections to animal dissections (Wheeler, 1993).

Conclusion

In answer to the question "Virtual Biology: how well can it replace authentic activities?" the students are telling us that whilst there is also an important place for virtual biology in its various guises, we must also provide authentic activities where possible. Hands-on lab activities are still the preferred activity in our courses and provide the key element in ratings of satisfaction with studying biology. Virtual experiences are valued for their flexibility of use, availability for revision and provision of additional information, whereas real experiences are valued for the hands-on, 3D nature but also for their "reality". If we wish to stimulate and challenge students about biology we consider that it is essential that they experience as much real material as possible within the constraints of time and budgets.

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Mary Peat (BSc Hons, PhD); recipient of two University of Sydney teaching awards (1994, 2000); Associate Dean (Teaching & Learning), Faculty of Science (1995 – 2002); Associate Dean (International Teaching Initiatives) Director UniServe Science (http://science.uniserve.edu.au). Mary has been teaching undergraduate students since 1972 at the University of Sydney. With Sue Franklin she has been working for over a decade on improving the learning experiences of first year students. This has resulted in setting up of the First Year Biology Teaching Development Group in 1994 (http://fybio.bio.usyd.edu.

book review

au/fyb/tdg/fybtdgho.htm) to concentrate on the development of computer-delivered teaching and assessment modules. Their interest in student use and perceptions of usefulness of these materials has stimulated several research projects. They are active members of an educational research group (RIBET - Research in Biology Education and Training: http://fybio.bio.usyd.edu.au/fyb/ribet/ribethome.htm). In addition Mary has worked at Faculty level to improve the experience of students in transition from secondary school to university and developed and implemented a Faculty program that has been held since 1996.

Charlotte Taylor (BSc Hons, MHEd, PhD): recipient of University of Sydney teaching award 2000, Associate Dean Teaching and Learning in the Faculty of Science 2004. Chair of the Science Faculty Education Research group (SCIFER). Charlotte has taught and coordinated large first year units (n<1000), for the past 15 years. Research in first year student learning has therefore been my particular focus, with specific projects on student prior experiences of academic writing and their influence on learning scientific writing. A number of papers have been published with colleagues in the Learning Centre and ITL and the outcomes incorporated into staff and tutor training programs in biology; a SCIFER funded project on the use of feedback in written assignments in collaboration with the Department of Physiology; analysing student understanding of threshold concepts in biology with collaborators in the Universities of Durham and Staffordshire. Charlotte completed a Masters in Higher Education at the University of UNSW in 2000 and presented the outcomes of my degree research projects on Learning to Write Online: using discussion groups with large student cohorts at First Year Experience and EARLI education conferences in UK in 2002 and 2003.

You can engage with Mary and Charlotte in a conversation about their work in Biology by visiting the online discussion forum at: **www.itl.usyd.edu.au/synergy/forum** or email Mary at: **maryp@bio.usyd.edu.au**

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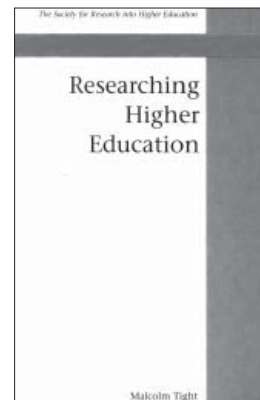
For academics who have recently turned their hand to researching and writing about teaching and student learning in more systematic and scholarly ways, Malcolm Tight's Researching Higher Education provides an insight into the key structural dimensions which organise higher education as a field of study. Concerned with mapping the breadth and scope of the field, and then trying to give a sense of its fractures and movements, Tight settles on eight themes which then perform the organisational work of the text: teaching and learning; course design; the student experience; quality; systems and policy; institutional management; academic work and knowledge. In the main, these themes seem entirely reasonable characterisations, and Tight does well to take us through a consistent structure for exploring each of these more purposefully.

In his examination of teaching and learning for instance, Tight poses a set of dilemmas or challenges for higher education as a field. These questions seem to me, a deliberate attempt to engage us with research that is committed to student-focused perspectives of learning. Here, they cluster around effective teaching methods for student learning, variation in student conceptions of learning, shifting students' to adopt deep approaches to learning, different learning for different students, and supporting academics new to their teaching role. In each case, Tight surveys the range of empirical research available and then offers up a series of exemplar accounts from the literature to showcase the range of ways these issues are being conceptualised and researched – including methodologically. And finally, as in any good piece of research, Tight encourages us to pursue new lines of inquiry. He points to the need for ongoing research into aspects of our teaching and learning practices as they impact on student learning.

This is not a particularly challenging structure for those of us already ensconced in researching or problematising higher education in more complex ways - which is not in itself, an issue. This is essentially a book that tells a narrative of the field, rather than what it might be. What the book does especially well, is provide an overview of relevant pieces of literature, together with a general and concise introduction to the research basis of many of the pedagogical practices underlying higher education. For me, the most interesting chapter '*Method and methodology in researching higher education*', provides the book with an imaginative set of possibilities about the generation of different kinds of research questions for higher education. **TP.**

This article describes peer mentoring, a beneficial program for supporting the student experience postgraduate students to build academic and social networks so that they settle more quickly into life as a semester begins, becomes the small group mentor for the first six weeks of semester. Although a Faculty and campus tour is the first of three formal activities undertaken by the groups, this program is much more than an orientation program.

Peer mentoring programs: Enhancing the learning experience in Economics & Business

Mark Freeman & Jill Kelton,
Faculty of Economics & Business

in the Faculty of Economics and Business. Peer mentoring programs are proliferating in educational institutions. Prior research strongly supports the notion of a peer mentoring program (Allen et al., 1997; Treston, 1999 and Fowler, 2004). Mentors report high satisfaction levels and a sense of achievement in helping others, as well as improved interpersonal communication skills and the esteem of their peers while mentees report improved "psychosocial functioning" and an increased likelihood to continue studying. In the Faculty's case, the success is obvious with some 324 students, new in semester two 2004, being involved in the six week program.

Why establish a peer mentoring program?

One of the earliest peer mentoring programs in Australian higher education was established at James Cook University in 1991. Treston (1999) reports supporting new students in a context of shrinking government resources and increased workloads for staff as a primary motivation for its introduction. While supporting new students was the same motivation for a pilot post graduate peer mentoring program (PMP) in the Faculty of Economics and Business at University of Sydney, the context related more to the rapid expansion of this student body over the last five years (1620 in 2001 to 3250 in 2004) without a commensurate increase in staffing. With an overall objective to "enhance the postgraduate students' sense of belonging to a learning community", the program has been designed to assist new

student in the Faculty and therefore have a more successful, productive and positive personal and academic experience. This fits well with the Faculty's mission to be the 'leading learning community in business, economics and government in Australia and the region'.

In the Faculty's case, the rapid expansion of the student cohort placed additional demands for student support services because the vast majority of new students came from a wide range of overseas countries. With 61% postgraduate coursework student body (2306 students) from overseas by 2004, it is no surprise that international students are more heavily represented in the program. In fact, 76% of respondents to semester 1 post program survey reported speaking a language other than English at home. This has given rise to particular issues of academic and social orientation which the program aims to address, first piloted in logistics and transport studies in 2003 before a wider roll out to all postgraduate students in 2004. Collaborative support from the Faculty of Arts, drawing on the experience of Nerida Jarkey and others in the Arts Network initiative was invaluable in scoping the program.

How does the Program operate?

The Program runs by grouping 4 or 5 new students with a more experienced senior student from the same discipline area (e.g. accounting, econometrics or marketing). The latter peer, who has participated in a full day training program before

Academic orientation to the discipline and Faculty

The program is very specifically aimed at discipline-based academic orientation and relies heavily on the small groups meeting face to face in their own time to undertake various activities. These activities are led by mentors and include:

- Registration for Fisher Library's discipline focused electronic resources classes (Week 1-2)
- Demonstration of and access to Blackboard (the Faculty's learning management system equivalent to WebCT) and the computing facilities on campus
- Attendance at transition seminars (4 in Week 1) and study skills workshops (7 in Week 3).

Of course, mentees may contact their mentor or mentee peers by email in between face-to-face meetings to clarify other queries. In addition these new students may access the entire cohort in the peer mentoring program via an online discussion forum should they wish wider access to students who might know and help them sort through issues of orientation.

Linking to other University services

In addition to the specific focus on Faculty and discipline-based academic orientation, the program aims to link new postgraduate students with the other services and facilities of the university. While some of these are part of the formal program (eg. the campus and library tours), others are more informal.

There is close liaison between the Program Coordinators and the International Student Services Unit (ISSU) and the University Counselling Service, with counsellors from both units providing training for mentors prior to the beginning of semester. A number of the mentors are also representatives on SUPRA (Sydney University Postgraduate Representative Association) and are active in encouraging mentoring program participants to use SUPRA services and facilities. The Program Coordinators use Blackboard website to publicise wider university events that would assist new students improving their personal and academic success. Notable examples include extra Library services such as EndNote classes, special lectures of interest to postgraduate students, student exchange opportunities and SWOT (Sydney Welcome, Orientation and Transition) Program.

Informal activities

Many groups arrange additional informal activities, including those beyond the campus. These have ranged from tours to the Blue Mountains to a regular Badminton Competition. Students are encouraged to take photos and share them either within Blackboard with each other, send to friends and families that might be far away and/or submit it into the PMP photo competition.

Social events

The program also hosts social events for all participants to get together. The launch of the program at the three hour Faculty orientation held in the Footbridge Theatre at the beginning of the semester is a more formal social occasion. It is followed by drinks and canapés in the Holme Refectory Building dur-

ing which time students meet academic staff. In contrast, the two social events held within the Faculty precinct at dusk during the program are much more informal but well-attended. For example, some 200 (50% of program participants) attended the social event on Friday 13 August.

Evaluation and quality assurance

Essential to the success of the program is a rigorous pre-program stage of recruitment and training of mentors, and a substantial post-program evaluation and reporting stage. Responsibility for the Peer Mentoring Program lies within the Centre to Advance Learning in Economics and Business, which has a fundamental role in supporting the Faculty's mission to be the leading learning community. There is a strong commitment to evaluation and continuous improvement and this goes well beyond surveys, with focus groups, analysis of the online discussion forum and a reference group.

As a result of the evaluation, several changes have been implemented.

- In the focus group after semester 1, 2004, participants reported that the social events gave the program a structure and were seen as a vital factor in helping new students to feel part of a

learning community. A reference group, aptly named the Mentor Task Force was established in semester 2 2004 with the aim of continuing informal social gatherings beyond the life of the formal program. The first mentor-led event, a BBQ on August 27, was a lively event which attracted more than 120 people. It is hoped this will become a rolling program of monthly events throughout semester.

- While semester 1 participation began with a bang with 368 new students registered as mentees in semester 1, 2004 and supported by 63 volunteer mentors, by the end of the first week only 323 mentees were still involved. Attendance at the individual structured group meetings fell at the second and third meetings. Although finding convenient times for all group members to meet is a challenge and also some students may have not felt a continued need for support, the feedback indicated some students had not properly understood what the peer mentoring program was about. To address this, clearer promotion has been initiated and a more structured training program for mentors. Perhaps more importantly, increasing numbers of mentees are becoming mentors and thereby passing on experience and expectations of the mentoring process. Despite being semester 2, some 324 new

students registered in the program and attendance at group meetings and social event has been holding up more strongly. Furthermore, volunteer mentors increased by 18% to 76.

- Greater participation in social events is encouraged by sending SMS reminders.

In semester 1, 2004 student satisfaction was high (93% of 58 respondents to the mid-program survey rated the program at three stars or more) and a high proportion (91%) would recommend the program to their colleagues. At the time of writing, early indications of a similar survey suggest even better results with many reporting that the program had helped them to better understand the University and Faculty.

An end of program survey in Semester 1, 2004 prompted 88 responses (29% of participants) which indicated that 81% would recommend the program to new students while a similar percentage (79%) agreeing that the program them to settle in and know where resources are. More than two thirds of respondents were satisfied with their mentor-mentee relationship, while the same proportion expressed overall satisfaction with the program. Sample student comments are below

'As an initial introduction to the faculty it is certainly worthwhile. It is the little things like learning about the faculty's free printing limit for postgrad students etc, that were most useful.'

'Gives me confidence to be a student in Sydney Uni. I mean I am familiar with campus, education system and resources as soon as possible.'

'Lets us know more people and make friends in the Uni. '

An expanding future

A number of key performance indicators have been established to assist the evaluation of the longer term impact of this program such as the relationship between program participation and student progression and/or retention rates, two key indicators of teaching performance at the University of Sydney.

The success of the postgraduate program has resulted in several similar or complementary initiatives. A peer mentoring program for undergraduate students is being piloted in semester 2, 2004. At least one other Faculty has been liaising to support their peer mentoring initiative. Tiered mentoring is a possible area for further expansion and Griffith University has already begun pursuing this in one faculty (Fowler and Muckert, 2004). In the Faculty's context, it has occurred more serendipitously with the piloting of the Lucy Mentoring Program within the Faculty in semester 1 2004. A number of the mentors in the undergraduate peer mentoring program are participating as mentees in the Lucy Program. (The latter involves senior female undergraduates being mentored by senior female professional in the private sector and in the corporate sector of the state public service). Given the University's commitment to graduate attributes, closer monitoring of the extended benefits, such as the transfer of skills of mentoring and the attributes of a mentor from one level and context to another, are worthy of future attention.

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Mark Freeman is Associate Professor and inaugural Director of CALEB. He has been active in leading student-centred learning programs of innovation within higher education and professional practice. Prior to joining the University of Sydney Mark held various academic positions in finance and work-based learning in the Faculty of Business at the University of Technology Sydney. He also spent time in industry as senior learning consultant for The Institute of Chartered Accountants in Australia who offer the Australasia-wide postgraduate professional accounting program. His research is in learning and assessment, particularly involving technology-supported innovation.

Jill Kelton coordinates the student mentoring programs for the CALEB. She has worked in universities for more than ten years, principally in the area of academic orientation and English language preparation for international students, first in the University of South Australia's Centre for Applied Linguistics and later in the University of Sydney's Centre for English Teaching and Foundation Program. In addition to teaching she has held various coordinating roles, in testing and assessment and short term program coordination, principally the Intensive Academic Preparation Course for AusAID scholarship holders. She has also been an accredited IELTS assessor and has wide experience of the sorts of issues, academic and social, which confront students, particularly international students, new to university study.

You can engage with Mark and Jill in a conversation about the Peer Mentoring Program and CALEB's work by visiting the online discussion forum at:
www.itl.usyd.edu.au/synergy/forum

or email Mark at:
M.Freeman@econ.usyd.edu.au

In recent years, much research and attention has been focused on developing generic life long learning attributes in under- graduates (Academic Board Policy 1993; B-HERT 2001; DEST 2002; Hyde et.al, 2004). However, little attention has been given to actu- ally providing avenues for graduates to continue their learning long after they leave university. Traditionally, the only options provided by the University of Sydney to graduates in the workplace wishing to keep up to date with the latest develop- ments in their field were Masters /Graduate Diploma courses and short conferences or workshops. Masters and Graduate Diploma pro- grams often fail to meet the needs of life long learner. These programs usually require intensive study, face to face attendance during the work- ing week, and are geared towards a career in academic research. Short conferences and workshops merely touch the surface and fail to provide a continuum of learning on a par- ticular subject or field.

Initiatives for graduate veterinarians like the distance education courses and information portal developed by the Post Graduate Foundation in Veterinary Science (PGF) and the Veterinary Education Information Network (VEIN) are unique in that they have provided new opportuni- ties for graduate veterinarians to engage in on-going learning at uni- versity throughout their career. This short article reports on an evaluation of these programs.

PGF distance education courses

The distance education courses pro- vided by the PGF are non-degree and are run over 10 months. They are designed for veterinarians in practice wishing to improve their skills in an area of weakness or those who want to become advanced in a

particular area of veterinary medi- cine. There are 18 courses in total ranging from equine surgery, to avian medicine. The courses have a problem based approach and par- ticipants are encouraged to use cases in their own practice to complete assignments. The blended delivery, allows participants to discuss cases and treatments with other course members through email list servs, submit assignments on-line through *WebCT*, view symptoms from vid- eos on a CD ROM and look up references at work from a hard copy of notes sent out each month. There are no compulsory face to face requirements for the course and par- ticipants can successfully complete the course without disrupting their working arrangements.
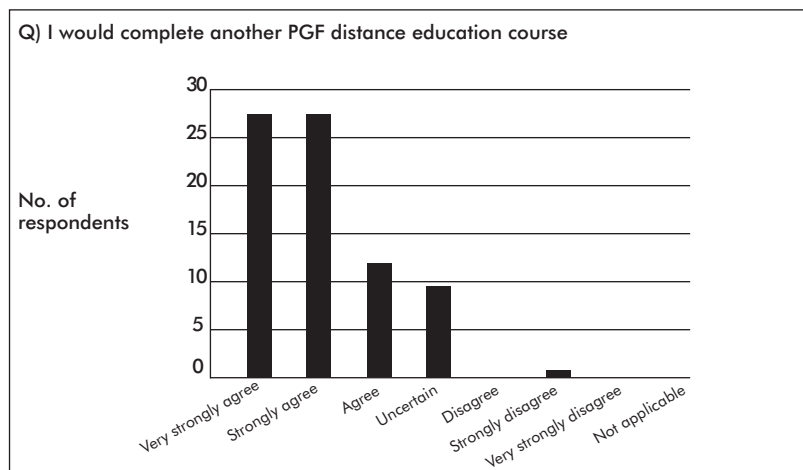
Evaluation of PGF distance education courses

A survey was mailed to every 2003 distance education participant with their final module in October last year. In addition, the survey was also emailed to each participant and could be downloaded from WebCT. It consisted of 40 questions and a (1-8) likert scale. Each question

was designed to encourage further comments.

Pioneering ways for veterinary graduates to become life long learners
Danielle Merrett, Susanna Smith & Michele Cotton
UniServe Science & Postgraduate Foundation in Veterinary Science

79 responded to the survey from a total of 247 enrolled participants. To gauge whether these courses did in fact support flexible and manageable life long learning, participants were asked if they had adequate time to complete assignments, whether the workload of the course was appro- priate for their learning needs, and if, as a result of doing the subject they felt more competent and confident in their work. Many commented that the program was a flexible and convenient way to continue their learning. One respondent wrote:

As a practice owner, full-time vet- erinarian and mother in the middle of house renovations this is the only means I could employ to further my learning this year without having to be away from the house or surgery too long and still obtain a good learning curve.

Most of the respondents said they would complete another distance education course with the PGF (Figure 1 below).

Q) I would complete another PGF distance education course

F1: *Number of responses for each category to: I would complete another PGF Distance Education Course.*

VEIN

VEIN is a membership based service, that delivers on-line and off-line information services to veterinary practitioners and animal scientists. With the shift towards a knowledge based economy there has been an increasing demand from graduates for timely access to high quality information - essential for productivity and innovation in the workplace. Members comprise of graduates from all over Australia who through VEIN, have access to: CAB and MEDLINE databases, a University of Sydney Library card with lending rights, a book and article delivery service, and a full-time staff member to assist members with research and advice. This service is particularly appealing to veterinarians practicing in rural areas who wish to keep up do date with developments in their field and do not have access to metropolitan libraries and resources.

Evaluation of VEIN

In May 2003, 210 VEIN members were invited to send in their feedback on VEIN services through an open ended question sent via email. 25 responses were received and some of the themes repeated in the responses were:

Access:
The part of the service which is particularly important to me, as a veterinary practitioner without easy access to a medical library, is the provision of copied journal articles and library books.

Fast availability:
I have been very impressed with the service provided by VEIN in terms of providing copies of journal articles quickly and efficiently and at a realistic price

General appreciation:
VEIN is an incredible service—I can always get on and the two databases present an incredible combination of papers.

The 2003 PGF distance education survey also evaluated whether participants who used VEIN found it useful. Participants were asked to choose the most appropriate response to the statement: access to VEIN and the abstract databases were useful (see Figure 2 below).
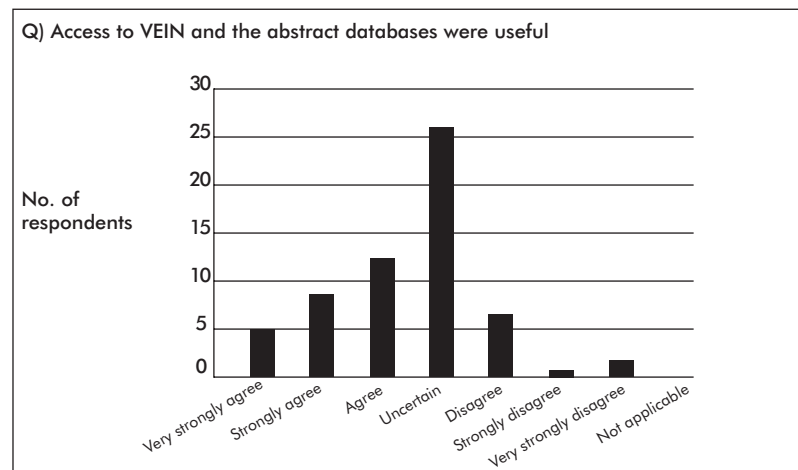
F2:Number of responses for each category to: I would complete another PGF Distance Education Course.

It is interesting to note that many participants did not utilise this service. Was it because they did not know about what VEIN offered or was it because they felt that it could not help them? Further investigation is required to answer these questions. Although most participants surveyed who used VEIN found it useful, some interesting results came from the comments of participants from one course. This course required participants to source all references themselves in an effort to not only enable them to grasp a deeper understanding of the topic but to develop generic research and independent learning skills. Some participants were resentful about having to source their own articles and having to pay additional membership to VEIN for database privileges.

The printed material sent out was often inadequate this resulted in excessive amounts of wasted hours trying to source this information from the internet, or pay to receive it from VEIN…. If I had wanted to spend hours developing my skills on internet

usage, I would have paid for a course to do so.

These problems seem to stem from a lack of explicit learning objectives that explain to why they are being asked to source their own articles rather than a lack of printed material for the course. Clearer expectations and learning objectives need to be communicated to new participants in future years.

Combining the two initiatives

In a collaboration between VEIN and the PGF, all PGF distance education participants this year were given membership to the VEIN Community as a part of their course to enhance to the life long learning process. The PGF has always encouraged its course participants to join VEIN but the 2004 program is the first year that all participants have had access to VEIN membership. Further investigation is needed at the end of the 2004 program to evaluate the benefits and outcomes of combining the two initiatives.

Providing avenues for graduates to become life-long learners after graduation is equally important as developing these attributes in our present undergraduate students. Learning is no longer something that finishes when a student completes their degree. Graduates are

now required to continue learning throughout their life. These initiatives represent a response to the changing educational needs of our society.

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Danielle Merrett is an Educational Technologist with UniServe Science. UniServe is actively involved in teaching and learning projects across the College of Sciences and Technology at the University of Sydney. As a former Distance Education Coordinator at the Post Graduate Foundation in Veterinary Science she has a particular interest in providing opportunities for learning to those who face: rural isolation, time and financial constraints, race, gender, and psychological barriers to education. She has also worked on developing training packages for life sciences courses at TAFE NSW and as a student advisor for the Australian College of Journalism.

Susanna Smith is the Manager of VEIN Community. She has a background in Social Science and Information Management. She has been involved in the training of VEIN Community Clients in information literacy skills and the day to day management of the VEIN Community service including information research, document delivery, and ongoing support of client information needs.

Michele Cotton is the Director of the Post Graduate Foundation in Veterinary Science and has been a veterinary practitioner for over 20 years. She is a member of the Teaching and Learning Committee of the Faculty of Veterinary Science and has a keen interest in providing quality, unbiased education to post graduate veterinarians.

You can engage with Danielle, Susanna & Michele in a conversation about VEIN initiatives by visiting the online discussion forum at:
www.itl.usyd.edu.au/synergy/forum

or email:
PhySciCH@mail.usyd.edu.au
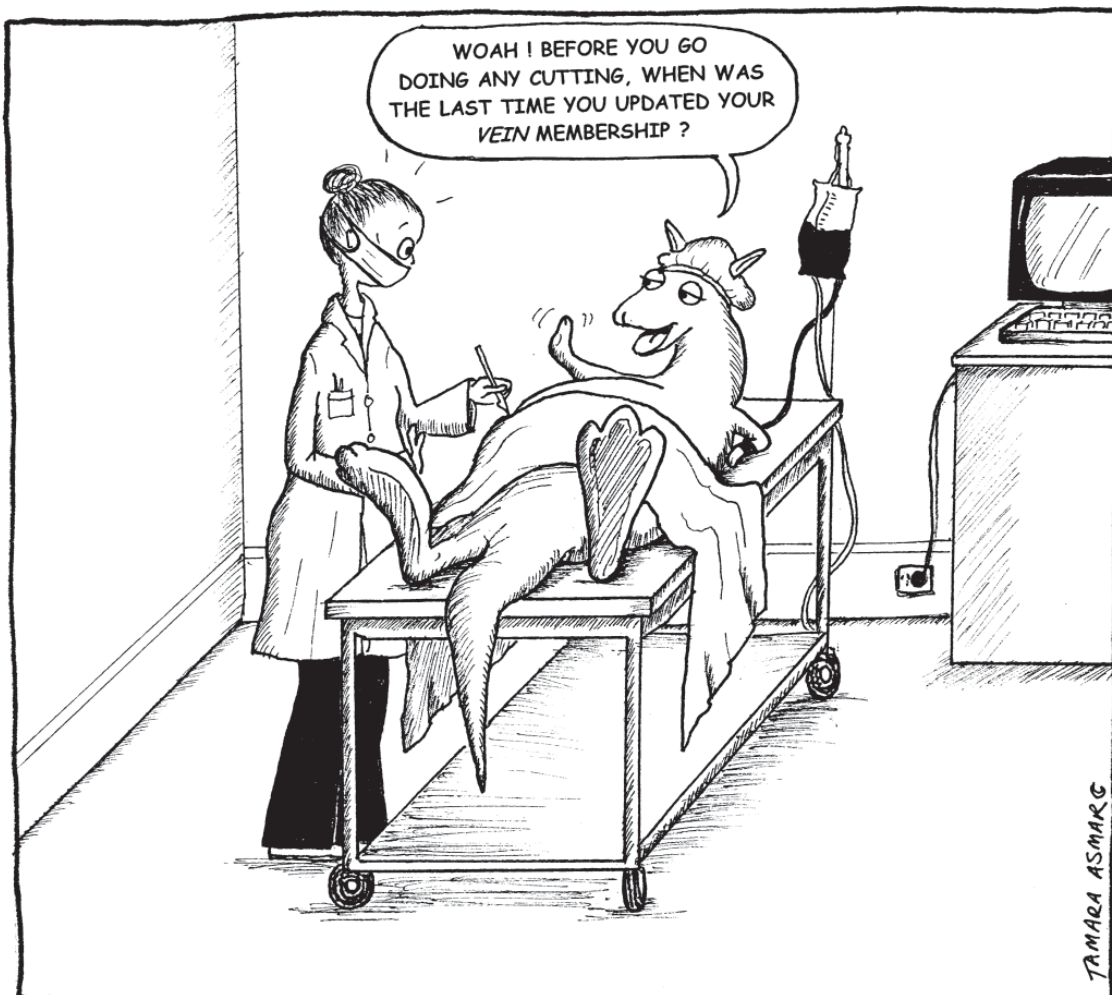
conferences

Conferences: Higher Education Teaching and Learning

AUSTRALIA, NZ AND ASIAN REGION

Australian Association for Research in Education Conference (AARE)
Theme: Doing the Public Good: Positioning Education Research
28 Nov – 2 December 2004
The University of Melbourne, Victoria
http://www.aare.edu.au/conf2004/index.htm

Australian Society for Computers in Learning in Tertiary Education Conference (ASCILITE)
Theme: Beyond the Comfort Zone
5-8 December 2004
Perth, Western Australia
http://www.ascilite.org.au/conferences/perth04/

Western Australian Universities' Teaching and Learning Forum
Theme: The Reflective Practitioner
3-4 February, 2005
Murdoch University, Western Australia
http://www.tlc.murdoch.edu.au/tlf/2005/

Enhancing Student Success
Theme: The Role of Integrated Support Services
11 April, 2005
Ourimbah Campus, University of Newcastle, NSW, Australia
http://www.ccc.newcastle.edu.au/student-support/2005conference/index.htm

Higher Education Research & Development Society Australasia Conference (HERDSA)
Theme: Higher Education in a Changing World
3-6 July, 2005
The University of Sydney, NSW, Australia
http://www.herdsa.org.au/2005/

Australian Universities Quality Forum (AUQF)
Theme: Engaging Communities
6-8 July, 2005 Sydney, NSW Australia
http://www.auqa.edu.au/auqf/2005/index.shtml

UK, EUROPE & THE MEDITERRANEAN

Society for Research in Higher Education Conference (SRHE)
Theme: Whose Higher Education?: Public and Private Values and the Knowledge Economy
14-16 December 2004
University of Bristol, UK
http://www.srhe.ac.uk/

Centre for Research in Lifelong Learning
Theme: What a Difference a Pedagogy Makes: Researching Lifelong Learning and Teaching
24-26 June, 2005
University of Stirling, Scotland
http://crll.gcal.ac.uk/conf.htm

European Association for Research on Learning and Instruction Conference (EARLI)
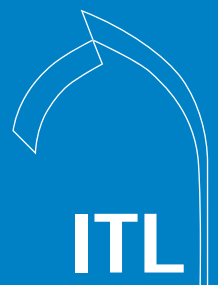Theme: Integrating Multiple Perspectives on Effective Learning Environment
23-27 August, 2005
University of Cyprus, Nicosia, Cyprus
http://earli2005conference.ac.cy

13th Improving Student Learning (ISL) Symposium
Theme: Improving student learning through assessment
5-7 September, 2005
Imperial College, London, UK
http://www.brookes.ac.uk/services/ocsd/1_ocsld/isl2005/call-forpapers.html

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