About NAIRTL: The Irish National Academy for the Integration of Research, Teaching and Learning promotes innovation, supports development and sustains good practice that links research with teaching and learning in thirty-eight higher education institutions. The Academy is a collaborative initiative between University College Cork, Cork Institute of Technology, National University of Ireland Galway, Trinity College Dublin and Waterford Institute of Technology. NAIRTL is supported by the Higher Education Authority Strategic Innovation Fund.

About this publication: The National Academy's third annual conference, Research-Teaching Linkages: Practice and Policy, was hosted by Trinity College Dublin. The keynote addresses together with a selection of papers, workshops, poster presentations and the roundtable discussion from the event are presented here.

HEA Higher Education Authority An tÚdarás um Ard-Oideachas
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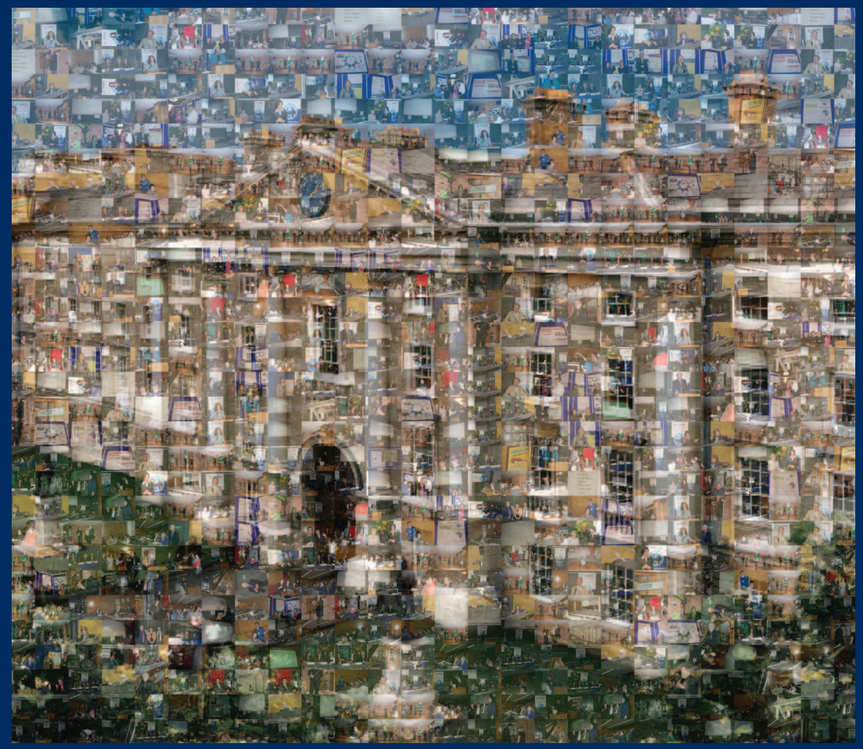
Research-Teaching Linkages: PRACTICE AND POLICY PROCEEDINGS OF THE NATIONAL ACADEMY'S THIRD ANNUAL CONFERENCE Editors: Jennifer Murphy, Bettie Higgs and Carrie Griffin NAIRTL

NAIRTL
National Academy for Integration of **Research**, **Teaching** and **Learning**
Acadamh Náisiúnta um Chomhtháthú ***Taighde***, ***Teagaisc*** *agus* ***Foghlama***

Research-Teaching Linkages: PRACTICE AND POLICY

PROCEEDINGS OF THE NATIONAL ACADEMY'S THIRD ANNUAL CONFERENCE



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RESEARCH-TEACHING LINKAGES: PRACTICE AND POLICY

Proceedings of the Third Annual Conference of the National Academy for the Integration of Research, Teaching and Learning

Editors: Jennifer Murphy, Carrie Griffin and Bettie Higgs

October 2010

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FOREWORD

The third annual conference of the National Academy for Integration of Research, Teaching and Learning was held at Trinity College Dublin on 11 - 12 November 2009, and was attended by over 300 delegates. The theme – *Research-Teaching Linkages: Practice and Policy* – was timely and generated some fascinating papers, workshops and debates, demonstrating that the research-teaching nexus is not only to the forefront of, but crucial to, current national discussions on the impact and future of higher education. Moreover, the importance of the research-teaching nexus is now central to dialogue surrounding strategies of investment in third-and fourth-level Ireland.

This publication, which I am delighted to introduce, provides insight into some of the innovative, inspirational and highly effective methods used by third and fourth-level teachers in classrooms, laboratories and centres for teaching and learning both nationally and internationally. The success of NAIRTL, and the continued interest in its grant initiative, awards programme for excellence in teaching, workshops and conferences, publications and other activities points towards the importance of the objectives of the National Academy in the modern Irish educational landscape. The relevance of this progressive organisation is particularly apparent at a time of increased emphasis on higher education , knowledge transfer and the creation of a knowledge economy where the importance of integrating research, teaching and learning is recognised. Research, teaching and learning are in fact inextricably linked, and that linkage is a critical part of the education continuum; NAIRTL, through its activities and its support of research-teaching linkages on four levels, encourages teachers to speak about their own research, engage students in authentic research, investigate the inculcation of a research ethos and conduct research into teaching and learning itself. The latter - the Scholarship of Teaching and Learning - has universally and undeniably demonstrated the positive impact of that relationship at all educational levels.

The sense that we are all researchers and, importantly, all learners, emerged from the NAIRTL conference and prevails in this volume. This recognition is extremely valuable since it privileges the educational rather than the productive aspect of research, making that link to teaching and learning more obvious and natural. The papers and posters presented here, concerned with graduate education and scholarship as well as research-enhanced teaching and learning, highlight that research finds a healthy, productive place in primary, post-primary and undergraduate education just as learning extends into research environments at fourth-level. Peter Scott, the former Vice-Chancellor of Kingston University, once said that *all* students are now researchers; we might extend this to make the point that all students need to *learn* to be researchers, to develop their research skills, and to hone their abilities to perform in a knowledge society, using the processes and mechanisms that they acquire in the higher education system to transfer their knowledge and learning in meaningful ways.

A key aspect of this conference was the interactive roundtable discussion (which you can view on the CD Rom that is provided with this volume) involving representatives of the major educational funding bodies in Ireland. The discussion, which was concerned broadly with the impact of research organisations and their funding strategies on teaching and learning, was multifaceted and engaging; however there seemed to be general consensus that a shift is underway in terms of the evaluation and assessment of the impact of research funding on teaching and learning. That shift in focus has been from a quantitative attitude towards research products (e.g. how many modules/new courses and so on have been created as a result of investment) to the real impact of enquiry-led teaching which, through the work of centres for teaching and learning and the National Academy, is increasingly recognised as encouraging collaboration, new methods, new research and better learning. The best way to transfer knowledge is through education; this has been emphasised at Government level and is now a key policy of most of the major funding bodies, and will positively

influence the graduates we produce - graduates who will be educated in research-informed ways.

If education is a continuum, then core funding for higher education – including teaching, learning, research and scholarship - must remain integrated. The results of long-term investment in this integration may not be immediate or instantly visible, but that investment will create a cultural change, the impact of which will be enduring. The HEA recognises the need for parity of esteem between teaching and research and, moreover, that a balance between the two is required to create a teaching and research system, which is more fruitful and will inform and stimulate growth and productivity in a cohesive manner. Clearly the investment in this system needs to be sustained to maintain international standards, reflecting an acknowledgement by investors and funding agencies that parity and progress will not be achieved by privileging either teaching on one hand, or research on the other.

Research is an integral part of learning, and scholarship of teaching and learning contributes equally to research cultures. This volume strongly indicates that this particular aspect of research is flourishing, and has found a voice, largely due to the endeavours of teaching and learning centres nationwide and, in particular, the work of NAIRTL in emphasising and publicising the natural dynamic between learning, teaching and research. Finally I wish to congratulate the organisers of the conference and the contributors at same and to wish them all continued success in their endeavours to enhance the learning experience of all students.

Eucharia Meehan
Head of Research Programmes
Higher Education Authority of Ireland

CHALLENGES AND OPPORTUNITIES IN THE DEVELOPMENT OF STRUCTURED PHD PROGRAMMES

In the last ten years an increasing number of structured PhD programmes have been developed in Ireland. An Irish Universities Association (IUA) statement issued in April 2009 declared that a structured PhD programme is one that supports the original research activity and includes:

> *"a formalised integrated programme of education, training and personal and professional development activities; the development of discipline-specific knowledge, research skills and generic/transferable skills; declared outcomes and graduate attributes in line with national and international best practice; supervision by a principal supervisor(s), normally with a supporting panel approved by the institution; progress to completion is formally monitored against published criteria and supported by formal institutional arrangements in line with national and international best practice; successful completion and examination of the research thesis is the basis for the award of the PhD degree; registration is normally for four years for a full-time student"* (IUA, 2009).

The statement declared that:

> *"The goal of such a programme is to provide a high quality research experience and output, with integrated support for professional development. The structured PhD programme is therefore designed to meet the needs of an employment market that is wider than academia, through the introduction of a range of educational and training opportunities as part of the programme. In doing so, the structured PhD can better address the immediate research needs of students, as well as preparing them for future careers in a wide variety of contexts"* (IUA, 2009).

Through its workshops and keynote presentations, the IUA-NAIRTL conference on Graduate Education addressed the challenges and opportunities concerning the development of structured PhD programmes.

What is distinctive about most structured PhD programmes is their inter-disciplinarity nature, which all presentations in this workshop reflected. Additionally, the presentations highlighted the inter-disciplinarity of the programmes: computer science and the humanities; literature and history; communication technologies and bionanosciences. This move to inter-disciplinary and inter-institutional programmes reflects the necessity of a multidisciplinary approach to developing a comprehensive understanding of a research question and project that either individual scholars or teams might address. Additionally, multidisciplinary exposure educates students on research methodologies regularly applied in other disciplines and their applicability to their own discipline. This will ensure the development of novel and flexible approaches to the discovery of new knowledge and the exploration of research questions. This approach also enhances the student experience by providing students with access to the best equipment, resources, development opportunities and overall educational experience that the country can provide. It also makes best use of limited resources by avoiding duplication and allowing those institutions to play to their strengths.

Furthermore, collaboration enhances the attractiveness of programmes to ambitious international students who, particularly as potential PhD students, are often more concerned with the quality and structure of a programme and the potential experience they will have, than the reputation of the institution(s) delivering the programme. This ability to attract high quality students, both

Irish and international, and the wherewithal to operate inter-institutionally will also provide Irish programmes with a competitive advantage in securing support from European and other funding sources. The exposure of Irish students to the best international students and the opportunity to work with them will enhance all students' experience and strengthen and increase Irish universities' links and collaboration with other research institutions. The recruitment and retention of the best PhD candidates has been part of national strategy since the *Strategy for Science, Technology and Innovation* was published in 2006. It is acknowledged that to become internationally recognised for the quality of its research efforts Ireland must attract and retain the best researchers.

The move to structured programmes will directly benefit the student and their research by providing structures that facilitate access to a wide range of disciplinary and generic skills development opportunities that will both directly and indirectly enhance the student's research and their subsequent employability. The most anticipated manifestation of this enhancement of the student experience will be the subsequent greater participation of PhD graduates in wide ranging careers. More immediately, the move to universal enrolment in structured PhD programmes should see increased completion rates and diminished times to completion.

The aspiration to develop the 'smart economy' has presaged the introduction of many structured programmes. However, integral to facilitating this objective is the preservation of disciplinary integrity and the student experience. Additionally, the core of PhD education remains 'the advancement of knowledge through original research'. Structured PhDs strive to preserve disciplinary integrity, enhance the student experience and contribute to the development of Ireland's 'smart economy'.

On behalf of the IUA, I would like to thank all of you who contributed to this conference. Particular thanks are due to our keynote speaker Jon Butler from Yale University who generously shared his insights on PhD programmes. A short summary of his keynote address is presented in these proceedings. The IUA is also especially appreciative of the opportunity to collaborate with NAIRTL in the organisation and delivery of the event. Thanks also to the many paper and poster presenters. Your contributions generated lively debate and discussions which endured long after the conference ended. Finally thank you to all the delegates for your energetic engagement in this event. I hope your experience was fruitful and left you brimming with new thoughts and ideas to implement in your individual institutions.

Westley Forsythe
Fourth Level Ireland Network Co-ordinator
Irish Universities Association

ACKNOWLEDGEMENTS

The financial support of the Higher Education Authority, under the Strategic Innovation Fund, has enabled the wide range of activities carried out by the National Academy for Integration of Research, Teaching and Learning (NAIRTL).

We were delighted to organise NAIRTL's third annual conference in collaboration with the Irish Universities Association (IUA). Our conference theme 'Research Teaching Linkages: Practice and Policy' aligned closely with the IUA theme of Graduate Education. We are grateful to Trinity College Dublin for providing the venue and to the many staff and students for assistance leading up to and during the event. Particular thanks must go to Dr Brian Foley and to Jade Barrett who worked closely with the NAIRTL team in organising the conference.

The NAIRTL/IUA conference attracted more than 300 registrations and included four keynote presentations, forty-one papers, four workshops and forty-six posters. We are grateful to all presenters and exhibitors. The proceedings comprise a selection of these with keynote presentations from Dr Anne Lee, Prof. Carolin Kreber, Brad Wuetherick and Prof. Jon Butler (summary version). Seventeen conference papers are included here together with thirty-nine posters. All of the published papers were peer reviewed, and we are grateful to all who contributed to this process.

A recording of the panel discussion on *How can research funding organisations shape teaching and learning?* is available on the attached CDROM. The discussion attracted a very large audience and we are grateful to our panel: Dr Eucharia Meehan, Dr Mairéad O'Driscoll, Ms Dipti Pandya, Mr Martin Hynes, Prof. Nicholas Canny and Prof. Frank Gannon for their participation. Heartfelt thanks also go to Dr John Bowman who kindly agreed to chair the session.

The sharing of professional practice that takes place at NAIRTL events is inspiring and thought provoking. The NAIRTL team would like to thank all delegates who attended and participated in the event. It is your sustained commitment to teaching excellence that makes our work so rewarding.

We Wish to Thank the Following Peer Reviewers:

Dr Barbara Bender, Rutgers, State University of New Jersey
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Chair
Dr John Bowman

Panel Members
Prof. Nicholas Canny, Royal Irish Academy (RIA)
Prof. Frank Gannon, Science Foundation of Ireland (SFI)
Mr Martin Hynes, Irish Research Council for Science, Engineering and Technology (IRCSET)
Dr Eucharia Meehan, Higher Education Authority (HEA)
Dr Mairéad O'Driscoll, Health Research Board (HRB)
Ms Dipti Pandya, Irish Research Council for the Humanities and Social Sciences (IRCHSS)

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Part 1:
Keynote Speeches

COMPLETING PhDS: THE PERIL AND ENDURING PROMISE OF DEEP STUDY

Contributor: Jon Butler, Dean, Graduate School of Arts and Sciences, Yale University

Biographical Note

Jon Butler is Howard R. Lamar Professor of American Studies, History, and Religious Studies at Yale University, where he served as Dean of the Graduate School of Arts and Sciences from 2004 to 2010. He received his BA and PhD from the University of Minnesota. His books include *Power, Authority, and the Origins of American Denominational Order* (1978; new ed. 2009); *The Huguenots in America: A Refugee People in New World Society* (1983); *Awash in a Sea of Faith: Christianizing the American People* (1990); *Becoming America: The Revolution Before 1776* (2000); and *Religion in American Life: A Short History*, with Grant Wacker and Randall Balmer (2003), as well as many articles. He is writing a book entitled *God in Gotham*, which focuses on religion's fate in Manhattan, the capital of American secularism, between the Gilded Age and the 1960 Kennedy election.

Note: As this session was not recorded, the following is a short summary of the paper that was delivered.

INTRODUCTION

What is a PhD? We answer this question too often by succumbing to the bureaucratic lure. We describe formal processes, 'outcomes', time to degree, funding, training in teaching - indeed, almost everything except central intellectual attraction and personal focus of the PhD enterprise: deep study.

Isaac Newton understood the heart of deep study when he acknowledged how Cambridge University gave special leeway for the 'silence and meditation' that was the foundation for all his great discoveries. It was through deep study that Newton found the ranging space that let his mind roam. As he described it, "*I keep the subject [I am studying] constantly before me and wait 'till the first dawnings open slowly, by little and little, into a full and clear light*" (Gleick, p. 38).

What a wonderful phrase: "*into a full and clear light*". But this "*full and clear light*" represents success. More important is the process that got Newton there, the process of "*keep[ing] the subject constantly before me and wait[ing] 'til the first dawnings open slowly.*" This is the hard work part, the part that requires financial support for the time and materials to research, the part that requires the freedom to study and to consider alternatives that frequently fail, often by design and definition, and the part that requires the most patience, the ability to overcome discouragement, and the fortitude to push on.

Certainly in United States PhD programs, the peril of time to degree, PhD funding, and lax faculty attention to students confronts the promise of deep study all too fully. We are not doing as well as we should and must do. Our record across the past forty years actually threatens deep study and the PhD that results from it. And if we do not change it, the robust PhD enterprise rightly praised between the end of World War II and the 1970s may become an unrecoverable past.

Hyperbole? I think not. At least three very simple numerical measures graphically portray the dimensions of the problem: time to degree, attrition, and admissions.

TIME TO DEGREE

The length of time it takes to earn one of the nearly 50,000 PhD degrees awarded each year in the United States simply has become scandalously and depressingly long. Although the median time in graduate school from start to degree was a seemingly acceptable 7.7 years (2008 data), half of those individuals studied much longer, and in some fields, like humanities and education, even the median time ranged from nine years to twelve years. (As is well known, national US figures reflect one feature of US PhD programs often not found in Europe: that most American institutions do not require a Master's degree to begin a PhD program and that institutions count the time to degree from the BA, or the start of graduate school, even if Master's degrees are awarded en route) (*Doctorate Recipients*, p. 14).

Some of this appalling length of US PhD programs can be attributed to poor financial support, forcing PhD students to work more than study. But time to degree is too long even at the top US research universities. At Yale, for example, which provides full tuition support, stipends ranging from $25,500 to $30,000 per year, and paid health insurance, the median time to complete a PhD in the humanities is 6.7 years and 5.7 years in both the social sciences and sciences (Yale Graduate School Statistics, 2009). No wonder parents of US PhD students frequently ask their children, 'When will you finish?'

ATTRITION

Attrition is equally high. Between 20% and 25% of entering PhD students drop out at some point in their study, roughly 15% in the social sciences, 18% in the humanities, and almost 25% in mathematics and the physical sciences. Occasionally, the dropout rate in some fields may represent a strong job market with incomplete graduate study, such as for computer science students. But most attrition derives from the sense of failure, fatigue, and desire to move on toward 'real life'. One single figure is sobering: only 57% percent of entering PhD students in all fields had received their degree by the tenth year of their program. No undergraduate program in a US university or college, or law, business, or medical school program, could survive with attrition rates between 15% and 25% and with over 40% percent of its students not finishing by their tenth year (Jaschik, 2007).

ADMISSIONS

Finally, anecdotal and numerical evidence suggests that a smaller and smaller proportion of students in the top quarter of US undergraduate schools seek admission to PhD programs over the past forty years. At Yale, the percentage of all graduating seniors entering graduate and professional study one year after commencement has fallen from 51% in 1960 to 23% in 2008, and the proportion who have entered PhD study has fallen from 16% in 1970 to 7% in 2008 (Yale Graduates Entering Graduate and Professional Study). Only 8% of 2008 University of New Mexico seniors indicated that they intended to pursue any kind of graduate or professional study, suggesting that only 2-3% of New Mexico seniors would intend to pursue PhD programs (College Senior Survey, 2008). Declining PhD admissions prospects compromise efforts to increase graduate student diversity. Families of struggling and underrepresented minorities ask why their sons and daughters should enter seemingly endless, high attrition PhD programs when they could be earning high income after shorter, more successful post-baccalaureate study to become doctors, lawyers, and business men and women (*Broadening Participation*, 2009).

REFORM EFFORTS

Is there help? The superb programs of the Council of Graduate Schools (CGS) in Washington, D.C., such as the PhD Completion Project and the Preparing Future Faculty Project have offered excellent models for PhD reform. And several recent books have probed ways to foster reform in PhD programs. These include *Educating Scholars* (Ehernberg *et al,* 2009), the most comprehensive study of humanities PhD education ever published; a Carnegie Foundation book, *The Formation of Scholars* (Walker *et al*, 2008), which emphasises a more collaborative approach in all PhD fields; and *Three Magic Letters* (Nettles and Millett, 2006) a wide-ranging general study of the American PhD experience.

At Yale, we have focused reform efforts in a 2006-2007 effort called the "2-4 Project" that is being renewed for 2009-2010. This is an internally focused program emphasising collaboration between faculty and students to sort out difficulties commonly occurring between the end of course work in the second year of US PhD study to the start of serious dissertation research by at least the fourth year of graduate study. Many, if not all, programs restructured course work, PhD qualifying examinations, and preliminary dissertation colloquia to help students move past bottlenecks that slowed their entrance into dissertation research, the place where all the preliminaries are swept away and they can finally follow Newton's aim to *"keep the subject constantly before me and wait 'till the first dawnings open slowly".*

CONCLUSION

A long time ago, a kid from a rural Minnesota high school class of forty-four had the unlikely fortune to begin PhD study in history. There I was, sitting on the floor in the book stacks at the University of Minnesota Library, hunched up for hours without interruption, reading seventeenth-century Virginia records that unrolled fateful changes overtaking Europeans and American Indians at what then must have seemed the edge of the earth. For me, the experience seemed like heaven.

Forty years later, perhaps we cannot make PhD study heaven. But we can do better to recover the deep study that a university in the seventeenth-century - already complex, overly bureaucratic, and often unhelpfully idiosyncratic - allowed Newton to pursue. The reason centers not only on the creative creations and discoveries that deep study produce, but on the thoughtfulness, advance of learning, and emphasis on reasoned dialogue that are implicit in deep study. Our times require these virtues in greater quantity than in less. We have an opportunity to think about the virtues of deep study in all aspects of our lives and society. And we have the obligation to reform the PhD programs we oversee to protect and advance the single feature that we know to be their heart: deep study. In the end, deep study is why we all were drawn to graduate school. Ideally, it will be the principal reason new students matriculate every year. We cannot fail them.

REFERENCES

"2-4 Project", Yale Graduate School [online]. Available from: http://www.yale.edu/graduateschool/academics/2-4project.html [accessed 24 April 2010].

Broadening Participation in Graduate Education. Washington, D.C.: Council of Graduate Schools, 2009.

College Senior Survey (CSS) 2007-2008 Administration, University of New Mexico. Available from: http://www.unm.edu/~oir/assessment/css_index.htm [accessed 24 April 2010].

Doctorate Recipients from U.S. Universities: Summary Report 2007-08. Washington, D.C.: National Science Foundation, 2009.

Ehernberg, R.G., Zuckerman, H., Groes, J.A., and Brucker, S.M. *Educating Scholars: Doctoral Education in the Humanities*. Princeton, N.J.: Princeton University Press, 2009.

Gleick, J. *Isaac Newton*. New York: Pantheon Books, 2003.

Jaschik, S. "Hope on PhD Attrition--Except in Humanities", *Inside Higher Education*, December 7, 2007. Available from: http://www.insidehighered.com/news/2007/12/07/doctoral [accessed

24 April 2010].

Nettles, M.T. and C.M. Millett. *Three Magic Letters: Getting to PhD*. Baltimore: The Johns Hopkins University Press, 2006.

UCLA Senior Survey 2009. Available from: http://www.college.ucla.edu/seniorsurvey/post-grad-plans.html [accessed 24 April 2010].

Walker, G.E., Golde, C.M., Jones, L., Bueschel, A.C. and Hutchings, P. *The Formation of Scholars: Rethinking Doctoral Education for the Twenty-First Century*. San Francisco: Jossey-Bass, 2008.

Yale Graduate School Statistics: Total and by Division [online] (2009). Available from http://www.yale.edu/graduateschool/academics/profiles/graduateschool.pdf [accessed 24 April 2010].

Yale Graduates Entering Graduate and Professional Study, 1960-2008. Available from: http://www.yale.edu/oir/open/pdf_public/W120_SrStdy_Charts_I&II.pdf [accessed 24 April 2010].

ENHANCING THE STUDENT EXPERIENCE THROUGH THE SCHOLARSHIP OF TEACHING AND LEARNING

Contributor: Carolin Kreber, Director of the Centre for Teaching, Learning and Assessment, University of Edinburgh

Biographical Note

Carolin is currently the Director of the Centre for Teaching, Learning and Assessment at the University of Edinburgh where she is also Professor of Teaching and Learning in Higher Education. From 1997 to 2004 she was a faculty member at the University of Alberta where she taught courses in adult learning and developmental theory, instructional design, research methodology and the administration of higher education. She obtained her PhD degree from the Ontario Institute for Studies in Education, University of Toronto. She has published numerous articles on the Scholarship of Teaching and Learning (SoTL) and her other research interests revolve around the values guiding higher education and the role of reflection in teaching and learning. She is particularly interested in the different kinds of questions that can be asked as part of the Scholarship of Teaching and Learning and the linkages between theoretical, instrumental and ethical deliberation on university teaching and learning.

I would like to talk a little bit in relation Brad Wuetherick's keynote presentation. Brad talked about various ways of involving students in research-type activities, or the various ways in which the student learning experience can be enhanced by involving students in research. The general theme of this conference, of course, is the integration of teaching, learning and scholarship and Brad's talk was focused principally on research-based teaching, whereas my talk will emphasise the scholarship of teaching. Ideally, of course, the two ideas, or the two ways of engaging in research-enhanced learning are interlinked and we hope that through the scholarship of teaching and learning we offer a better learning experience for students. I think that people attending this conference also hold a fairly strong assumption that by being involved in research the student learning experience is enhanced – so there is a link obviously.

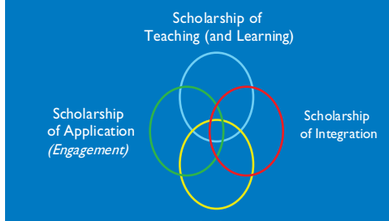
But what is this talk really about? In some ways I feel a bit humble being here today giving a lecture on the scholarship of teaching having heard already some wonderful presentations that I would consider to be excellent examples of the scholarship of teaching and learning. And these presentations that I attended were very research-based. People reported on data that they collected, that they critically reflected upon, that they interpreted, and that they then shared. My talk is not based on any data. I am not really talking about a research study that I did. I do this kind of work but this is not what I'm going to talk about today. What I would like to do then, rather than presenting data, is to explore what the scholarship of teaching could be, rather than necessarily what it is at present. I will look at how it can be conceptualised. Then we will have a brief discussion and I will take any questions that you might have in terms of the ideas that have been introduced. Some of the ideas I, myself, need to think some more about, so I am in the process of thinking about them and I'm sharing with you where I am at, at this moment.

It is about twenty years ago since Ernest Boyer and his colleagues at the Carnegie Foundation introduced different ways of engaging in academic practice and one of these ways was the scholarship of teaching and learning. The scholarship of teaching and learning was then seen as a distinct aspect of scholarship that interrelated with other scholarships, for example, the scholarship of discovery. The scholarship of discovery is what we usually refer to as research: the advancement of knowledge in a particular area. We also have the scholarship of integration, as well as the scholarship

of application or engagement.

How do we conceptualise scholarship? If one applied a socio-cultural lens to this question, one might say that different disciplinary cultures use their own repertoires, practices and tools in their engagement with scholarship. Particular disciplines tend to ask certain questions and use certain methodologies in the study of teaching and learning that have certain commonalities with the types of questions and the types of methods that they would use in their own discipline. So we might find more discursive approaches in the so-called soft disciplines and more empirical analytical approaches in so-called hard disciplines.

SoTL as one aspect of academic practice (Boyer, 1990)



From a socio-cultural lens, one might look at the interpretations of scholarship held by people who work within a university setting. Within our contemporary university context, the scholarship of teaching and learning is frequently interpreted as pedagogical research and this ranges from the large-scale Research Assessment Exercise returnable studies to smaller-scale context-specific studies. But the idea is that scholarship equals research and rarely is the scholarship of teaching and learning considered as learning about teaching, or becoming a university teacher, which involves different forms of learning, and of course sharing what one has learned with others in ways that are perhaps not as traditional as presenting at a conference or submitting an article to a peer reviewed journal. So it seems to be that in much of the discussion on the scholarship of teaching and learning there is an emphasis on the product, what have you learned, or the outcome of your enquiry, rather than the process.

How we conceptualise SoTL

A socio-cultural theory of learning would predict that

- different disciplinary cultures use their own tools, repertoires and practices in their engagement with SOTL;

- within a contemporary university context, SOTL is interpreted as '(pedagogical) research' (ranges from large-scale RAE returnable studies to smaller scale context-specific studies);

- rarely is SoTL considered 'learning about teaching' (becoming a teacher), which involves different forms of learning, and sharing what one has learned in less traditional ways (process versus product)

There is a new term that has become very popular, that is, 'SoTL research'. To me, this is interesting because I thought that what Boyer and his colleagues meant to do was to look at scholarship in a new way, rather than suggesting that scholarship is the same as research. This term 'SoTL research' is now used widely in North America. What is understood by 'SoTL research' is research carried out by academic teachers into matters of teaching, learning and assessment, usually in particular subject areas. And the rationale for such work is that it would enhance the student learning experience. This is why we are doing this. We want to enhance the student learning experience.

I would like to develop this notion a little. Basically I will ask three fairly straightforward questions: Are research and scholarship the same? What do we really mean by advancing the student learning experience, or what does it involve? Is the student learning experience best enhanced through research or also through other ways? I am not saying that research is not meaningful or that it does not enhance the student learning experience. I am just suggesting that there are perhaps other ways that could complement research on teaching and learning. Finally, I would like to look at all this through the ancient notion of authenticity and see whether that concept might usefully inform how we think about the scholarship of teaching and learning and what we consider to be meaningful learning experiences on the part of students.

Problematising 'SoTL research'

Three questions

1. Are research and scholarship the same?

2. What does advancing the goal of enhancing the student experience involve?

3. How is 'authenticity' linked to teaching, learning and SoTL? (is it a useful concept?)

So, are research and scholarship the same? I took this quotation from a book by two Carnegie foundation researchers who basically praise the scholarship of teaching in these ways. *"Professors – the American notion of professors – academics in disciplines from Anthropology to Zoology are beginning to consult pedagogical literature: they look critically at education in their own field; they enquire into teaching and learning in their own classroom, use what they are discovering to improve their practice. In addition, many are making this work public so that it can be critiqued and built upon."* And we have seen some examples of this here.

1. Are research and scholarship the same?

"Professors in disciplines from anthropology to zoology are beginning to consult pedagogical literature, look critically at education in their field, inquire into teaching and learning in their own classroom, and use what they are discovering to improve their practice. In addition, many are making this work public so that it can be critiqued and built upon"
(Huber & Morreale, 2002).

In an interesting article, Lee Anderson suggested that one can actually identify certain quintessential features or attributes of scholarship that apply regardless of the domain of scholarship that you consider. So all scholarship, or all work to be considered scholarship, would need to meet these four criteria. There has to be a deep knowledge base. In terms of teaching and learning in the higher education setting this means to have deep knowledge of the field or discipline that we have developed expertise in and that we are teaching. But it also means having a deep knowledge base about what we have come to understand about teaching and learning itself and more specifically teaching and learning in relation to our subject area – what Lee Shulman has called "*pedagogical content knowledge*" - in addition to the content knowledge which is disciplinary knowledge as such. So that will be the first criterion.

Features of 'scholarship'

- Deep knowledge base
- Inquiry orientation
- Critical reflectivity
- Peer review and "publication"

(Lee Andresen, 2000)

Key question:
How can we engage with student learning and teaching - in our subject areas - such that these four essential attributes of scholarship are guiding our academic practice?

The second one: that there is an enquiry orientation. We are curious about something; we want to know something; we want to advance our thinking in a certain direction so there is something to be enquired into. There is critical reflectivity involved and some form of peer review and 'publication' – I put this publication in quotation marks for a reason and I will come to that in a moment. To me then the key question becomes, how can we engage with student learning and teaching in our subject areas such that these four central attributes (Deep knowledge base; Inquiry orientation; Critical reflectivity; Peer review and publication) of scholarship are guiding our academic practice?

Some of you might be familiar with this table. I borrowed it from work by Paul Ashwin and Keith Trigwell who looked at the various ways in which academics might engage in pedagogic scholarship. Basically they said you can engage with it in order to inform yourself or to inform colleagues within your own department or school. You can also engage with it to inform a much wider audience at a conference like this, for example. Only the level three type of engagement in pedagogical scholarship they suggested is research; the others refer more to scholarly engagements or something like this conference. So there are then these three different levels. This is one useful way of looking at it, particularly since many people, among them Pat Hutchings and Mary Huber, have emphasised that the scholarship of teaching can really include very small-scale context-specific work as well as larger studies that then may get into the academic journals and really try to advance theory about student learning assessment, and even teaching. In that respect it is really useful because it shows that the concept is very elastic and that much can be subsumed under it. However, I find that the model leaves open how people might engage in this work and the types of learning, or forms of learning that underlie engagement in this type of work. By 'learning' I mean our own learning, that is, the learning that we engage in as academics when we learn about teaching and learning and when we develop as university teachers.

'Pedagogic scholarship'

Level	Purpose of the inquiry:	Evidence gathering methods and conclusions will be:	Inquiry results in:
1	To inform oneself	Verified by self	Personal knowledge
2	To inform a group within a shared context	Verified by those within the same context	Local knowledge
3	To inform a wider audience	Verified by those outside of that context.	Public knowledge

Adapted from Ashwin & Trigwell, 2004, p.122.

This idea of going public, that is, publication, is often considered a very important aspect of scholarship and it hinges on this notion of peer review. Here is one link to the concept of authenticity that I see. Charles Guignon, who is Professor of Philosophy at the University of Southern Florida, suggested that authenticity is defined by two different activities: to become clear about what one's own deliberations lead one to believe; but then also to honestly and fully express this in public places. It seems to me, even though his book is not about scholarship, that scholarship is directly linked to this idea of authenticity. So when we engage in scholarship, we do not ignore other voices or the insights that have been contributed by other researchers or theorists that we can read about, or those that are being expressed by our colleagues in conversation, or those that are expressed by students. Ultimately we develop our own stance on issues but informed by theory or existing knowledge. For that reason I think there are many ways of going public in the scholarship of teaching and learning, if that particular framework were used. One might say, for example, that we go public as scholars of teaching and learning when we go out into the community and take a particular stance on certain policy directions in higher education and make this public – but I will come to that in a moment.

Going public?

Guignon, 2006, on 'authenticity':

- a) to get clear about what one's own deliberations lead one to believe
  and
  b) to honestly and fully express this in public places.

- Such is also the nature of scholarship (of course one does not ignore other voices, but finds one's own voice within them and learns to interpret and critique them).

- There are many ways of going 'public' in SoTL (other than the refereed journal article or conference)

Another view on authenticity: Jon Nixon, in a recent book, suggested that authenticity is defined by two virtuous dispositions. One is courage; and the other one is compassion. So one centres on the self; I myself act in courageous ways and thereby assert my own claims to recognition somewhere in the public sphere. But it is also defined by a sense of compassion where I turn to those around me - for example the students I teach - and try to help them assert their own claims to recognition. I can do this, for example, by inviting the quiet, introverted student into the discussion, or by being aware of the lack of cultural capital that some people bring to the teaching and learning situation.

Authenticity of teachers:

Nixon, 2008, on authenticity

- courage (emphasis on self)
  - To take a stand on issues taught
  - To invite students into their authenticity and authority as learners
  - To develop one's own pedagogical style

- compassion (emphasis on the other)
  - To appreciate the unique needs of students (contingency, particularity)

Coming back to the notion of courage, where the emphasis is on me: the authentic teacher might take a stance on issues. This is similar to what Charles Guignon said; we might take a stance by deliberating on issues and developing one's own perspective.
So I might develop a stance on the issues that I teach about. For example: I look at my course; I introduce certain ideas and rather than presenting them as neutral, I let students know where I stand on this. Another way of looking at it would be to take a stance on certain policy directions as a scholar, as a public figure, and to make that public. I think that is an interesting way to look at the scholarship of teaching and learning, moving it out of the classroom, and looking at the wider role that a scholar of teaching and learning might play in society – this is something that we do not hear very much about. An authentic teacher might invite students into their own authenticity and authority as learners. That takes a lot of courage; it is much easier to stand in front of a large lecture group and talk to people and leave after the hour is over, rather than inviting students into your own authenticity.

Lastly, when we develop our own pedagogical style we show authenticity. We might consider theories of teaching and learning and then reflect on how they apply in our particular context. We might surrender certain rules and algorithms for bringing our own self into the process. We invite others into the process. So being authentic also involves compassion where compassion is to appreciate the unique needs of students. It is to value the contingency and particularity of the specific group of learners and the individuals within the group with which we are working.

Where does knowledge on higher education, teaching and learning come from?

- formal knowledge, theory or research on (higher) education (as encountered, for example, in books, articles, courses that prepare teachers, etc.)
- context-specific personal (and collective) teaching experience
- context-specific inquiry into teaching and learning one engages in within one's own field (which can take on different forms)

"Articulating a rationale for one's instructional world… requires reflection about personal theories, knowledge of formal theories, and blending of the personal and formal" (Rando and Menges, 1991, pp. 13-14).

When teachers develop knowledge about teaching and learning, or when we engage in the scholarship of teaching and learning, where does this knowledge come from? Well, it comes from various sources. There is formal research or theory on higher education.
We take theories that are out there and use them to inform our practice. We heard about the notion of threshold concepts, for example. The theory developed by Erik Meyer and Ray Land on threshold concepts is one way of looking at learning that might inform our practice. Social learning theory, espoused by Vygotsky, Bandura, and others is another example. Then there is, of course, the very context-specific teaching experience that we have and this is personal teaching experience that develops over time. It is also collective in some ways because while each of us experiences it in our own unique way, there is a community of other teachers that we are not really separated from. So what we understand about teaching and learning is inevitably influenced by how other people understand teaching and learning. Let us look at a department where what Paul Trowler

calls certain teaching and learning regimes have developed over time. These are particular traditions, norms, practices that are influenced by us just as much as we are influenced by them. Then there is context-specific enquiry into teaching and learning within our own field that we might engage in, and this learning then can take on very different forms.

Here is where it gets a bit messy. If one looks at what might be different aspects of the scholarship of teaching and learning, a look at Aristotle's distinction between activities that are aimed at production and activities that are aimed at interaction and relating to others in a social context is useful. Then one can put a third layer on this and look at it through critical social theory lens and say, in addition to production and social relations, there might also be this aspect of reconstruction. When we look at aspects of the scholarship of teaching and learning as production, where we look at the most effective or efficient ways to bring about a particular outcome, we might say that the learning that we engage in is principally of an instrumental nature. But what do I mean by this? We all want to bring about something in teaching and learning. We want to bring about student learning; we want to bring about an enhanced student learning experience in a way. That is certainly one valid way to look at production. But is it the most meaningful way to think about how to enhance the student learning experience?

Aspects of SoTL

ACTIVITIES	LEARNING	KNOWLEDGE
Production *(poiesis)*	Instrumental	Expertise *(techne)*
Social relations *(praxis/action)*	Communicative/ dialogical	Practical wisdom *(phronesis)*
Reconstruction	Critical or emancipatory	Emancipation /empowerment *('critically inspired phronesis')*

When we look at the practical side and application (praxis) of teaching as opposed to its theory, or the activities we are involved in when we relate to others, we look at teaching in an entirely different way. It is about communicating with other people, and trying to understand what a particular issue looks like from their perspective. The knowledge that is most relevant when we engage with other people in an attempt to promote effective communication and learning is what one might call practical wisdom or the ability to make good decisions and these good decisions might be different for different students. So there is not an algorithm or rule that can be applied which might be the case when we look at it through the lens of expertise.

Finally we come to reconstruction: looking at things in an entirely new way. Here, the learning would be critical or emancipatory and the knowledge would be emancipation or empowerment. It refers to when we look at why we are doing things in a particular way, when we question our tradition, practices, and examine how they have evolved, how they might change, why they should change and so forth.

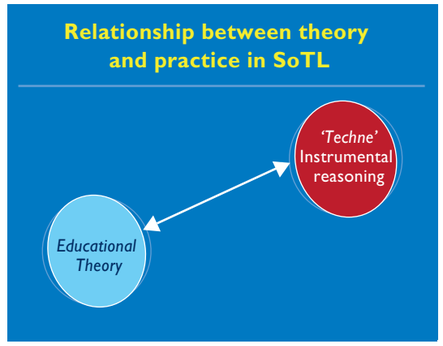
SoTL: More like 'phronesis' or like 'techne'?

Q: 'Will this teaching method lead to better learning?'

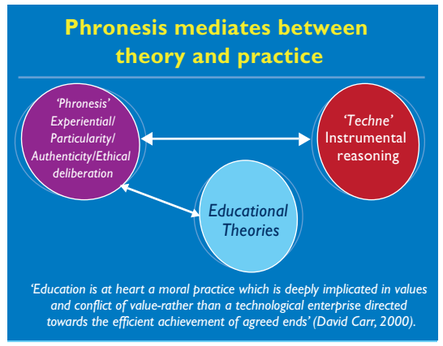
- *Techne* - reasoning directed at establishing effective means to chosen ends (developing rules, regulations that meet the needs of [all] students)-'producing learning' (reasoning ***from*** values)
- *Phronesis* - reasoning aimed at the discernment of desirability of ends (rules and regulations are surrendered in order to meet the other in his uniqueness; the capacity to make good judgements in particular situations-what, when, with whom, to what degree, etc) (reasoning ***about*** values)

Is the scholarship of teaching more like practical judgement or 'phronesis', or is it more like having expertise, knowing how to do things, what I would call 'techne'? Is it more like one than the other? Or is it both and is that important? I do not know the answers: I am just putting these forward as questions.

If you take simple questions, for example: will this teaching method lead to better learning? What is better? How do we look at this notion of better? Is better that we find the most efficient or effective way for all students to reach the same level of learning? Or is better learning something that needs to be deliberated on in terms of what it means. What should the outcomes of learning be? How desirable are certain outcomes? So while the notion of techne leaves the question of the desirability of the ends or outcomes unquestioned, the notion of phronesis takes that as its core – what is a desirable outcome and how might we be able to bring it about?



Techne, then, is reasoning directed at establishing effective means to chosen ends. So the idea is to produce learning, which of course is a very positive thing. The idea of phronesis, on the other hand, is aimed at the discernment of desirability of ends and here we sometimes surrender or abandon rules to meet the needs of particular students. That, in some ways, is also linked to authenticity because when I, as a teacher, have the courage to leave aside what the textbook on teaching and learning says, and try to engage with or recognise the needs of a particular student whose needs are not really met by any universal theory, I think what comes into play is the authenticity of the teacher and this kind of authenticity, which develops over time, through the experience of teaching.



'Education is at heart a moral practice which is deeply implicated in values and conflict of value-rather than a technological enterprise directed towards the efficient achievement of agreed ends' (David Carr, 2000).

2. What does advancing the student learning experience involve?

What do teachers need to know?

- what are meaningful goals and purposes of higher education?
- how student learning and development in relation to these goals and purposes can be promoted?
- which teaching and assessment approaches/strategies might be conducive to this learning and development?

(Kreber & Cranton 2000; Kreber, 2005; Kreber & Castleden, 2009)

When we look at the scholarship of teaching and learning, there is always the question: how does theory come into play? I talked earlier about some theories that might inform teaching and learning: threshold concepts; social learning theory, and so on. But there is also, of course, the idea that these theories do very little to directly help us with our practice because our practice is so context-specific, or situation-specific, that these universal theories do not really apply. This is why the scholarship of teaching and learning really resonated with academic staff and many teachers. Therefore, we should all engage in action research and develop our own theories; we engage in some sort of enquiry into our own practice and thereby distil certain results that then form some kind of grounded theory.

That is one way of looking at it. One might also think of educational theories as a particular

articulation of a philosophy; that we take a philosophical stance on education, a philosophy of education that could be a theory that informs our practice. So another way of thinking about the relationship between theory and practice is to look at the idea of phronesis or practical judgement. When we are informed by theory and have identified the ends or goals of university education, or the goals of our courses or what we are trying to achieve with our particular students, we would then try to develop best ways of bringing it about. So the techne derives from phronesis and phronesis draws on theory: this is how one can look at this relationship.

So what does advancing the student learning experience involve? It might involve many different things but one could ask: what is it that teachers need to know? And one might say that there has to be some knowledge about meaningful goals and purposes of higher education; generally about meaningful goals and purposes in our own discipline. It can be narrowed down even further within the particular courses that you teach. Derived from that is knowledge about student learning and development in relation to these goals; and derived from that is knowledge about which teaching and assessment approaches or strategies to use.

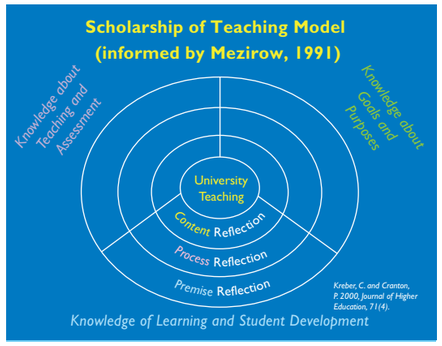
On meaningful goals and purposes

"…the college should encourage each student to develop the capacity to judge wisely in matters of life and conduct….The goal is …to set them free in the world of ideas and provide a climate in which ethical and moral choices can be thought-fully examined, and convictions formed".

Ernest Boyer (1987). "College: The undergraduate experience in America"

What is the purpose of higher education? It is to bring about student learning in certain ways. I find it interesting that Boyer's work is often cited for this classification system that he introduced in terms of scholarly activity but he also, in a text that he wrote a few years earlier, introduced a view on the purposes of higher education. So there is a sense here that there is more involved than learning to become an expert within a particular discipline.

We saw earlier that one criterion on underlying scholarly activity is that of reflectivity and I like this quotation by Lee Anderson who said that, *"Being a scholar of teaching means opening any claims regarding knowledge, about the what, how and why of teaching, to proper intellectual challenge"*. Being a scholar of teaching means to question things on various levels. It also means to critically engage with one's practice.



A few years ago I developed this model based on transformative learning theory, together with a colleague, Patricia Cranton. Basically we looked at these three areas of knowledge: the knowledge of goals and purposes; of student learning and development; and of teaching and assessment strategies. We suggested that academics engage in the scholarship of teaching and learning when they reflect in each of these areas on different levels.

So the three different levels that we identified were: content, process, and premise reflection - this is Mezirow's terminology and it is often misinterpreted. These three areas have the aim of identifying and validating knowledge claims that we make in these domains. Our reflection is then informed by our own teaching experience, by formal theory and by content-specific enquiries that we might carry out. Content reflection is really the least interesting of all these because it does not really mean to reflect on the content of the courses that you are teaching. This is a misinterpretation of the term. The term is not very effective really because it invites too much misinterpretation. When we get into content reflection we basically reason through existing knowledge. Much more interesting are the levels of process reflection and premise reflection. So when we get to process reflection we question knowledge and that can happen in two different ways, and here those two different activities of production and action or praxis or social relations come into play. We can engage in process reflection when we ask: how effective am I with solving a particular problem? But I can also ask: what is the most meaningful thing to do here?

Three forms of reflection

- *Content* reflection ('reasoning within existing knowledge')
  - Is aimed at describing the problem and offering a habitual response
- Process reflection ('questioning knowledge')
  - a.) "How effective am I with solving the problem?" ('techne - instrumental learning),
  - b.) "What is the most meaningful thing to do?" ('phronesis' - communicative learning)
- Premise reflection ('constructing new knowledge')
  -"Why is it that I choose to do these things this way; is there an alternative?" ('phronesis' - emancipatory learning)

With premise reflection we engage in the construction of new knowledge. Why is it that we choose to do certain things in this particular way? Is there an alternative to this? That is a very important question to ask. I think that question is best looked into through some form of instrumental learning. We might, for example, say that when we look at process reflection again, we want to know how students conceptualise a problem. A lot of research has gone into helping students develop more sophisticated conceptions, more accurate conceptions, moving students from a naïve conception to a more advanced one.

Three forms of 'learning'

Process Reflection

- *Instrumental learning* - knowledge claims validated through scientific method (testing hypothesis; establishing causal relationships; linked to *'techne'*).
- *Communicative learning* - knowledge claims validated as we engage in dialogue within a community to achieve a shared interpretation on our assumptions based on shared norms and practices (linked to 'phronesis').

Premise Reflection

- *Emancipatory learning* - knowledge claims validated through reflection on premises, the questioning of presuppositions or core beliefs that define how we presently interpret our practice (linked to 'critically inspired phronesis').

There is another entirely different type of question that can be asked which is: who in this group is having trouble with conceptualising or developing advanced or sophisticated conceptions and why? Who are the marginalised learners? What can I do here to promote profound understanding of this material for all students, not only those who already have a very good background in the area? It is an entirely different type of question.

Process versus Premise reflection

"The scholarship of teaching is concerned not so much with **doing things better** but with doing better things" (Lewis Elton, 2005)

When we engage in premise reflection we ask: why do I choose to do things in certain ways? An example might be: are there certain forms of knowledge important that we usually do not address in traditional academic learning? We value autonomy in higher education. We think it is very important that

people develop the ability and the disposition to make rational choices. That is a really important goal of higher education. Is that the only valid form of knowledge? Are there other forms of knowledge that could be incorporated into academic learning at university? There is now an evolving literature, for example, on emotional involvements with rituality and authenticity. The bookshelves are full it, but we tend to think about academic learning in terms of rationally-based thought processes.

So there are different kinds of learning that inform the scholarship of teaching and learning. We have instrumental learning which is pretty much the scientific process that is being followed by testing hypothesis, establishing causal relationships. Communicative learning is based on understanding, interpretation and emancipatory learning where we question the presuppositions of core beliefs that we hold about how things ought to be done. I think these types of reflection apply across those three domains: teaching and assessment method, goals and purposes, and learning theories that we consider to be important.

Many of you might be familiar with Louis Elton. He is a kind of an icon in the literature of teaching, learning and assessment. A few years ago, he suggested that the scholarship of teaching and learning is not so much about doing things better but about doing better things. I have always liked this because it is a simple statement and I think it brings things to the point. It is not just about doing things that we have always done more efficiently, more effectively, but really to reflect on whether we might need to do different things, particularly in our times. I think that he distinguishes quite nicely the difference between process and premise reflection.

So what might a critical perspective suggest in terms of how we might conceptualise the scholarship of teaching and learning? I think if we adopted a critical perspective it would imply moving beyond purely instrumental, and beyond purely communicative knowledge. It involves asking this key question: why do we do things in that particular way? It also implies looking beyond one's own disciplinary perspective. The scholarship of teaching, it is often said, is embedded within the disciplines. It starts with people's own disciplinary base. It is about particular subject areas. It is very valid to start with that view but I think that critical reflection is enhanced if we communicate across disciplinary boundaries.

What would a 'critical perspective' suggest in terms of how we conceptualise SoTL?

- 'Being critical' implies moving beyond purely instrumental and beyond purely communicative knowledge – it involves asking: WHY DO WE DO, THE THINGS WE DO, THIS WAY-is there a need to change?
- 'Being critical' implies looking beyond one's own disciplinary perspective (yet, present SoTL initiatives still encourage strong disciplinary focus)
- 'Being critical' also, and fundamentally, implies looking at purposes and goals of education and engaging in 'critical deliberation' on these ('Scholarship of teaching and learning' often too narrowly conceived – not inclusive of 'Scholarship of curriculum')
(Barnett and Coates, 2005)

Being critical, fundamentally, implies looking at this whole area of goals and purposes. It sounds trite perhaps, but to my mind there is always a lot of talk about learning - which is important - but the question what are we learning for, with what goal, for what purpose, is not talked about as much. Maybe it is all taken for granted. I think, for example, the Quality Assurance Agency Scotland, with its latest enhancement theme called the 21st Century Graduate, is trying to get at something important here. It asks us all to reflect on what are meaningful outcomes of a university education nowadays. Should higher education change to make it more meaningful to students?

I like this quotation by David Orr: *"In a time of global turmoil, what transcendent purposes will this ideal academy serve? In a time of great wrongs, what injustices will it right? In an age of senseless violence, what civil disorders and dangers will it resolve? In a time of anomie and purposelessness, what higher qualities of mind and character will it cultivate?"* Orr is involved in environmental education and an important figure in the United States. He suggested that higher education really should achieve more than developing experts in a particular discipline. I think these are important questions that should not be ignored by scholars of teaching. We should engage with those questions that relate directly to the learning process. When we ask these questions we move from the domain of instrumental, empirical, analytical enquiry into the realm of moral decision making. That is an important part of the scholarship of teaching and learning.

In the current societal, economic, political, cultural context and in this present policy environment a crucial question in SoTL might be: what is it that deeply matters to us with regard to the learning opportunities that should be offered to students and what are the main ideas, interests and motivations around which we define our professionalism in teaching?

3. Authenticity and SoTL

'It is one of the key pedagogical tasks, to enable students to understand the challenges, and demands, of becoming and sustaining an authenticity of self'.
(Barnett, 2004).

- Ownership, commitment and responsibility

I want to come back to authenticity and the scholarship of teaching and learning now, which is such a complex notion that it can be unpacked from a variety of perspectives. Earlier this morning Brad Wuetherick made reference to the work of Ron Barnett. Brad talked about this notion of supercomplexity that Barnett introduced. We have to deal with a world that is characterised by supercomplexity. He suggests that it is critical that students are enabled to understand the challenges and demands of becoming and sustaining an authenticity of self. Authenticity is associated with notions of feeling ownership, commitment towards certain projects and responsibility. If authenticity then is an important goal of higher education on the part of students, we might want to ask how we can best help students in their process of moving towards greater authenticity.

Grimmett and Neufeld, in a book that was published quite a while ago, introduced three different motivations that might define professionalism in teaching. One is if we do what is externally rewarded. One might say we engage, for example, in the scholarship of teaching and learning, in research on teaching and learning because if we publish it – and if we are lucky and we publish it in the right journals – then there are certain extrinsic rewards for this. We might also say another motivation that might underlie professionalism is to do what we personally find enjoyable, so what is personally rewarding and meaningful. The third one, and this is what they consider to be an authentic motivation, is to do what is good or ethically right. They suggested to do what is good is to act in the important interest of students. Now there is a tension here between those three different motivations and this is why I love that quotation. It is not a matter of choosing one over the other two, or one over the other, but to somehow keep them in balance. It is not only to do something because it is externally rewarded and because it is personally meaningful, but it is also looking at how you can benefit others and having a communitarian perspective on authenticity. Together with students, we build a community so we have their interests at heart and that is probably what defines teaching, to offer the best learning experience for students.

"Authentic motivation is … caught up in a struggle to do what is necessary and of value, not just for the organisation nor just for oneself, but ultimately in the important interest of learners"; I think that is a nice quotation. But what is in the important interest of students? Autonomy is important: this is a widely accepted goal of higher education; but as Ron Barnett and others remind us, authenticity is also important.

I think the question to ponder is this: is the scholarship of teaching and learning the same as research on teaching and learning, based on traditional peer review and publication, or can one espouse a much wider perspective, one that really includes ethical deliberation about what needs to be done? Can we engage with research findings in a sense that we say, 'This is interesting, this is useful, but I need to mediate that for the context that I find myself in. I need to adapt this to the students with whom I work.'

Thank you.

DEVELOPMENTS IN POSTGRADUATE EDUCATION AND THEIR IMPLICATIONS FOR RESEARCH SUPERVISION

Contributor: Anne Lee, Senior Academic Development Adviser, University of Surrey, England

Biographical Note

Anne is a psychologist and academic developer with a background in consultancy and education who has spoken at conferences and led seminars and workshops on doctoral supervision at a wide range of universities across Europe. In addition to various papers, she has written a Society for Research into Higher Education (SRHE) Guide for Supervision Teams. The approach to supervision that her research has proposed is being used as a tool for supervisor development.

The Rialto Bridge is an emblem of what I am going to describe. We want our doctoral students to pass over a bridge whilst they are working with us: from dependence to independence.

My proposition is that there is a pedagogy of supervision, not that *this* is it in its entirety (I am sure there are many other aspects) but that there is a pedagogy of supervision, that it has relevance for other levels of the curriculum, and that this pedagogy of supervision provides an entry point for academics to become involved in the scholarship of research, teaching and learning. I argue that the framework I am about to describe is an entry point: this is one of the ways of looking at the teaching research nexus.

I want to explore a conceptual approach to doctoral supervision, to look at some of the ways that this applies to other levels of the curriculum, and to discuss some approaches to developing supervisors.

Developments in postgraduate education and their implications for research supervision

NAIRTL
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Through the maze

- Global competition for postgraduates
- Bologna
- Effects of student fees/funding
- Salzburg principles
- Publication/ref pressures
- 'New route' PhDs
- Growth of cross-discipline and interdisciplinary work
- Growth of part-time students and lifelong learners

Why is supervision such a hot topic? We know that there is global competition for postgraduates; we know that in the UK and Ireland we are doing quite well at the moment but that China is building universities at the fastest rate imaginable and we need to maintain our distinctiveness. We know the Bologna Process is impacting on us and of course the Salzburg Principles are part of the Bologna Process. Going back to the Salzburg Principles is useful if we want to understand some of the roots of what is happening to PhD education now. In the Salzburg Principles we began to realise that we needed critical mass in doctoral education, and we saw the beginning of serious encouragement of interdisciplinary research; it was there too that we saw employability becoming one of the big issues. These issues are all playing out now in different scenarios through different funding councils and different governments across Europe. We know the effects of student fees and funding; I know that your undergraduates here in Ireland still have the bliss of not having to pay fees (and it does change the landscape when they do), but of course they do still have to pay fees for postgraduate education. If some students go to places like Norway or to

Holland, not only are they paid for doing their PhDs, they can become members of staff; they can have pensions and they are, indeed, employed as academics.

We know that there have been many changes in academia: the pressure to publish and the worries about forcing academics to publish on narrower issues, read by fewer and fewer people. We know that new-route PhDs are controversial and that now there are a lot more courses for PhD students to do; in some cases this used to be a time for students to concentrate solely on their research, but it is rarely 'research only' now. We know that the professional and employability demands on PhDs and other doctoral programmes have increased. The numbers of part-time students and lifelong learners – who are sometimes called, rather disparagingly, 'hobby PhD students' – have also increased. (I actually think that hobby PhD students are some of the most exciting to teach because they are primarily driven by intrinsic motivations.)

The proposition for a framework for concepts of research supervision came from interviews that I carried out initially at Surrey, then at other universities across the UK and then with some supervisors at Harvard (they call them advisers), so you may also see an American flavour coming through. This was a qualitative study supported by the University of Surrey. I interviewed this increasing network of supervisors who were referred to me as being good or even excellent and inspirational. The selection process was very pragmatic. I asked students and academic colleagues to refer people to me and to recommend people. (There is another study to be done on how to identify good supervisors for a study like this).

A framework for concepts of research supervision

					
	Functional	*Enculturation*	*Critical Thinking*	*Emancipation*	*Relationship Development*
Supervisors Activity	*Rational progression through tasks Negotiated order*	*Gatekeeping Master to apprentice*	*Evaluation Challenge*	*Mentoring, supporting constructivism*	*Supervising by experience, developing a relationship*
Supervisor's knowledge & skills	*Directing, Project management*	*Diagnosis of deficiencies, coaching*	*Argument, analysis*	*Facilitation, Reflection*	*Managing conflict, Emotional intelligence*
Possible student reaction	*Organised Obedience Negotiation skills*	*Role modelling, Apprenticeship*	*Constant inquiry, fight or flight*	*Personal growth, reframing*	*A good team member, Emotional intelligence*

Functional
- *"I have a weekly timetabled formal slot for them and follow-up if they do not turn up"*

Enculturation
- *"I would feel I had failed if they did not stay in the field"*

Critical Thinking
- *"I use 'magic' words to help them identify the thread in their argument eg. arguably, conversely, unanimously, essentially, early on, inevitably etc.*

Emancipation
- *"Your job as a supervisor is to get them knowing more than you"*

Developing a Relationship
- *"I always say to them you can go through a love-hate relationship with me. It will probably be more hate than love most of the time, but if we can come out of it at the end still talking to each other, possibly even friends or colleagues in the future, that for me is a good outcome"*

The first theme that emerged from the data was a ***functional*** approach: this was demonstrated by supervisors taking doctoral students in a rational progression through tasks. I want to let some of the supervisors speak for themselves so there are some quotations illustrating each of these approaches.

Now the functional approach might lead you to ask: 'were all my interviewees supervising Science PhDs?' No, they were not. Surrey is predominantly a Science and Engineering university but we do have, and I did include, people from Arts, Humanities and Social Sciences. It is interesting to find that these approaches to supervision are generic to all disciplines. An example of a typical quotation from someone working from the functional approach would be: *"At every meeting we used to write up notes. We both would sign them and I would give them a copy so we'd have a common understanding of what we had talked about".*

The next heading**,** ***enculturation***, is about people becoming members of the discipline. Here the supervisor is not necessarily the fountain of all knowledge but is the gatekeeper to further information and contacts. The phrase 'gatekeeper' is borrowed from general practitioners (family doctors). These supervisors have an idea of what they want the successful PhD student to look like, so their role is one of diagnosis of gaps of the deficiencies and of coaching the person until they reach this stage of being. Some of the quotations which exemplify this are: *"I feel I have failed if they didn't stay in the field' and "My students all know their academic grandfather"*. There is also another whole issue about the enculturation of international students and at the moment I am just acknowledging that this exists and that we need to think about it, but I am not going to explore it further in this presentation.

Enculturation can include: encouraging the student to read biographies of significant academics; creating together the list of essential works to be mastered - that elusive thing, the canon - which turns out of course to be an individual exercise but it creates a challenging discussion.

The third approach that emerged was ***critical thinking*** and I guess that is what a lot of us think that doctoral education is really all about. When I spoke to these excellent supervisors about this area, you could see their thinking changed. It was almost as if they were visualising the brains of the students and completely depersonalising them. So this is a completely different aspect of doctoral education. They said things like: *"They need to explain to me why, what and how"***,** and *"I ask them to email me a question about their project every week"*; and this supervisor went on to say, *"And I told them that if they don't, I will forget them".*

I rather liked the idea that one interviewee introduced, the idea of giving his students 'magic words' to help them to identify the thread in their argument. I spent some time looking for magic words and thought they were an endearing concept and probably particularly helpful for students working in a second language. So the critical thinking approach is about encouraging a meta-cognition and an ability to critique their own ideas. *"I expect them to learn how to learn, how to reason and how to start into something new"* - this is an interesting quotation because it highlights doctoral education as being connected to transferable skills.

The fourth of five possible themes or approaches to research supervision was ***emancipation***. This is very different to both enculturation and functional approaches. A supervisor who is working through an emancipatory approach will not be bound by a directive which says that full-time doctoral students have to complete in three or four years: for them it is the journey that is important. It is a radical humanistic perspective where the journey is as important as the completion. It is focused on mentoring and supporting and it is not focused on saying, 'You've got to become a member of this discipline and you have to act like everybody else in this discipline'. Of course this highlights the challenge, that we want people to be good in our discipline but we also want them to be original. The supervisor operating from an emancipatory approach gains satisfaction from facilitating personal growth in students and I think we can probably all share some of that motivation.

This final theme of ***relationship building*** was much more problematic to synthesise. The other four approaches I could see all had a professional attitude, a set of skills behind them. But of course we know that when you work with a PhD student intensely, over a period of time, a relationship develops and what is happening when that happens? I think we are in the contested land of emotional intelligence and in the interviews supervisors were talking about: the need to enthuse; the need to give more of yourself than was strictly demanded; the need to encourage and inspire; to recognise achievement and to give pastoral support.

We cannot use just one approach when supervising doctoral students because each has advantages and disadvantages.

The functional approach has clarity and consistency but can be rigid. The enculturation approach encourages communities of practice, it encourages participation and it encourages identity development but it can be very confining too. 'You're either one of us or you're not', can be the subliminal message if it is taken too far. Critical thinking can be very rational and can expose fallacious thought but it can be personally belittling if it is handled in a particular way. Emancipation of course can help, in particular, personal growth and independence. The negative side of emancipation is when supervisors are unaware of their own agendas or that they might be abusing power. Relationship development can create lifelong partnerships but there is a potential for harassment. I have had supervisors say to me, *"I felt devastated when my students graduated and never contacted me again. I expected them to want to contact me". I have had other supervisors say to me, "I expect my students to stay in contact with me and I expect, at the very least, to get a Christmas card every year".*

Advantages and Disadvantages

	Functional	Enculturation	Critical Thinking	Emancipation	Relationship Development
Advantages	Clarity Consistency Progress can be monitored Records are available	Encourages standards, participation, identity, community formation	Rational inquiry, fallacy exposed	Personal growth, ability to cope with change	Lifelong working partnerships Enhanced self esteem
Disadvantages	Rigidity when confronted with the creation of original knowledge	Low tolerance of internal difference, sexist, ethnicised regulation (Cousin & Deepwell 2005)	Denial of creativity can belittle or depersonalise student	Toxic mentoring (Darling 1985) where tutor abuses power	Potential for harassment, abandonment or rejection

Dependence and Independence

	Functional	Enculturation	Critical Thinking	Emancipation	Relationship Development
Dependence	Student needs explanation of stages to be followed and direction through them	Student needs to be shown what to do	Student learns the questions to ask, the frameworks to apply	Student seeks affirmation of self worth	Student depends on supervisor's approval
Independence	Student can programme own work, follow own timetables competently	Student can follow discipline's epistemological demands independently	Student can critique own work	Student autonomous. Can decide how to be, where to go, what to do, where to find information	Student demonstrates appropriate reciprocity and has power to withdraw

Links to conceptions of research

(Brew 2001, Lee 2008)

	Functional DOMINO	Enculturation TRADING	Critical Thinking LAYER	Emancipation JOURNEY	Relationship Development
IN THE FOREGROUND IS	Solving problems in a linear fashion	Publications, grants, social networks	Data is linked together with hidden meanings	Personal existential issues, linked to career	
RESEARCH IS	Process of problematising or solving problems	A market place for exchanging ideas	Discovering hidden meanings	A personal transformative journey	

Going back to my opening slide of the Rialto in Venice, we were talking about acting as a bridge between the knowledge and the student. Of course eventually the student becomes independent and flies across the Grand Canal. We always want to move students from dependence to independence and this slide suggests that we can do this in at least five different ways. The top line across the dependence and independence matrix is probably really about scaffolding certain approaches and then the bottom line is about fading, where we remove ourselves from the scene and encourage postgraduates to be more independent.

Some of you may be familiar with Angela Brew's work. She was at the University of Portsmouth and currently works in Sydney. She did some very interesting work on conceptions of research and what academics perceive that research all about. I can map her four domains – Domino, Trading, Layer, and Journey - onto these four approaches – Functional, Enculturation, Critical Thinking, and Emancipation; however I could not map the relationship development one to her work, despite the fact that it so clearly exists from the interviews I carried out. This is why I have said it is more problematic.

What do students want? I interviewed students as well and found that they all want different things at different times. This slide maps some of the things that they wanted: clarity, evidence of progress, they want belonging, direction, the ability to think in new ways, the ability to analyse and recognise flaws in arguments, career opportunities, etc. So that is the framework explained from several different angles.

Next I want to argue that the framework can be applied to teaching graduate students and undergraduate students alike (Table 1). I am arguing that developing creativity is important at all levels of education. There is the part of the curriculum where the lecturer creates the knowledge, which is often taught through transmission-based teaching. Then there is the part where the student creates the knowledge and the role of the lecturer is to facilitate the construction of knowledge.

What do students want? Identifying student motivation, objectives and needs

	 Functional	 Enculturation	 Critical Thinking	 Emancipation	 Relationship Development
What students might be seeking	Certainty Clear signposts Evidence of progress	Belonging Direction, Career opportunities, Role models	Ability to think in new ways Ability to analyse, to recognise flaws in arguments	Self awareness Autonomy Self actualisation	Friendship Nurturing Equality

Implications of moving to enquiry-based learning

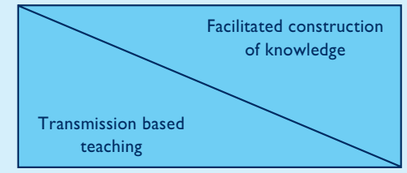


Table 1: Can this apply to teaching postgraduate students?

	Functional	Enculturation	Critical Thinking	Emancipation	Relationship Development
Are these the skills of teaching at masters level	Curriculum design Lecturing and small group teaching/ tutoring skills Giving feedback and assessment Quality assurance	Induction of students Organising departmental seminars, and conferences Finding and sharing examples of good practice in the discipline	Giving students the tools for self and peer assessment Comparing the criteria for validity in own subject with others Attending/ organising journal clubs	Introducing research in the curriculum. Supporting enquiry-based learning Engaging with personal development planning Encouraging metacognition and reflection	Participating in and, initiating social events Reflection on appropriate self-disclosure and boundaries Skills in managing conflict

Returning to the framework as it applies to doctoral supervision, it appears that there are some core beliefs. The supervisors I interviewed frequently demonstrated an ability to operate from two of the five possible approaches. They might well be *able* to operate across all five but most frequently they operated from two. There are some core beliefs going on underneath each approach about how we think people learn and also their values. So performativity here refers to performing to the organisation's objectives, or perhaps to some sort of quality assurance agency's objectives. The value underneath enculturation is about belonging and people wanting to belong, and 'communities of practice' is a very powerful phrase there. The value underlying critical thinking is that we give primacy to rigour. The value underlying emancipation is autonomy and the value under relationship development is agape, a form of selflessness, friendship and love. We probably all have these different values operating when we work with our students, it is a question of which is in our repertoire at any particular time.

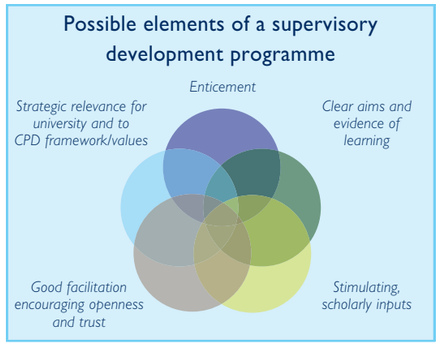
Core beliefs and values

	Functional	*Enculturation*	*Critical Thinking*	*Emancipation*	*Relationship Development*
Beliefs about how people learn	*Absorbing Regurgitating*	*Emulating Replicating*	*Theorise Analyse*	*Discovery Constructivism*	*Being affirmed*
Values	*Performativity*	*Belonging*	*Rigour*	*Autonomy*	*Love Agape*

If this is a useful framework for helping academics to consider the options open to them as supervisors and lecturers, how can we introduce it to them? Below are some suggestions for a range of approaches to developing supervisors:

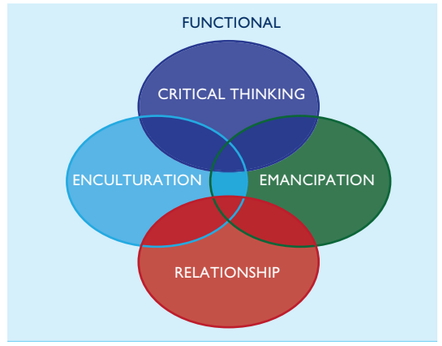
- Action learning sets (cf Balint Groups);
- Workshops (for example, Leeds Metropolitan University, Edinburgh, University of Surrey);
- Residential courses (for example, Missenden Centre);
- Scholarly seminars (for example, at Portsmouth);
- Researching and reflecting on good practice (Brew and Peseta, 2004);
- Involvement in developing/updating policy;
- Developing a bank of case-studies – (some can be actor-led for example, Forum Theatre is used at the University of Umea);
- Mentoring programme (recommended in the QAA code of practice) and opportunities for individual support;
- Accredited and assessed programmes (for example, SEDA, HEA or part of PGCert/PGCAP).

Finally, I want to discuss possible elements of a supervisory development programme? Well, I find enticement is very important: coffee and biscuits, lunch is very good; residential programmes in elegant venues even better. I used to run programmes from a not-so-small stately home and people always remembered those programmes because they just visualised themselves back in that wonderful setting. But coffee and biscuits do well too. Programmes have to be linked, of course, to the university



context, policies and plans, to continuing professional development (CPD) frameworks and to values, all of which is complex. I think CPD for academics (in research management, teaching and learning) is something we've only just started to work on. UK Vitae are currently consulting on a Researcher Development Framework which is a new initiative in this field. It looks at the stages that researchers go through, from being early career researchers to being star researchers or Nobel Prize winners across a whole series of about twenty-four different domains. The framework will be available on their website [http://www.vitae.ac.uk]. It was derived from research that was carried out mainly in Glasgow and Manchester but a team have been looking at the chart in some detail to populate it

My last slide is to indicate that this framework is not actually a matrix: it is more of a Venn diagram, and it admits that these approaches overlap. I certainly acknowledge its limitations, but the matrix is a useful working tool because in workshops you can take each column and say for example: 'Okay, I've got this problem. If I were just working in the functional approach, how would I handle it?' And ditto for the others. Then your participants can reach a place where they can say, 'Now I've got five possible ways of dealing with this programme. What combination is going to be the best?'



So, I have made my proposition: that this framework is a useful pedagogic tool and that we can use it to help supervisors to develop themselves and we can also explore applying it to curriculum design and other levels of the curriculum as well. Thank you very much.

RECENT PUBLICATIONS

Lee, A. and Pettigrove, M. (2010). *Preparing to Teach in Higher Education*. Lichfield: UKCGE

Lee, A. (2009). *Some Implications of European Initiatives for Doctoral Supervision*. The Bologna Handbook.

---. (2009). *Teaching Masters programmes and Doctoral supervision: at the boundary of research and teaching. Conference proceedings for Scholarship of Teaching and Learning Conference*. London 2008

---. (2009). *The postdoctoral researcher – aiming high. An initial survey of the literature*. Commissioned review for Vitae UK (CRAC).

---. (2008). "Supervisory teams – making them work", *Issues in Postgraduate Education*. London: Society for Research into Higher Education, Series 2, no. 6.

---. (2008). "How are doctoral students supervised? Concepts of research supervision", *Studies in Higher Education*, vol. 33, no. 4, pp. 267-281.

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MOVING FORWARD WITH RESEARCH-ENHANCED TEACHING AND LEARNING: PERCEPTIONS OF UNDERGRADUATE STUDENTS AND ACADEMIC STAFF

Contributor: Brad Wuetherick, Program Director, Gwenna Moss Centre for Teaching Effectiveness (University of Alberta, pre 2010)

Biographical Note

Brad is the Program Director for the Gwenna Moss Centre for Teaching Effectiveness at the University of Saskatchewan, having recently moved from several positions at the University of Alberta. His current research interests focus primarily on the integration of research, teaching and learning, including the impact of research-based teaching and learning on the undergraduate learning environment and the perceptions and experiences of the teaching-research nexus among academic staff. Brad is also involved in several projects related to the role of academic development, the scholarship of teaching and learning, and the use of technology in teaching. Brad has published and presented extensively on these research areas at conferences across Canada, the US, the UK and Australia.

I will discuss four different components in my presentation today: the first is how we might conceptualise the integration of research, teaching and learning. The second and third points relate to student and staff perceptions of how we integrate research, teaching and learning, and the fourth is the influence of practice and policy on how we move forward.

Introduction to the Session

1. Conceptualizing the integration of research, teaching and learning
2. Student perceptions and experiences of research in the learning environment
3. Staff perceptions and experiences of research in the learning environment
4. Influencing practice and policy

UNIVERSITY OF ALBERTA

To begin, I will refer to influential quotations that have informed my own work. It is interesting that it has been almost twenty years since Boyer said that it's been a tired old debate of teaching versus research, and if twenty years ago it was tired and old, it must be archaic and dead now. The issue of teaching versus research, however, still comes up regularly regardless of department, institution, or national system. We even heard it yesterday from one of the research council panellists, - that 'we are the research councils and we do not have a mandate at all for education' - so research and teaching are considered completely separate. That is one of the challenges that we need to overcome in order to move forward with research-enhanced teaching and learning. I also firmly agree with Ellis (2006) that every student should have opportunities to engage in research and to create knowledge while they are in their undergraduate programmes.

Introduction to the Session

"The time has come to move beyond the tired old teaching versus research debate."

Boyer (1990)

"I propose that colleges and universities provide an opportunity for all undergraduates to conduct research"

(Ellis 2006)

UNIVERSITY OF ALBERTA

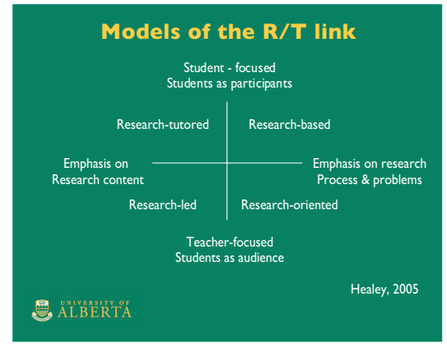
It has been over ten years since Hattie and Marsh did a meta-analysis of fifty-three different studies that looked at traditional measures of teaching excellence (primarily student evaluations of teaching) and research excellence (primarily publication rates and citation indices) and determined that there is essentially no correlation. So it is not good enough to say 'the best researchers are the

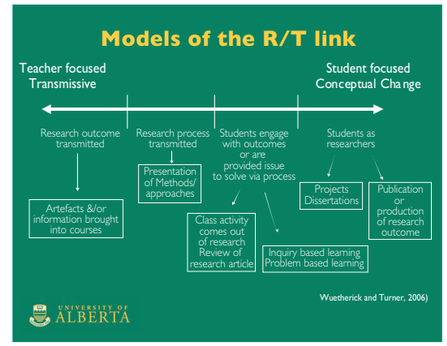
best teachers' or that you need to be a good researcher in order to be a good teacher, which is a comment that we heard yesterday from one of the panellists. The research has instead shown that we have to think actively about how we bring teaching and research together. In other words, how do we structure an educational environment that actively brings research and teaching together in the learning environment? Hattie, speaking at a conference in the UK a couple of years ago, was surprised at how much his study had been used to justify the separation of funding for research and for teaching. This is antithetical to their conclusion that we need to find ways to actively bring these things together.

The ease with which we bring research and teaching together varies greatly and reflects how different people conceptualise research. Much research has shown that if you believe scholarship to be truly just discovery disciplinary research, and if you think of research as being the creation of knowledge that is new, then it is more difficult to imagine how undergraduate students might be involved. Whereas if you have a conception of scholarship and a conception of research that is more like Boyer's four scholarships – discovery, integration, application, and teaching – then it is easier to think about how students can be involved. Conceptions of teaching are also important. There has been a lot of work carried out on teacher-centred versus student-centred approaches to learning, and the place of power between these two approaches. In particular, the distinction has been between a teacher-centred approach, where the power is with the instructor as the teaching expert, versus a student-centred approach, where the power is held by the student and the student drives the learning forward.

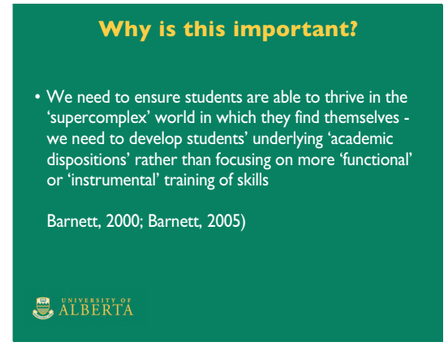
There is also some work that shows that there are important variations in integration that depend on the type of institution. Research-intensive institutions have different challenges to teaching-intensive institutions. There is also a lot of variability by discipline and department. Evidence shows that the ease of integrating research and teaching is influenced by whether a discipline is low-consensus or high-consensus. The Higher Education Academy UK guides by Healey and Jenkins (2005, 2007) discuss how different disciplinary cultures impact on the way of conceptualising the linking of research and teaching. National systems impact on the ease of linking research and teaching. For example, in North America there is a long history of research councils funding undergraduate research and facilitating undergraduates to be actively engaged as research assistants with academic staff. Contrast that example with national systems (e.g. in Australia or the UK) where academic staff are not allowed to add undergraduate research assistants to research grants submitted to the research councils.

This slide shows Healey's (2005) model of how links between research and teaching can be conceptualised. I quite like what he has done with this conceptual model, except for a small concern in one quadrant: research-tutored. The emphasis with research-tutored is on both the research content and being student focused. The example he used in talking about this quadrant was the 'Oxbridge' tutorial model (pairing students one-on-one or two-on-one with an academic staff member), which in reality no other institution can replicate. So it is difficult to think sometimes about an aspect of the model where only a few institutions in the world can use that type of activity (though it is important to acknowledge that recent attempts have been made to explore other examples for this quadrant in HEA publications, as well as in some research emerging from the Netherlands). But the other three quadrants are key to how we conceptualise the integration of research and teaching. 'Research-led' refers to the content of your research or the research of others informing the classroom lecture materials; 'research-oriented' refers to teaching students about the process/methodologies of research; and 'research-based' refers to students actually being engaged in enquiry learning. One of the other ways of conceptualising research-teaching linkages that Healey does not include in this model is the scholarship of teaching and learning.



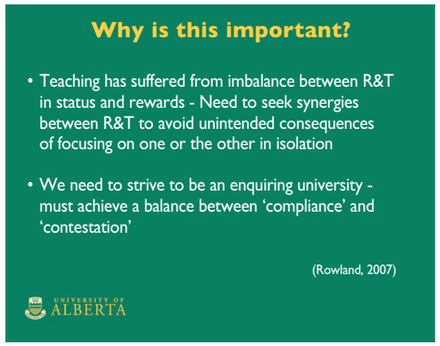


Nancy Turner (RHUL, now at University of the Arts, London) and I came up with a similar way of thinking about this issue. This was developed based on the results of qualitative comments on a student survey that we carried out at both institutions. Interestingly we came up with the same type of conceptual categories. The students themselves identified research outcomes being transmitted in the classroom; they identified research process being transmitted to them (many of them made quite tongue-and-cheek comments about the fact that they learned research methods by sitting in lecture halls); they identified engaging with the outcomes of research or research processes, including enquiry-based learning or problem-based learning; and lastly they identified students as researchers. Healey (2005), however, would combine the latter two under research-based learning in his model. We purposely separated them because the students themselves seemed to distinguish between using the research process to explore a topic that had already been researched in the discipline, compared to them working on the discovery of new knowledge.



Why is the integration of research and teaching important? One reason is that we are preparing students to move forward into what Ron Barnett (2000, 2005) has called a *"supercomplex"* society. So we are moving to a point where it is not good enough to produce graduates that are only experts in their discipline. They have to understand how to move forward in an interdisciplinary sense, recognising that there are multiple perspectives and ways of knowing, and multiple ways to solve problems. In other words, they will need to succeed in addressing the 'great

issues of the day'. Barnett argues that we require *"not that students become masters of bodies of thought, but that they are enabled to begin to experience a space and challenge of open critical enquiry"*. In order to succeed in preparing our students for those challenges, he argues that we need to focus on developing students' underlying academic dispositions - what Bourdieu called the *"habitus"*. Habitus is defined as the set of dispositions distinguishing one group of people from another; in other words the ways in which students understand the world, knowledge, learning as based on their discipline, rather than focusing on instrumental or functional training of skills. What Barnett and others argue in favour of is an enquiry learning environment to enable students to develop these conceptions of themselves as learners, of the nature of knowledge, and of the world.

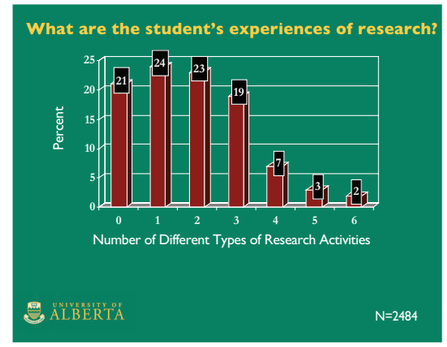


It is important to acknowledge here that there has been an historical imbalance between teaching and research, creating a status issue. The integration of research and teaching allows synergies between the two to be recognised and the avoidance of the unintended consequences of focusing exclusively on one or the other.
There are many cases - the Boyer Commission in the United States being an example - where students are promised access to researchers if they come to university; then they spend their four years in an undergraduate programme and rarely encounter researchers in the classroom, primarily because individual researchers avoid teaching entirely or only teach postgraduates. It is critical that we keep this type of unintended consequence in mind.

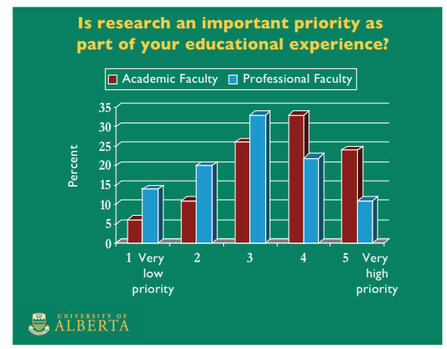
It is also important to think about how to become an enquiring university. Rowland (2007) describes a critical component of what we ought to be doing - we should inspire *"both a love of learning and a love of our discipline"* in the students with whom we interact; we should learn disciplinary norms and ways of thinking and practicing (an aspect of what Rowland called *"compliance"*); and we ought to learn to challenge the frontiers of knowledge in our discipline (an aspect of what Rowland called *"contestation"*). If you think about what made you love your own discipline and encouraged you to continue learning at the postgraduate level, the chances are that it was as a result of being involved in exploring your discipline, which raises the question about how we replicate that with our students.

My institution – which is a top-tier research university - is co-located with several teaching-only institutions that do not have graduate programmes or established research records. Students and media, and in particular public relations campaigns by the other institutions, have been questioning why students would want to attend a research university. They perpetuate the stereotype that research universities are impersonal and that students cannot interact with staff. Our institution has thrown down the gauntlet rather provocatively to say that learning in a research-intensive environment ought to be qualitatively different than learning in a non-research-intensive environment. We have been explicit that students themselves are our primary vehicles for taking the University of Alberta's research and scholarship into our local, national and international communities. I would not necessarily say our institution has thought through exactly what this means yet but it is an interesting challenge, forcing people to think about the question: 'Why would you want to learn in a research-intensive institution like the University of Alberta rather than going across the river to Grant MacEwan University?' (one of our teaching-only institutional neighbours located just across the river). The answer to that question should not be: 'We, at the University of Alberta, have larger classes than they do'. Unfortunately, in some cases, that is the answer that people have actually given to this question. But the reality is that the University of Alberta has capital infrastructure that the other institution is never going to replicate. The University of Alberta has people who are internationally renowned, and who should be in front of students inspiring them to be, as one example, the next postgraduate students. The question remains: how do we actually ensure that learning in a research-intensive environment matters? How do we ensure students experience the people and infrastructure that comes with a research-intensive environment? How do we structure that experience effectively?

We at the University of Alberta, in trying to answer some of these questions, felt it important to discover what our students' perceptions were of what we do. We undertook three separate studies; two of our studies were undertaken in collaboration with our Students' Union, who were equal partners in the research process. They helped develop questions and assisted in crafting the study itself. Having undergraduate students participate in this research was an interesting process.



The first study we did (which was a paper-based survey distributed in specifically targeted classes) had 2,484 students respondents. It was balanced across all four years of undergraduate study and responses were proportional to the size of each faculty. In that study, 31% of respondents had three or more research experiences. Questions included: have you had professors talk about their own research in their class? have you had a research methodology course? have you had opportunities to engage in enquiry learning or to do an independent project? have you actually presented at an undergraduate research conference? have you been an undergraduate research assistant? There were several students who reported no research experiences; however, as students progressed with their studies (from year one to year four) the reported number of experiences increased significantly. So final year students were more likely to have several experiences compared to first year students.



However when we asked: is research a priority for you as part of your education?, generally, the responses were fairly neutral. When we looked at the data by faculty or discipline, we found that in the faculties of Arts and Science for example, students were significantly more likely to say that research was a priority than the professional schools were. So Engineering, Education, Nursing, Pharmacy were significantly more likely to say, 'No, research is not important; it is the actual practical skills of how I

engage as a professional that are important'.

In the second survey which was emailed to a random student sample, distributed across years of study and degree program (collecting over 1200 responses) we asked 'from your perspective, what were the overall priorities for your education in terms of a quality education?' The top two responses were good teachers, or instructors who care about student learning. The next two responses had an explicit career focus. When considering 'the opportunity to do research', 44% of respondents said that was an important priority for them.

What are the most important priorities in a quality education?

Instructors who are good teachers	98%
Instructors who care about students' learning	95%
Degree program prepares you for a future career	92%
Individual classes are relevant to your future career	92%

Research-related items:

Opportunities to do research	44%
Being taught primarily by tenure-track faculty	36%

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N=1304

As we looked at those people who said research was a high priority in comparison to those who did not, an interesting trend develops. Research-oriented students were more likely to think that the items relating to student engagement were of importance to them. They were more likely to assign importance, in terms of the learning environment, to extra-curricular activities, the reputation of the university, and the quality of educational and classroom experiences. Thus if we could raise student awareness about research as part of their learning environment, it might have an impact on their overall quality of experience.

The Research-Oriented Student: A Profile

- Students who perceived research as higher priority in quality education significantly more likely to be:
  - Age 18-21, >30
  - Non-transfer
  - Urban origin
  - Enrolled in academic faculties (Arts, Science)
  - Enrolled in academic specialized programs (i.e., honours or specialization)

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In terms of the demographics of our students, the ones who are more likely to say research was important were aged between eighteen and twenty-one, or over thirty. So students returning to university after a number of years, or those straight out of secondary school, were more likely to think research opportunities were important than students between twenty-two to twenty-nine where the credential or career connection was most important. Students for whom research was a priority were more likely to be non-transferring. Many Canadian community colleges offer one or two years of study followed by the possibility of transfer into other universities. Students who took that route into university were less likely to think that research was important. So, again people that came straight to us out of high school were more likely to think research was important. Urban location appears to be a factor. For example, respondents from Edmonton who had repeatedly seen local press reports about research at the university tended to be more supportive of research being an important part of their learning environment.

The third study we did was in conjunction with Royal Holloway and the University of Gloucestershire in the UK where we surveyed final year students to see how we compared in relation to these institutions. On the whole the students at the more research-intensive institutions –Alberta and Royal Holloway – were far more likely to be aware of research on campus and to have experienced research, than an undergraduate focused institution – Gloucestershire. They were also more likely to recognise both the positive and negative impacts that academic staff engaging in research had on their learning environment.

Very few respondents from all three institutions reported experiences of developing research techniques over the course of their studies. This was a troubling finding at the University of Alberta. As a follow up to this result, we carried out an evaluation of all our undergraduate degree programs. This evaluation showed that every undergraduate degree programme on campus had a research methods course, and that those research methods courses were usually taken in second or third year, yet the respondents still did not report the development of research techniques.

Our survey showed that more undergraduate students in the University of Alberta are engaged as researchers (particularly on nationally funded summer research assistantships) than in the participating UK universities. We also facilitate a lot more undergraduate research conferences in Alberta where students get a chance to present or publish their own research.

As part of our joint project, we also explored whether students agreed or disagreed with certain types of statements. We found that students at the University of Alberta were significantly more likely to agree that instructors not involved in research spend more time helping students. But interestingly, in all three institutions, students felt that instructors involved in research are more enthusiastic about the subject, regardless of type of institution. In all three institutions students reported that they learned best when undertaking their own research project and the most effective teaching is when students are involved in the research process.

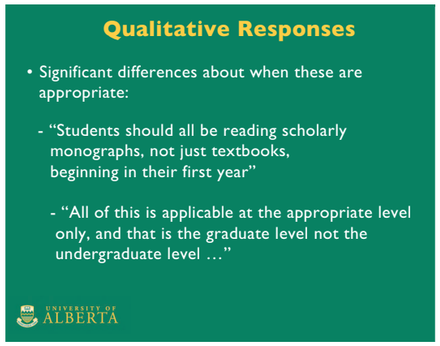
As we progressed with this project, I presented it to a number of different departments at the University of Alberta. Academic staff responded in ways that would suggest a disconnect between what staff thought students were experiencing versus what the students reported. We surveyed some of our academic staff to ask 'What do you think the students are experiencing?', which we then compared to the students from those same departments. We began to realise that staff were more likely to think that students underestimated the research awareness on our campus (Table 1).

Table 1: Staff Perception of Students' Awareness of Research

	U of A Staff	U of A Students
Research seminars	46%	75%
Books, articles or other research output	46%	68%
Notice boards advertising research opportunities	23%	59%
Existence of Research Centre or Institute	18%	72%
Areas with national or international reputations	18%	60%
Faculty are writing for publication	73%	79%
Faculty are supervising research students	46%	81%
Faculty are undertaking funded research	36%	77%

They, in turn, overestimated the experiences that students were having with research. When asked what the typical fourth (or final) year student had experienced, staff were also more likely to overestimate the positive impact of research that students would report and were more likely to underestimate the negative impact of research.

We asked for qualitative responses as part of the study and academic staff reported some really innovative things that they were doing in the classroom to integrate teaching and research. But arguably, when they submitted comments about this, they were still thinking in a more transmissive teacher-centred way. When asked about the most important way in which they conceptualise teaching and research, over half the respondents said that 'Research informs my teaching materials'. Less than 10% reported that 'students engaged as researchers' was the way to think about this.



Some comments were of a more negative nature regarding the link between research and teaching:

> *"Research need not distort a class but it has that potential. Often the problem is one of time – publishing priorities come before class time."*

> *"I am not sure what the 'link' intended is, but what I research is too esoteric to have much influence on undergraduate teaching. They are not in a position to understand."*

The theme attracting the most comments– the core purpose of higher education – shows that staff view universities as fundamentally about both teaching and research. The University of Alberta has started to describe itself as a teaching and research intensive university and that the education students receive ought to reflect that.

A few secondary themes emerged from the qualitative responses, which included the importance of academic staff as research-active:

> *"Only research-active scholars can communicate the most recent results of research along with practical knowledge of how to do research. Scholars who do not pursue scholarship/research themselves or at least keep up with their fields in an active way will soon be teaching in a way that reflects a past version of the discipline …"*

I do know, anecdotally, that there are people who would not be considered research-active in a traditional discovery-research sense, who keep more up-to-date with the current literature in their field than do some of the research-active staff who are focused on a really narrow field. So it is important to think about how 'research-active' is defined. The research assessment exercise in the UK, for example, has imposed a definition of what research-active is that creates problems about how we then think about the integration of research and teaching.

Another secondary theme that emerged related to student progression to postgraduate studies. This has been emphasised on many research-intensive campuses; a focus on research as part of the teaching and learning environment at the undergraduate level helps meet institutional aspirations in the area of postgraduate study, including an awareness of what research does and does not do, and the importance of developing a research ethic in our students in order to prepare them for advanced study.

I turn finally to policy and practice in the integration of research and teaching. It is important to remember that one size does not fit all at every institution, or in every discipline, or in every national context. It is important to consider a particular context when moving forward; there are policy levers at all levels that can significantly influence individual academic practice and the experiences of undergraduate students.

Here are some examples of different policy levers at the national level that can influence practice in the area of research-based or research-enhanced teaching and learning. Undergraduate Quality Assurance is one of the areas that can negatively impact the integration of research, teaching and learning probably more easily than it can positively impact it; however how this is framed is important. For example, the Scottish Quality Assurance Agency frames undergraduate quality assurance conversation in a way that allows thinking about research-enhanced teaching and learning in the context of developing students' graduate attributes. That framework seems to be really positive in terms of how we might move forward. National opportunities, rather than just institutional or departmental opportunities, for undergraduates to be involved in research activities are also important. For example, undergraduate research journals are becoming more common. We should not underestimate the importance of facilitating conversations between academic staff, university administrators, and policy makers at the national level.

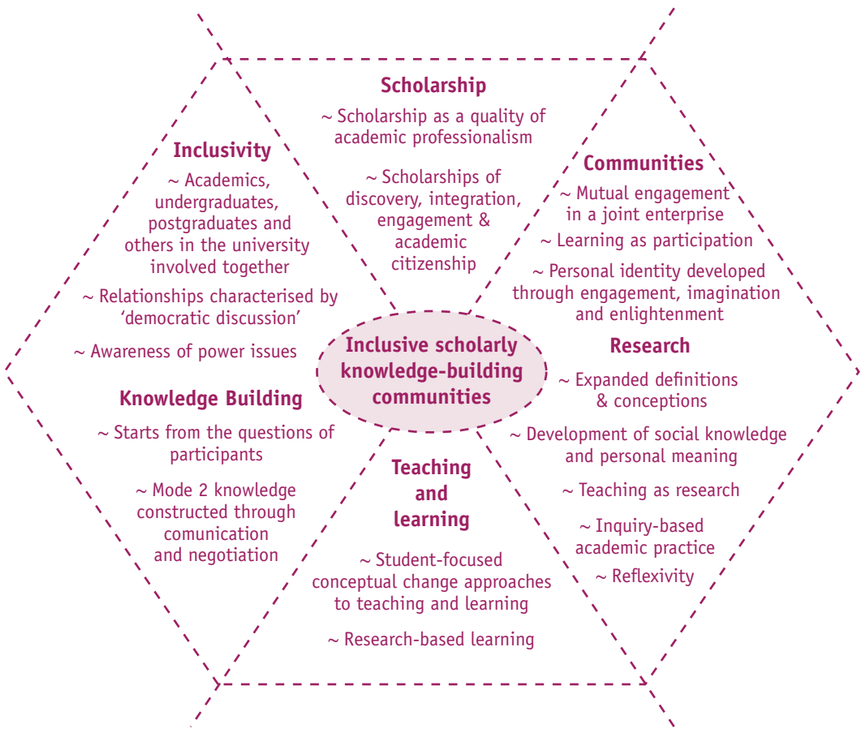
The staff evaluation processes are also relevant, and the Centre for Teaching and Learning at each institution can facilitate institutional conversations in this area. In particular, graduate certificate programs for postgraduate students or new faculty should include aspects of research-enhanced teaching and learning as key components in their programs.

Removing potential policy barriers is important, and this is one of the areas at the University of Alberta that had the most impact on practice. We used to have a lot of examples where the Human and Animal Research Ethics Boards were so slow in getting approvals that if an instructor wanted to do a research project with their students, by the time they got approval the semester was over. We purposely built-in a research ethics model that allows the instructor to apply for a blanket ethics approval before the semester begins and students can submit an ethics proposal for assessment. Since the instructor already received blanket approval for the class s/he can progress with the project, using a simplified ethics process as a learning tool. We also found several of our research policies had defined who was allowed to be a scholar on our campus. Undergraduate students were never part of that definition so we have attempted to broaden the definition of 'scholar'. For example, undergraduate students were not allowed to submit their own ethics for approval on our campus. If they wanted to do a study on their own it had to go through an academic staff member. Now students are allowed to propose their own ethical statements.

A small amount of money can significantly provide an incentive for people to do things to integrate research and teaching. Our university is actually taking this a step further. Every year we have CAD $800,000 that we give out in research-enhanced teaching and learning grants to support faculty members who are doing innovative projects related to research-enhanced teaching and learning. The grants range in size from CAD $20,000 to CAD $250,000 (with the larger grants spanning two or three years). To put this in perspective, the University of Alberta grants are potentially larger than the Canadian Research Council grants for educational research projects. Most importantly we began to celebrate the undergraduate research and communicating the achievements to broader audiences.

I wanted to end with a discussion about what Angela Brew calls *"Inclusive Scholarly Knowledge-building Communities"* (Figure 1).

Figure 1: Inclusive Scholarly Knowledge-Building Communities (Brew, 2006)



If we begin to think about how we progress with the integration of research and teaching, and the creation of an environment where students are considered partners in the scholarly community, and if we are inclusive about allowing students to be part of what we are doing in research, then we begin to create a different type of learning environment. There are few cases where this has been implemented effectively, but if we can start to think about creating a more inclusive, scholarly community, from first year undergraduate students through to senior professors, then we will have reached where we want to go in terms of research-enhanced teaching and learning (or at least be well on the way to getting there).

I will end with a quotation from our university president at the University of Alberta about involving students in discovery. If this is truly the type of learning environment that we create for our students, then we will have been successful at integrating research and teaching across our campus.

Inclusive, scholarly knowledge-building community

- To implement an inclusive, knowledge-building scholarly community we need to engage at the level of programs to plan appropriate in-class curriculum and out-of class learning opportunities
- Need to get away from an isolated, individual approach to teaching
- Most importantly, we need to ensure that the policy framework and the faculty evaluation framework facilitate, support, and reward these activities

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> *"We must integrate discovery into all aspects of learning. The "Great University" of the twenty-first century must involve students in exploring our grand challenges. … Our students, graduate and undergraduate, must acquire a capacity for creativity and social ingenuity by tackling questions like these. …. For while it is true that intellectual mastery begins with the rigorous exploration of a subject in the classroom, it must be extended in the laboratories of life through research projects and internships throughout the world"* (Samarasekera, 2005).

This challenge is something that society needs universities to take up. Thank you for inviting me to be here, and congratulations on a great conference.

Part 2:
Conference Paper Presentations on Graduate Education

RESEARCH AND PROFESSIONAL DEVELOPMENT PLAN (RPDP) FOR PHD STUDENTS

Contributors: Emer Cunningham and Janet Carton, University College Dublin, and Claire Rosten, University of Brighton

Biographical Note

Emer Cunningham is Project Manager for the Structured PhD in University College Dublin (UCD), working in the Graduate Studies Office. She has worked in the implementation of the UCD Research and Professional Development Plan (RPDP). Emer graduated with a BSc (1986) and MSc (1988) in Pharmacology from University College Dublin and has a PhD in cellular biology from University College London, and also carried out her postdoctoral work there. Emer has ten years experience working as a researcher in the biotechnology industry in Ireland and the UK. More recently, she has worked for the Higher Education Authority of Ireland (Research Programmes) as a Project Manager.

Janet Carton currently works at University College Dublin as Graduate Programmes Manager. Her main focus is supporting and facilitating the development of third and fourth level education in the university. She previously headed up the Strategic Research Initiatives Unit in the Directorate of Research and Enterprise, Dublin Institute of Technology (DIT). Having completed a PhD and postdoctoral fellowship in Biomedical Research, she has worked in graduate research education for more than ten years. She was responsible for the design and implementation of the first *Research Supervisor Support and Development Programme* in an Irish HEI.

Claire Rosten worked in the Graduate Studies Office at University College Dublin (UCD) as Project Manager for the Structured PhD. She was responsible for the assessment, revision and re-launch of the Research and Professional Development Plan (RPDP) between October 2006 and September 2008. Claire graduated with a BA (2000) from the University of Oxford in Psychology and Philosophy and has a PhD in Psychology from the University of Southampton, where she researched the cognitive and psychophysiological aspects of anxiety disorders. Claire currently works as a Research Fellow at the University of Brighton for the Research Design Service, an advisory organisation funded by the National Institute of Health Research.

KEYWORDS

UCD Research; professional development; graduate education.

ABSTRACT

The University College Dublin (UCD) Research and Professional Development Plan (RPDP) is a set of tools to aid in the planning and progress of a PhD student's research and professional skills. It is an integral part of the Structured PhD programme at UCD and has been specifically designed to aid students in the planning, monitoring and completion of their PhD. It is primarily owned by the PhD student, but is intended to be beneficial to both the student and the supervisor. The RPDP potentially has great benefits for the management and timely completion of a student's PhD and in directing the acquisition of both research and professional skills. The UCD RPDP was included as an integral part of the UCD PhD Regulations, which were approved by the Academic Council in October 2006.

The UCD RPDP was initially developed under license from University College London Graduate School. The RPDP was piloted with a group of eighty-five UCD students in September 2006, was monitored and reviewed throughout 2006/7 and was updated for 2007/8 using feedback from the students and their supervisors. Feedback was elicited from an online survey, student coffee mornings and supervisor feedback sessions.

The findings showed that the RPDP was popular amongst the students who felt they benefited from the structure of the RPDP and the momentum it generated. The majority of the supervisors were supportive of the RPDP, in particular, the formalised meetings element. It was felt that the structure of the meetings ensured the student was well prepared and had thought about the main issues for discussion. There were criticisms of the 2006 RPDP but these were mainly concerned with the style and this has since been changed based on their input. There was consensus amongst students and supervisors that it is imperative that Supervisors are informed of, and engaged with, the RPDP from the outset of the PhD.

INTRODUCTION

A Structured PhD programme was introduced to UCD in September 2006 with the aim of enabling UCD PhD students to achieve the best possible experience of graduate research and training and in parallel support the student in their career development. While making a substantial and original contribution to knowledge, normally leading to peer-reviewed publications, remains the core objective of doctoral studies, the UCD Structured PhD includes several innovative measures designed to support the student in achieving their academic and professional objectives. In particular, a Research and Professional Development Plan is compulsory for all students admitted after 31 August 2007.

UCD RESEARCH AND PROFESSIONAL DEVELOPMENT PLAN (RPDP)

Research and professional development planning is an integral part of the Structured PhD Programme at UCD. The purpose of such planning is to ensure that the student's work is clearly focused on achieving their research and professional development goals. The RPDP is designed to play a major part in informing the trajectory of the student's PhD research and in their training and development as a researcher.

WHAT IS THE UCD RPDP?

The UCD Research and Professional Development Plan (RPDP) is a set of tools to aid in the planning and progress of a PhD student's research and professional skills. It has been specifically designed to aid students in the planning, monitoring and completion of their PhD. The RPDP is primarily owned by the PhD student, but is intended to be beneficial to both the student and the supervisor. It potentially has great benefits for the management and timely completion of a student's PhD and in directing the acquisition of both research and professional skills. The UCD RPDP was introduced into UCD's academic PhD Regulations and supports existing quality assurance mechanisms.

> *"For all students admitted after 31 August 2007, the student, supported by the Doctoral Studies Panel, shall document their educational, training and personal and professional development needs, which, along with the proposed programme of research, will inform the development of a Research and Professional Development Plan (RPDP)"* (Section 18.15, UCD Regulations for the Degree of Doctor of Philosophy http://www.ucd.ie/registry/academicsecretariat/pol_regs.htm).

STRUCTURE OF RPDP

The UCD RPDP is structured around three focus areas:

1) ***Research Plan:*** Basic guidelines for preparing a research plan and using it as a road map during the graduate experience.
2) ***Professional Development Plan:*** A skills self assessment and prompts as to skills that may be beneficial to progress the research and promote career development
3) ***Meeting Records:*** Formal record of the research and professional development plans and progress to date signed by the student and members of the Doctoral Studies Panel, thereby providing a framework for constructive engagement of the student and quality supervision.

As mentioned above, the UCD RPDP was first established under licence from the Graduate School, University College London, and piloted in UCD with a group of eighty-five Ad Astra Scholarship-funded scholars in September 2006. As mentioned, feedback was positive, with most supervisors expressing support for the scheme. Students also broadly expressed satisfaction with the scheme. Any criticisms of the scheme have since been addressed.

There was consensus amongst students and supervisors that it is imperative that supervisors are informed of, and engaged with, the RPDP from the outset of the PhD. Research supervisors face an ever growing challenge in meeting academic quality assurance standards and supporting skills acquisition for their students. UCD offers a wide range of doctoral level discipline–specific modules as well as transferable skills modules available to PhD students.

The introduction of the RPDP has been an important tool in supporting the supervisor's role in this respect. However the professionalisation of supervisory practice will further embed the effectiveness of research planning and professional development in its broadest capacity.

OTHER ELEMENTS OF THE UCD STRUCTURED PHD

Doctoral Studies Panel: The School appoints a Doctoral Studies panel for each student normally early in their first year. The purpose of the Doctoral Studies panel is to support and enhance the supervisor-student relationship, to monitor student progress during the course of their doctoral studies and to provide advice and support both to the student and the supervisor.

Transferable Skills Training: The skill-set of a UCD PhD student will naturally include the advanced research and analytical techniques required to undertake high level research in their field. It is also expected that the PhD graduate will possess a range of transferable skills, relevant to the successful completion of their research project and to broader career development. Taught modules, online modules and workshops covering a wide range of transferable skills and research topics which are in line with international best practice have been made available.

Credits and Modules: The UCD Structured PhD operates within a credit-based framework, with one credit corresponding to twenty to twenty-five hours of total student effort. If a student is on a four-year PhD programme, a maximum of ninety credits can be accumulated. The minimum credits that can be accrued over the course of the students PhD programme is determined by the relevant Graduate School.

Progression: Doctoral studies, which are normally completed by full-time students within three to

four years, comprise two stages: **Stage 1** is a period when the research plan is defined; the student develops their research skills, and initiates original research work for their doctorate. **Stage 2** is primarily dedicated to continuing the original doctoral research but may also include some advanced education and training.

FUTURE

The main challenge to the success of the RPDP is consistency of use across the university graduate layer. This requires 'buy in' from university management and supervisors as well as students. If the RPDP is seen as an additional layer of bureaucracy, it will be difficult to cement into the graduate planning culture. Highlighting the benefits of engaging in this planning process is something which should be factored into Supervisor Development and Support Programmes.

A pivotal aim of graduate, forth-level Ireland is to equip graduates with the appropriate skills required to help secure Ireland's economic success in the twenty-first century. The development of the structured PhD and UCD's Graduate School framework supports the creation of structured, relevant, generic transferable and professional skills training, enabling PhD graduates to develop careers in diverse sectors of the economy. UCD's RPDP is seen as playing a vital role in this endeavour.

REFERENCES

University College London Professional Development Plan [online]. Available from: http://www.e-skills.com/ARCHIVES/UCL-PDP/2148 [accessed 5 May 2010].

UCD Regulations for the Degree of Doctor of Philosophy [online]. Available from: http://www.ucd.ie/registry/academicsecretariat/pol_regs.htm [accessed 5 May 2010].

UCD Research and Professional Development Plan [online]. Available from: http://www.ucd.ie/graduatestudies/currentstudents/rpdp/ [accessed 5 May 2010].

CREATING AN 'INTERDISCIPLINARY MOMENT' IN GRADUATE EDUCATION: THE THEORY AND PHILOSOPHY SUMMER SCHOOL

Contributor: Alfred Moore, University College Cork

Biographical Note

Alfred Moore is a Marie Curie Research Fellow and visiting assistant professor at the University of British Columbia, Canada, and a lecturer in political theory at University College Cork, Ireland. His research interests include political theory, sociology of science, and the politics of science, technology and the environment.

KEYWORDS

Graduate education; interdisciplinary; post-disciplinary; theory; philosophy.

ABSTRACT

This paper reports on a pilot interdisciplinary graduate Summer School in Theory and Philosophy for the Arts, Humanities and Social Sciences, which aimed to combine research with graduate teaching and learning. The paper will develop reflections on the ways in which interdisciplinary residential learning spaces can promote successful skills development among graduate students. It thus contributes to the ongoing assessment of the effectiveness of this innovative approach to interdisciplinary graduate education in the Arts, Humanities and Social Sciences Through the reflections developed in this paper I hope to offer models and lessons that can contribute to the ongoing development of new ways of delivering research-led interdisciplinary programmes that can enhance the skills and competitiveness of graduate students.

The aims of the Theory and Philosophy Summer School operated at two levels. The first set of aims concerned the enhancement of the interdisciplinary skills and effectiveness of doctoral researchers. The programme was designed to enable students to develop high-level conceptual and communicative tools that would their deepen disciplinary knowledge and enhance interdisciplinary cooperation. The second set of aims concerned the development of models for the organisation, curriculum development and delivery of graduate research education programmes in theory and methods of inquiry.

These findings indicate the importance of dialogical processes and interpersonal interaction in developing skills in communicating across disciplinary traditions and boundaries. In this connection the spatial environment proved crucial to supporting disciplinary interaction. Enabling lecturers to integrate research and teaching was also crucial to the achievement of the aims of student development. Finally, reflection on curriculum development has led to a working typology of ways of being not-disciplinary. Together these findings contribute to a developing organisational model for the delivery of interdisciplinary research-led GREP.

GRADUATE EDUCATION IN A POST-DISCIPLINARY WORLD

Graduate education faces a number of challenges, one of which centres on the place of disciplinary structures in contemporary society. The 'post-disciplinary' claim is that the usefulness of disciplinary specialisation is diminishing, and that new ways of organising graduate teaching and research are required in order to overcome excessive narrowness, specialisation and fragmentation. Mark Taylor, chair of Columbia University's Religion Department, argues that the organisation of graduate education has led to separation and over-specialisation where there should be collaboration. It is a system built around narrow scholarship, fragmentation and proliferation of sub-fields – "*writing*

more and more about less and less" (Taylor, 2009, p. A23). It functions to produce graduates trained for academic jobs that will never be available to them. With the expansion of graduate education, it is increasingly accepted that graduates will develop careers outside of their academic specialism, working in government, business or various non-profit sectors. Some aspect of our training of graduate students must address this concern.

Furthermore, creative and broad-minded approaches are required to address the complex and multi-faceted problems faced by policy makers, businesspeople, governments, and societies: *"There can be no adequate understanding of the most important issues we face when disciplines are cloistered from one another and operate on their own premises."* In response to these problems, Taylor suggests, "*[r]esponsible teaching and scholarship must become cross-disciplinary and cross-cultural",* there must be more collaboration among institutions, and we need to "*[e]xpand the range of professional options for graduate students"* (2009, p. A23).

Higher Education policy in many countries has recognised this set of challenges.[1] In particular, the Irish Research Council for the Humanities and Social Sciences (IRCHSS) has sought innovations and improvements in Irish graduate education. Funded in 2009 by the IRCHSS Research Development Initiative, the Theory and Philosophy Summer School for the Arts, Humanities and Social Sciences, organised by the School of Sociology and Philosophy at University College Cork (UCC), represents part of a response to the problem of graduate education in a post-disciplinary world.

THE SUMMER SCHOOL

The goal of the Theory and Philosophy Summer School (TAPSS) was to create a residential setting where graduate students from a range of disciplines could come to engage in a structured teaching programme addressing foundational commitments in methodology through discussions of theory and philosophy. In this way the School aimed to provide a mechanism to support research training, knowledge transfer and networking. The school was a one-week residential programme, structured around a number of distinct student-centred and collaborative learning experiences: ***conversations***, in which the whole group discussed a set of key concepts; ***readings***, small tutorials discussing a specific text led by a staff member who chose the text; ***symposia***, small group sessions to exemplify methods of theorising, how sociologists and philosophers 'do' theory; ***discourses***, lectures by established international authorities representing the state of the art; and ***blue horizons***, evening lectures open to the public given by a philosophy and a sociology professor from UCC.

The School attracted more than fifty applicants, and was attended by thirty graduate students from UCC, the University of Limerick (UL), National University of Ireland Galway (NUI Galway), University College Dublin (UCD) and Trinity College Dublin (TCD), as well as from universities in Canada, Spain, the UK and Germany. Our participants were PhD students of philosophy, sociology, art theory, anthropology, social psychology, Chinese studies, folklore, modern languages, health sciences and geography. The teaching team included guest professors from UCD, the National College of Art and Design (NCAD), UL, Sligo, Edinburgh and the Canadian universities of York and Waterloo, alongside members of UCC's philosophy and sociology departments.

AN 'INTERDISCIPLINARY MOMENT'

The School was strongly interdisciplinary in that it involved collaboration among people from different disciplines through team teaching and cooperative curriculum development, as well as a degree of interaction and integration at a conceptual level (Klein, 2010). In a broad sense, this approach can be contrasted with ***multi-disciplinarity***, the *"juxtaposition of various disciplines, sometimes with no apparent connection between them",* and ***trans-disciplinarity***, which involves *"establishing a common system of axioms for a set of disciplines"* (OECD, 1972, 25-6). While much of the discussion of ***interdisciplinarity*** over the last twenty years has focused on the institutionalisation of programmes, creating research centres and networks in new interdisciplinary fields like environmental studies, global justice studies and gender studies, our project sought to create a space for a temporary engagement, where all travel to join a common endeavour before returning to their disciplinary work: in short, we sought to create an ***interdisciplinary moment***.

The *methodological interdisciplinarity* practised at the school centred on the examination of foundational concepts and methods and reflection on theory in the research process. TAPSS aimed to generate a space in which graduate students from across the humanities and social science could reflect on their conceptual *"instruments of reasoning"* (Geertz, 1980, p. 169), stimulated by a common discussion among people using common concepts in different, yet in some sense related, ways. This sense of methodological interdisciplinarity is well described by Bal's account of *"travelling concepts in the social sciences"* (2002). Generating the kinds of conversations in which conceptual disagreement is productive requires an explicit thematisation of the interdisciplinary ambition of the school, so that the conversations and the misunderstandings become productive and not obstructive; it requires substantive cooperation on the part of the staff and genuine team teaching and collective curriculum building (a core group of six staff from sociology and philosophy jointly developed the curriculum and several sessions at the school were taught by more than one staff member), rather than a simple division of labour; it also requires openness and cooperation among the participants. In light of these challenges, we decided it was essential to hold the school outside of the university buildings, so that all would travel and none of the disciplines would be operating *"on their own premises"*, as Mark Taylor puts it (2009, p. A23) and cooperation and interpersonal engagement among staff and graduate students would be unavoidable.

EVALUATION

The students were required to write learning journals to chart their evolving understandings of a number of key concepts, including epistemology, reflexivity, theory, fact, ideology, interpretation, and value. These concepts were introduced at the beginning of the week. We revisited these terms in the full group sessions in the middle of the week, and found that students were in a position to argue cogently for the inclusion of other key terms, and to contest the meanings of others. Many students reported finding the initial sessions very useful, and the group discussions of these key concepts served well to bring out and sharpen disagreement:

> *"During the week I found that although everybody tried hard to understand the other some fundamental antagonisms and/or misunderstandings remained, e.g. between critical theory and interpretative/dialectical hermeneutic approaches, but also between philosophy and sociology and between students and 'experts'. In a sense then, our journey, our 'methods as way', was marked by various aporias (from aporos, meaning literally 'no path') which limited the number of directions we could possibly pursue".*

One of the goals of methodological interdisciplinary, as outlined above, is to stimulate reflection on foundational concepts by encountering those concepts as used in different yet cognate disciplines, and this goal was well articulated by one of our students: *"[t]he summer school has certainly increased my awareness of the different methodologies of theory, as the 'latent background' to the theoretical enterprise, and the normative and political implications they carry"*.

1 National Academy of Sciences (2005) *Facilitating Interdisciplinary Research*. Washington, DC: The National Academic Press.

The importance of the process of interdisciplinary interaction was suggested by one sociology student, who reported initially feeling more comfortable with the talks by sociologists. *"As the week progressed, however, many of the [philosophical] concepts and ideas I was exposed to resonated with my research topic"*. *"Through group dialogue"*, she continued, *"I became more aware of the nature of my own assumptions and the traditions of thought to which I belong"*. In conclusion, she declared that *"[m]any of the discussions throughout the week helped me to clarify my methodological position"*.

The School represented a safe place for discussing ideas and problems outside of the institutional location of the discipline. One of our participants referred in his learning journal to the symbolic safety of the castle as *"a space where academics coming from different perspectives could have sharp, tough and direct confrontations in a protected environment"*. It was also a place away from distractions: media, the internet, and day-to-day professional commitments. This generated a highly collegial atmosphere of informal conversation and collaboration among the core teaching team, most of whom were also residential throughout the week. This was noticed by several of the students, one of whom commented in his journal about the positive impression made on him by the collaborative example set by the teaching team.

Many of our participants said they appreciated the opportunity to work with graduate students from backgrounds they would not ordinarily encounter. They opened student's eyes to other ways of working with similar concepts: *"what was most valuable in this aspect were the interactions I had with the fellow students, who recommended literature I was not acquainted with and that I must now consult for my project"*. Furthermore, this interdisciplinary environment forced them to articulate their ideas in terms that others could understand. This skill speaks to the overall goal of preparing graduate students to operate in professional environments outside of their specialist disciplinary training.

The residential venue enabled students to spend time with senior professors and researchers in a way they would not have had an opportunity to do in an ordinary university setting. One student commented: *"I was particularly delighted to have access to speakers after their talks in the bar where they kindly allowed me to bombard them with questions over a glass of wine!"* Another student reflected on the events of the fourth day of the School: *"that evening, I had a great conversation [with one of the professors] and he encouraged me to develop my theory … so on a practical level, I had encouragement for my work which I still hang onto for dear life a week after the course ended. That meant a lot to me and I will attend more conferences in future to do more of that type of networking"*.

CONCLUSION

Our project aimed to create an interdisciplinary moment, and it was successful in generating productive interdisciplinary discussions at the level of theory and methodology among graduate students from across social sciences and humanities. The wider aim was to equip students to communicate outside their discipline, and prepare them for careers beyond their particular specialism. There is evidence from student learning journals that many of the central aims were achieved, yet there is one important group of questions we are not yet in a position to answer: Did their experience at the school carry over into their studies? Were the students able to take this home? Which aspects of the experience worked in a lasting way? We intend to do a follow-up study of the participants in the inaugural summer school in order to monitor and improve the impact of this graduate education programme.

REFERENCES

Bal, M. (2002). *Travelling concepts in the humanities: A rough guide*. Toronto: University of Toronto Press.

Geertz, C. (1980). "Blurred Genres: The Refiguration of Social Thought", *American Scholar*, vol. 49, no. 2, pp. 165-179.

Klein, J.T. (2010 forthcoming). "A Taxonomy of Interdisciplinarity", in *The Oxford Handbook of Interdisciplinarity*, eds R. Frodeman, J.T. Klein and C. Mitcham. Oxford: Oxford University Press. Available from: http://www.phil.unt.edu/resources/syllabi/spring10/5960/Chapter_2_HOI.doc. [accessed 2 October 2009].

OECD (1972). *Interdisciplinarity: Problems of Teaching and Research in Universities*. Paris: OECD.

Taylor, M. (2009). "End the University as We Know It", *New York Times*, 26 April 2009 [online]. Available from: http://www.nytimes.com/2009/04/27/opinion/27taylor.html. [accessed 26 April 2009].

VISIONS OF EFFECTIVE DOCTORAL SUPERVISION: DISCIPLINES AND TRADITIONS IN A TIME OF CHANGE

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Biographical Note

Jacqueline Potter is Associate Dean for Teaching, Learning and Academic Development at Edge Hill University. She trained as an ecologist, increasingly developing pedagogic research and interests in learning in the disciplines, institutional change and development. She has initiated and contributed to a range of research and practice projects exploring and extending practice within disciplines. Recent publications explore academic learning communities and learning collaborations. Jacqueline was an inaugural member of the Management Board of NAIRTL during her time working for the Centre for Academic Practice and Student Learning (CAPSL) at Trinity College Dublin.

Mary Creaner commenced her career in education, subsequently qualifying as a psychotherapist and clinical supervisor. She has been involved in developing and delivering a variety of adult education programmes and professional development training. She is lecturer and research co-ordinator with the Doctorate in Counselling Psychology and Course Director for the Diploma in Clinical Supervision, Trinity College Dublin (TCD). She is accredited by the Irish Association for Counselling and Psychotherapy and a member of the American Psychological Association. Mary has a particular interest in practitioner research; in clinical supervision; research supervision; and counsellor education.

David Delany holds a PhD in computational neuroscience from the TCD School of Psychology and Trinity College Institute for Neuroscience (TCIN). His primary research interest is in the area of brain function enhancement and rehabilitation. After completing a post-doctorate in mathematical neuroscience in the School of Mathematics in TCD, Dr Delany moved to the TCD Centre for Academic Practice and Student Learning (CAPSL) part-time, where he runs an innovative cognitive science-based advanced thinking skills course he developed for researchers within TCD and other universities.

Joan Lalor is currently a lecturer in Midwifery at TCD and is involved with teaching and supervision from undergraduate to postgraduate level. Joan also continues to practice as a midwife and maintains her clinical links with the linked service providers to ensure that her research is clinically relevant with a strong service user focus. Her interest in doctoral supervision aligns with the recent drive to increase research capacity within health care staff with an emphasis on the generation of evidence for practice, whereby more clinicians undertake research at doctoral level.

KEYWORDS

Graduate education; postgraduate supervision; qualitative research; grounded theory; metaphor.

ABSTRACT

The numbers of postgraduate doctoral students has steadily risen in Ireland and internationally in recent years. The Irish government has made a clear commitment to expand and develop research education, and the work of postgraduate students constitutes a vital part of the contribution of the university to research. Nationally, and within and across institutions, expectations are changing and a new infrastructure is being developed to meet the changes and improve the postgraduate research experience.

The role of the supervisor is also under scrutiny. International work has shown that the quality of supervisory practice has a demonstrable effect on postgraduate outcomes (Cullen *et al*, 1994) and recent research shows how supervisor behaviour and conceptions of the role may vary across disciplines (Zhao *et al*, 2007; Lee, 2008). In this paper we report the aims, approaches and preliminary results from the qualitative research study Visions of Supervision (VOS). The VOS study uses grounded theory methodology to explore how senior academic staff from differing disciplinary backgrounds conceptualise effective doctoral supervision at a time of change and development in fourth level education in Ireland.

The study was conceived of and initiated in response to a review of the international research literature on supervision undertaken by one of the authors. From this we identified a lack of published literature exploring supervision practices through in-depth qualitative approaches and in detailed relation to contextual factors such as discipline. These lacunae, and our interest in understanding how supervisors were responding to the range and speed of developments influencing graduate education in Ireland, were the initial questions we sought to illuminate with our study and which we begin to address in this preliminary paper based on our conference presentation.

INTRODUCTION

The work was developed out of a shared interest among the authors in doctoral supervision practices, their management and variation in disciplinary contexts and in Ireland. Following a preliminary literature review by one author (Delany, 2008) we identified the need for a detailed qualitative study to explore our understanding of research supervision in Ireland at a time of specific government expectation on higher education to expand and diversify fourth level study opportunities (DETE, 2009). We developed a consensual approach to the VOS project that would exploit the range of research capabilities and interests we had and that would also allow us to grow and develop as researchers through the collaboration.

On completion of our first phase of data analysis we wished to bring forward the research to the attention of colleagues through a NAIRTL conference presentation under the theme of graduate education. This short paper, based on that presentation, covers three areas. First, we situate the VOS research project within the current national graduate education context. We feel that this is particularly important owing to the unique character and context of Irish higher education. Second, we briefly present ourselves as researchers, our working philosophy and methodological approach. Third, and finally, we briefly introduce our participants and the first stage outcome of our consensual research approach.

NATIONAL GRADUATE EDUCATION CONTEXT

Globally, the numbers of students studying and graduating with research degrees has increased rapidly in the past decade. Concomitant with this growth in numbers has been increasing focus and review of the quality and fitness for purpose(s) of graduate education structures and approaches, including the role of supervisor. One very evident outcome of this growth and interest in graduate education has been the number and range of academic research and publication on supervision and graduate study, predominantly from Australia, the UK and the USA.

Ireland traditionally adopts and adapts a multiplicity of approaches, influenced by models in the USA and the UK as well as through association with continental Europe and the European Higher Education Area. This confluence of influences operates within the very specific current context of the national drive to develop a strong research base and an excellent higher education system as infrastructure to contribute to the Government's plans for economic recovery and a knowledge-based economy (Department of Enterprise, Trade and Employment [DETE], 2009); specifically, the DETE report talks about a "*system-wide step change in PhD, education*" (p. 18). There is some current research in Ireland investigating graduate education outcomes (Buckley *et al*, 2009); however we know of no other research, past or current, that explores the views of supervisors and supervision practices in Ireland. The VOS project aims to contribute the unique voice of Irish graduate educators to the global graduate education literature.

THE RESEARCH FRAMEWORK AND THE RESEARCHERS

Determining consensus on the research framework was a critical step in the VOS project. The four author/researchers represent different disciplinary and research backgrounds which influenced our approaches and our expectations of involvement in the project. Openness, reflection-in-practice and reflexivity are therefore core components of the framework and of our research process.

We have taken a grounded theory approach with a view to systematically generating theory from recursive investigation of the data collected. We operate as a collective of researchers mindful of consensual qualitative research approaches (for example, Hill *et al*, 2005) and working broadly within the Strauss and Corbin (1990) model as interpreted by Wareing (2001) and with support and guidance from the author, Mike Wareing, on its application in relation to this data set.

From Delany's (2008) literature review, we have summarised:

- that disciplinary differences exist in supervision practices;
- that the quality of supervisory practice influences postgraduate outcomes;
- and that most studies on supervision have not expressly focused on the approaches and practices of experienced, effective or successful supervisors.

This led us to our initial research frame: What is effective research supervision in Ireland? It influenced our sampling approach where we have: (i) explicitly focused our data collection among senior academics as a possible surrogate for experience, effectiveness and/or success; and (ii) purposefully sampled for discipline variation among our participants. The focus on effective (rather than on good, best or excellent practice) is deliberate and follows Elton's (2006) usage and contention that effective teaching leads to effective learning.

Having secured ethical approval for the research, we commenced data collection through semi-structured interviews with the senior academic staff who were our research participants in early 2009. Interviews were recorded and transcribed before each researcher independently open-coded the interview transcripts. Throughout this first phase we used consensual qualitative research approaches to collectively determine the questions we put to our research participants, to achieve consensus about the meaning emerging from the data after the first open-coding and, in the process of working through the data, we met and discussed our emergent meaning-making from the data.

THE RESEARCH PARTICIPANTS AND PRELIMINARY OUTCOMES

We interviewed nineteen senior academics from a research-intensive university in Ireland. At the time of interview, our participants were collectively supervising one hundred doctoral students and had supervised 178 PhD students to completion. Each interviewee had more than six years experience supervising at graduate level; some had more than thirty years experience. In addition to their experience as a supervisor, most participants held or had held postgraduate leadership and

development responsibilities locally (in academic departments or schools), for the institution or within the context of inter-institutional collaborative graduate education programmes (GREPS). The participants' disciplinary backgrounds were varied and covered the full spectrum of variation inherent in the typology descriptors of hard, soft, pure and applied disciplines developed by Becher (1989).

Our initial frame was to establish a workable model from our first coding to further develop research questions that could be explored within the data. To do this, we examined the potential of developing an explanatory metaphor to summarise our preliminary understandings and consensus of the meaning we had made after our initial and independent coding of the data (e.g. Carpenter, 2008). Lee and Green (2009) have recently discussed the archetypal metaphors of authorship, discipleship and apprenticeship. These are focused on the pedagogy of supervision; however our interviewees talked more widely about national and institutional contexts, about changes to their practice through time, and about changes and responses to the expectations of graduate education by students, academics and external agencies. We put forward for consideration to the NAIRTL conference our shared metaphor of *'captaincy'* – the command, leadership or guidance of others - particularly the command of a vessel or the leader of a team or crew. The metaphor seems a better fit – a way to sort and synthesis our data - and more akin to the metaphorical nature itself of 'super-vision' as discussed by Lee and Green (2009). We believe that the captaincy metaphor captures the breadth and nature of our data that extends beyond participants' reflections on their own supervision experience and practice to their views and perspectives in relation to changes and contextual variations that influence traditions and conceptions of practice, particularly those that emanate from the discipline and how they respond to the current climate of change and rapid expansion of graduate education goals. The concept of captaincy explicitly incorporates elements of leadership and responsibility but also conceptions of journeying with others. At this stage we are testing and interrogating the metaphor: exploring whether it is robust enough to identify future themes of inquiry, testing it to ensure it is 'followed through' for implications and associations. Presenting this initial outcome and discussing its fit and function with the NAIRTL conference audience was an important component of the ongoing research.

REFERENCES

Becher, T. (1989). *Academic Tribes and Territories: Intellectual Enquiry and the Culture of Disciplines*. Buckingham: The SRHE and The Open University Press.

Buckley, F., Brogan, J., Flynn, J., Monks, K., Hogan, T., and Alexopoulos, A. (2009). "Doctoral competencies and graduate research education: focus and fit with the knowledge economy?" [online]. LInK Working Paper Series (Paper No. 01-09). Dublin City University: The Learning, Innovation and Knowledge Research Centre. Available from: http://doras.dcu.ie/2425/ [accessed 11 May 2010].

Carpenter, J. (2008). "Metaphors in qualitative research: shedding light or casting shadows?", *Research in Nursing and Health*, vol. 31, no. 3, pp. 274-282.

Cullen, D., Pearson, M., Saha, L.J., and Spear, R.H. (1994). *Establishing effective PhD supervision*. Canberra: AGPS.

Delany, D. (2008). *A review of the literature on effective PhD supervision* [online]. Trinity College Dublin: Centre for Academic Practice and Student Learning. Available from: http://www.tcd.ie/CAPSL/academic_practice/index.php?page=resources#Supervision [accessed 11 May 2010].

Department of Enterprise, Trade and Employment (2009). Science, Technology and Innovation -Delivering the Smart Economy [online]. Dublin: Department of Enterprise, Trade and Employment. Available from: http://www.entemp.ie/publications/science/2009/Delivering_the_Smart_Economy.pdf [accessed 11 May 2010].

Elton, L. (2006). "The nature of effective or exemplary teaching in an environment that stresses strong research and teaching links", *New Directions in Teaching and Learning*, Special Issue: *Exploring Research-based Teaching*, vol. 107, pp. 33 -41.

Hill, C.E., Knox, S., Thompson, B.J., Williams, E.N., Hess, S.A., and Ladany N. (2005). "Consensual Qualitative Research: an update", *Journal of Counselling Psychology*, vol. 52, no. 2, pp. 196-205.

Lee, A. (2008). "How are doctoral students supervised? Concepts of doctoral research supervision", *Studies in Higher Education,* vol. 33, no. 3, pp. 267-281.

--- and Green, B. (2009). "Supervision as metaphor", *Studies in Higher Education,* vol. 34, no. 6, pp. 615-630.

Strauss, A. and Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. California: Sage.

Wareing, M. (2001). "Grounded theory: a framework for inquiry", Paper presented at the British Education Research Association Annual Conference, 13-15 September 2001.

Zhao C-M., Golde, C.M., and McCormick, A.C. (2007). "More than a signature: how advisor choice and advisor behaviour affect student doctoral supervision", *Journal of Further and Higher Education,* vol. 31, no. 3, pp. 263-281.

Part 3:
Conference Paper Presentations on Research-Enhanced Teaching and Learning

LESSON STUDY: RESEARCHING LEARNING ABOUT TEACHING FROM RESEARCH MATHEMATICS LESSONS

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Biographical Note

Dolores Corcoran is a lecturer in Mathematics Education in St Patrick's College, Drumcondra. She completed her doctoral study at the University of Cambridge, where the title of her thesis was: Developing Mathematical Knowledge in Teaching: A Three Tiered Study of Irish Pre-service Primary Teachers. Her research has led her to a growing interest in socio-cultural theories of learning with implications for teacher education and continuous professional development. Current research interests focus on working with teachers and colleagues, using lesson study to develop the teaching of mathematics, particularly in challenging situations.

KEYWORDS

Lesson study; mathematics teaching; pre-service teachers; community of practice; research lesson.

ABSTRACT

Lesson study is a form of teacher professional development that is intrinsic to the Japanese educational system in first and second level schools and in teacher education. Lesson study has been credited with the success of Japanese pupils in international comparative tests of mathematics achievement (Stigler and Hiebert, 1999). It is gaining international credibility as a means of enhancing the scholarship of teaching and promoting mathematical achievement in diverse school cultures (Asia-Pacific Economic Cooperation Education Network, 2008). Lesson study is a deceptively simple protocol with highly textured nuances. Each lesson study cycle involves a group of teachers, working collaboratively, and hinges on the detailed preparation of a research lesson, which is taught by one of the group and observed and reviewed by others. Increasingly, lesson study is being recognised as an inherently complex site of social, situated and distributed learning (Lave and Wenger, 1991) which challenges the researcher to find new markers of how and under what conditions, participation in the practice of lesson study builds mathematics teacher capacity and translates into more successful teaching of mathematics. Two conjectures have been formulated explaining why lesson study improves teaching and inviting research into the process (Lewis, Perry and Murata, 2006).

The study on which this presentation draws consisted of three tiers (Corcoran, 2008). In the third tier, a teacher development experiment was designed and implemented using lesson study on a yearlong education elective course to develop mathematics for teaching. In this presentation, the concept of *communities of practice* (Wenger, 1998) is used as a heuristic to examine notions of *engagement, alignment* and *imagination* in relation to learning about teaching mathematics on the part of the six student teacher participants. *Accountability to the enterprise* of lesson study and the development of a *shared repertoire* facilitated the *negotiation of meaning* of *research lessons*.

INTRODUCTION

The field of mathematics education - incorporating research into both the learning and teaching of mathematics at primary, secondary and tertiary levels - is one which is of considerable importance in many societies since achievement in mathematics is believed to contribute to economic success (Forfás, 2008). The persistent difference in the performance of Irish students between the reading and mathematical literacy domains (on the international Programme for International Student Assessment (PISA) is a cause for questioning how mathematics is being taught, and possibly not

learned, in Irish schools (Eivers, Shiel and Cunningham, 2008). In an interesting study, Schoenfeld (1988) highlighted the potential to develop expertise in problem solving that may have been present in student teachers, but which was hampered by their experiences of school mathematics. These experiences fostered a stifling rules and procedures approach to arrive at one, teacher-decided, right answer as quickly as possible. Research findings in an Irish study of second level mathematics classrooms indicated that self-styled 'good' and 'successful' teachers of mathematics equated improved learning with the memorisation of formulae and procedures (Lyons *et al*, 2003). The study reported here sought to trial the use of lesson study to promote the integration of teaching and learning of mathematics among a group of prospective primary teachers, by researching children's responses during mathematics lessons.

LESSON STUDY

Lesson study is a form of teacher professional development that is intrinsic to the Japanese educational system in first and second level schools and in teacher education. Lesson study has been credited with the success of Japanese pupils in international comparative tests of mathematics achievement (Stigler and Hiebert, 1999). It is gaining international credibility as a means of promoting mathematical achievement in diverse school cultures (Asia-Pacific Economic Cooperation Education Network, 2008). Lesson study is a deceptively simple protocol with highly textured nuances. One cycle consists of three interdependent parts, the first and third of which can be protracted according to the degree of the lesson study group's engagement with the enterprise. Each lesson study cycle involves a group of teachers, working collaboratively, and hinges on the detailed preparation of a ***research lesson***, which is taught by one member of the group, observed (usually video-recorded) and reviewed by others. The active presence of a Knowledgeable Other - someone from outside the participating teachers' immediate practice – for some or all of the lesson study cycle makes an essential contribution to achieving effective learning outcomes for mathematics teaching. Two conjectures have been formulated explaining why lesson study improves teaching. Conjecture one contends that, *"lesson study improves instruction through the refinement of lesson plans."* Conjecture two contends that, *"lesson study strengthens three pathways to instructional improvement; teachers' knowledge, teachers' commitment and community, and learning resources"* (Lewis, Perry and Murata, 2006, p. 5). In a context where there are perceived deficiencies in mathematics teaching, the possibilities inherent in conjecture two motivated my research.

THEORETICAL FRAMEWORK FOR DATA ANALYSIS

The full study on which this presentation draws consisted of three tiers (Corcoran, 2008). In the third tier, a teacher development experiment was designed and implemented using lesson study on a year-long education elective course to develop mathematics for teaching. Six student teachers chose the lesson study course as part of their third year Bachelor of Education degree programme. They engaged in three full cycles of lesson study, where the group of six prepared and reviewed lessons together but divided into two to teach and observe two research lessons in different school sites. Pseudonyms are used to protect the identity of all participants. I will describe here evidence from a single research lesson that was taught by Bríd during lesson study cycle two. Bríd had chosen to participate in the lesson study elective with the express objective of learning to teach mathematics well. The research lesson she taught was to a lively fifth class in a mixed primary school situated in a middle class suburban area of Dublin. This was a 'dive-in' lesson, without the benefit of background knowledge of pupils available to a school staff. Nonetheless, it was a valuable learning experience for the lesson study group. One incident from this research lesson is used to illustrate how learning about teaching mathematics occurred for one prospective teacher and her colleagues. The concept of "*communities of practice*" (Wenger, 1998) was used by the researcher as a heuristic to examine lesson study in relation to learning about teaching mathematics by the six student teacher participants. Three further notions elaborated by Wenger as essential to learning by participation in practice were also used in analysis. Evidence of "*accountability to the enterprise*" of lesson study, where in each cycle, student teachers' mutual engagement in the protocols of collaboratively preparing, teaching or observing a research lesson, and discussing evidence of pupils' learning observed during that lesson was sought. This accountability to communicating about the work of teaching mathematics resulted in the development of a "*shared repertoire of ways of doing things"* and facilitated the "*negotiation of meaning*" of research lessons by participating student teachers. Each of the research lessons themselves was analysed using The Knowledge Quartet (Rowland, Huckstep and Thwaites, 2005), a framework to identify mathematical knowledge in teaching devised along four dimensions, namely foundation, transformation, connection and contingency. This became a shared language for discussing mathematics teaching, with which to negotiate commonly agreed meanings of goals for the lessons and interpretations of children's mathematical thinking.

BRÍD'S RESEARCH LESSON ON FRACTIONS

Bríd volunteered to teach a lesson on fractions despite admitting to the group that she was "*scared of fractions*". The lesson study group had planned a lesson that was focused on developing children's understanding of unit fractions as a designated number of equal parts of a whole, and proposed using a pizza party context. At the outset, Bríd explained that the children were expected to work in pairs and show and justify their strategies to the class. Bríd and her planning colleagues expected that the use of equivalent fractions would be required of the children as they worked to solve the problems they had chosen. The class was invited to suppose that a child in the class, Cathal, was having a birthday party. He had enough money to buy six identical pizzas and invited seven friends to join him for the party. The research lesson plan had focussed carefully on choice of representation. Each pair of children was given an A4 page with six large circles drawn in a three by two array. These were to represent pizzas. Having set the context of a birthday party Bríd allowed the children to decide how they would divide the circular pizzas between eight children. She did not demonstrate what children were expected to do, but her instructions were clear and invitational. She emphasised the concept of 'equally shared' and invited children to find their own way of dividing the pizzas.

Confusion about the value of a unit fraction occurred more than once in the lesson – a confusion that was inadvertently fostered by the 'teacher'. When Bríd posed a second problem, the children were given fresh sheets of circles, the six pizzas were retained, but two extra persons were to attend the party, resulting in an expected answer of six-tenths (or its equivalent, three-fifths) of a pizza per person, when the six pizzas were to be divided into ten equal parts. During a plenary session in the lesson, it emerged that two boys had devised an alternative and elegant way of dividing the six pizzas between ten people that appeared to puzzle Bríd. Each pizza was divided into fifths and two pizzas were deemed by the boys to give one-fifth to each person, resulting in three slices (fifths) per child.

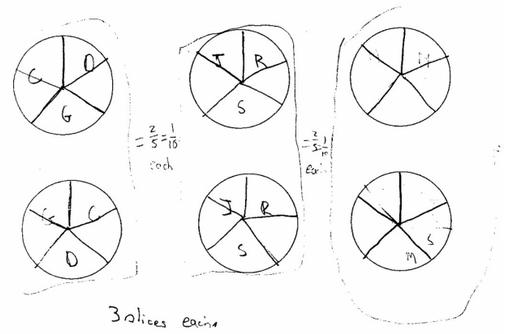

Figure 1: Children's worksheet

Bríd did not invite the boys to the board to draw their solution but tried explaining it to the class herself, in response to their instructions. However, she became confused by the use of fifths when dividing pizzas

between ten people:

Bríd: *Fifths … divide each pizza up into 5 … three slices each … which works out … what would you call that … as a fraction? So they got one slice … two slices … so that's one tenth each. First two, they get a tenth each. So they're getting two fifth each which works out as one tenth.*

At that stage Bríd wrote $\frac{2}{5} = \frac{1}{10}$ on the board and seemed unaware of the discrepancy. Neither did she appear cognisant of previous answers she had recorded nor those anticipated in her lesson plan. This confounding of fifths and tenths and inability to deal with discrepancy in children's articulation of their thinking is reminiscent of the "*limited and flimsy*" mathematics knowledge identified by Ma (1999, p. 68) among the US teachers in her study. It is true that at a procedural level Bríd could divide six pizzas between ten people correctly but the pedagogic approach she took in the lesson required that she be able to understand the many different ways children would approach the problem. A teacher in Ma's study, Mr Wang, observed in this context:

> *"But to catch students' new ideas [in the classroom you have to have a good understanding of mathematics. You have to catch it in a moment with the whole class waiting for your guidance"* (Ma, 1999, p. 139).

Mr Wang's words presuppose that the teacher holds firm subject matter knowledge in order to be able to respond to *contingency* opportunities. The lesson study group had planned to encourage children to devise and articulate their own equal sharing strategies yet when faced with a novel response Bríd was unable to recognise it and unintentionally imparted mathematical misinformation to the children.

After the lesson, Bríd collected the children's worksheets and the group scrutinised them carefully. These artefacts were a source of learning for the community of practice, but after the event. They could have been used more within the lessons and the incident outlined here was evidence for the group of the potential contribution that the children's worksheets might have made to mathematics teaching in the lesson. Figure 1 reproduces the worksheet of the boys who had divided two pizzas equally between ten people by giving each a fifth. They had arranged the pairs vertically and with a border drawn round each pair. Beside the first pair, they had written "$= \frac{2}{5} = \frac{1}{10}$ each" with "3 slices each" underneath the whole picture. The boys had articulated their thinking clearly, when she had called on them to do so, but Bríd's questioning may have led them to inscribe it incorrectly on the worksheet. Their intention appeared to be to express the fact that two pizzas divided into fifths yielded one portion each for ten persons and the writing of that certainly warranted further exploration in class.

CONCLUSION

This problem based lesson was devised by the lesson study group - six student teachers - and the author as Knowledgeable Other. It was an attempt to implement the primary mathematics curriculum (Government of Ireland, 1999) with a focus on children's mathematical thinking, different from the routine problems found in mathematics textbooks and aimed at developing the specific mathematics process skill of communicating and expressing mathematical ideas. By enacting this research lesson, Bríd allowed herself and her lesson study colleagues an opportunity to view the act of teaching through three lenses associated with Japanese teachers of mathematics: the 'researcher perspective' lens, the 'curriculum developer' lens and the 'student/ [pupil] learning' lens (Fernandez, Cannon and Chokshi, 2003). In doing so, she demonstrated the enterprise of researching learning in this manner to be a worth while exercise with multiple opportunities for learning about mathematics teaching afforded by engagement with the process. Lesson study has been recommended as a means of developing mathematics teaching at second level in Ireland (Conway and Sloane, 2005). Findings from this study indicate that engagement in lesson study enhances the teaching of mathematics among student teachers. Its potential for use by practising teachers to develop and enhance the teaching and learning of mathematics at all levels appears worthy of further investigation.

REFERENCES

APEC (2008). Asia-Pacific Economic Cooperation Education Network [online]. Available from: http://www.criced.tsukuba.ac.jp/math/apec/apec2008/index_en.php [accessed 28 October 2009].

Corcoran, D. (2008). *Developing mathematical knowledge for teaching: a three-tiered study of Irish pre-service primary teachers*, PhD thesis, University of Cambridge.

Conway, P. and Sloane, F. (2005). *International Trends in Post-Primary Mathematics Education*. Dublin: National Council for Curriculum and Assessment.

Eivers, E., Shiel, G., and Cunningham, R. (2008). *Ready for tomorrow's world? The competencies of Irish 15-year-olds in PISA 2006. Main report.* Dublin: Educational Research Centre.

Fernandez, C., Cannon, J. and Chokshi, S. (2003). "A US—Japan lesson study collaboration reveals critical lenses for examining practice", *Teaching and Teacher Education*, vol. 19, no. 2, pp. 171-185.

Forfás (2008). Catching the Wave: A Services Strategy for Ireland [online]. Available from: http://www.forfas.ie/publications/forfas080912/forfas080912_services_strategy.pdf [accessed 28 October 2009].

Government of Ireland (1999). *Primary School Mathematics Curriculum*. Dublin: Stationery Office.

Lewis, C., Perry, R. and Murata, A. (2006). "How should research contribute to instructional improvement? The case of lesson study", *Educational Researcher*, vol. 356, no. 3, pp. 3-14.

Lyons, M., Lynch, K., Close. S., Sheerin, E., and Boland. P. (2003). *Inside Classrooms: The Teaching and Learning of Mathematics in Social Context*. Dublin: Institute of Public Administration.

Ma, L. (1999). *Knowing and Teaching Elementary Mathematics*. Mahwah, NJ: Earlbaum.

Rowland, T., Huckstep, P., and Thwaites, A. (2005). "Elementary Teachers' Mathematics Subject Knowledge: The Knowledge Quartet and the Case of Naomi", *Journal of Mathematics Teacher Education*, vol. 8, no. 3, pp. 255-281.

Schoenfeld, A. (1988). "When good teaching leads to bad results: The disasters of a "well-taught" mathematics course", *Educational Psychologist*, vol. 23, no. 2, pp. 145–166.

Stigler, J., and Hiebert, J. (1999). *The teaching gap: Best ideas from the world's teachers for improving education in the classroom*. New York: The Free Press.

Wenger, E. (1998). *Communities of Practice*. Cambridge: Cambridge University Press.

WORKSHOP: RESEARCH-TEACHING LINKAGES: BEYOND DEFINITIONS (OR HOW TO PITCH YOUR RESEARCH PROPOSAL TO MAXIMISE THE INTEGRATION OF RESEARCH, TEACHING AND LEARNING)

Contributors: Marian McCarthy, University College Cork; Jennifer Murphy, NAIRTL; and Stephen Cassidy, Cork Institute of Technology

BIOGRAPHICAL NOTE

Marian McCarthy was seconded full time from her post as lecturer in the Education Department, University College Cork (UCC) to work in Ionad Bairre, the Teaching and Learning Centre in UCC, which she co-founded in 2006. Marian has been teaching since 1977, having worked at second level for many years. She is coordinator of the Certificate, Diploma and Masters in Teaching and Learning in Higher Education. Marian's doctoral research is in the area of Teaching for Understanding and of approaches that facilitate the development of a Scholarship of Teaching and Learning within the university. She is particularly interested in the synergies between the work of Project Zero at the Harvard Graduate School of Education, with its focus on the student-centred approach of Multiple Intelligences and Teaching for Understanding, and those of the Carnegie Foundation for the Advancement of Teaching, with its focus on teaching as an integral part of scholarship and research.

Jennifer Murphy is currently pursuing a Doctorate of Business Administration in Higher Education Management. Her research interests include Organisational Behaviour, Strategy, Management and Teaching and Learning. Following completion of her Bachelor's degree she completed a Masters in ICT in Education and more recently graduated with a postgraduate diploma in Educational Administration. She worked as a teacher for over six years and subsequently worked as Project Co-ordinator of the Access Programme in University College Cork before being appointed as Project Manager of NAIRTL in 2007. Jennifer has presented at conferences nationally and internationally and has published and edited a number of publications related to the integration of research, teaching and learning.

Stephen Cassidy currently holds the position of Head of Teaching and Learning at Cork Institute of Technology. In this role, he is responsible for managing, promoting, and facilitating the development of effective learning, teaching, and assessment strategies within the Institute. His current interests are in the areas of curriculum design, teaching with technology, and student centred learning. Stephen holds a PhD in Mechanical Engineering from National University of Ireland, Galway and is a former senior lecturer in the Department of Mechanical Engineering. He has supervised a number of postgraduate students in his specialist research areas of heat transfer and sustainable energy.

KEYWORDS

Research – teaching linkages (research - led, research- oriented, research - based and research - informed); integration of research, teaching and learning.

INTRODUCTION

This workshop grows out of the Research-Teaching Linkages working group* of NAIRTL. The group was established to focus on clarifying links between teaching and research, particularly on those

sustaining the integration of research and teaching and learning. To date, NAIRTL has identified four research teaching linkages (research - led, research- orientated, research - based and research – informed teaching) to guide grant applicants and those wishing to publish in the research area of teaching and learning. These definitions are well grounded in the literature on research, teaching and learning internationally (for example: Boyer, 1990; Brew, 1999; Elsen *et al*, 2009; Griffiths, 2004, Healey, 2005; Shulman, 1993, and Shulman and Hutchings,1999) and served to provide a context for the session.

The workshop was well attended by participants from various disciplines and higher education institutional contexts. Its objective was to discuss and critique the four ways of linking research, teaching and learning already provided by NAIRTL. Case study scenarios/examples of each form of integrating research, teaching and learning were put forward to guide the discussion. Participants were given the opportunity to consider the meaning and implications of each research – teaching perspective and to highlight what might be problematic, or challenging, or acceptable. Further insights regarding how research-teaching linkages might be refined and expained were gleaned from the participants' inputs. In return, participants were enabled to fine tune their own understanding of research – teaching linkages.

BACKGROUND AND METHODOLOGY

The research-teaching linkages working group further clarified the four categories of integrating research, teaching and learning outlined by NAIRTL as follows:

1. *Research-led teaching and learning:* teachers doing the research and talking about it to students without actively involving them in the research.
2. *Research-oriented teaching and learning:* teachers preparing students to do projects; discussing the processes of research; teaching about how to do the research; learning to think in the discipline; for example, how does an engineer think?
3. *Research-based teaching and learning:* student doing the authentic projects using processes of enquiry.
4. *Research-informed teaching and learning:* Research on teaching, as opposed to research on the discipline itself. This also includes the idea of the students, or the wider community, informing the research questions.

These definitions were presented to participants on the day and represented the idea of the integration of research, teaching and learning as happening along a continuum. The working group found this to be a more inclusive way of introducing the concept of integration, than to construe it hierarchically. In an effort to develop the understanding of each of the approaches, the working group members agreed to record short video clips with staff or students in their institutions to be used in the workshop. This was an effort to illustrate in real terms with real people the approaches advocated. To avoid confusion in the language and definitions used, it was agreed that interviewers would prompt the interviewees in a pre-discussion about the four ways of integrating research, teaching and learning that had been identified.

The conference workshop would advocate the continuity approach to integrating research, teaching and learning, i.e. that it is good to be engaged in research-led teaching, but better to be practising all forms.

The questions to be put to staff and students were agreed in advance as follows:

QUESTIONS FOR STAFF

1. Tell us about yourself? (Name/ Institution/ Disciplinary Area)
2. How do you integrate research teaching and learning in your area?
3. What are the benefits of this approach?
4. What are the challenges of teaching and assessment for you?
5. Are there any other implications?

QUESTIONS FOR STUDENTS

1. Name of the course you are undertaking?
2. Are you aware of the current research happening in your area?
3. Have you been taught research methodologies?
4. Have you been involved in doing any research projects?
5. Have you participated in any research on your learning?
6. During your course are you exposed to research in any way?
7. If undertaking undergraduate research project tell me about it?
8. What are the benefits to being exposed to research?

The workshop began by highlighting the policy shift towards inclusion in third level research. Many national grant awarding bodies including PRTLI, HRB, IRCHSS,[1] NAIRTL and others require applicants to report on the impact of their research on their teaching. Attention was drawn to key comments from some of these bodies, made as part of the conference's panel discussion entitled "*How can research funding organisations shape teaching and learning*"? For example, the comment by Dr Eucharia Meehan of the Higher Education Authority (HEA) that "*teaching and research are inextricably linked and part of the educational continuum…*" drew attention to the central idea of the workshop. Her focus on the student as researcher also highlighted the interconnected nature of research, teaching and learning: "*in essence all students are researchers- this is necessary if we are to perform in a knowledge society*". Ms Dipti Pandya, representing the Irish Research Council for the Humanities and Social Sciences (IRCHSS), also made the connection between research and teaching, commenting that "*the grant scheme requires detail regarding how the proposals impact on teaching*". Mr Martin Hynes of the Irish Research Council for Science, Engineering and Technology (IRCSET) also acknowledged that "*teaching and learning are part of the formative experience of scholars…teaching and learning provide a considerable part of science and society*". Attention was also drawn at this contextual stage of the workshop to the PRTLI 5 guidelines which underline the importance of establishing research-teaching linkages (HEA, 2010, p. 9): "*It will be necessary to outline the specific measures which are proposed, or which are already in operation, which will enhance innovative and inclusive teaching and learning activities in the research area and strengthen the links between teaching and learning and research, within the institution*". Finally, the NAIRTL (2009/2010) grant application guidelines were also invoked to strengthen the case for integrating research, teaching and learning. These included the four research definitions central to this workshop.

Classic examples of the four approaches to integrating research, teaching and learning were then identified and the video clips of staff and students talking about these approaches were played as stimuli. The implications of each definition were teased out as the workshop progressed, leading to meaningful and interesting discussion about research – teaching synergies.

1 Programme for Research in Third-Level Institutions (PRTLI); Health Research Board (HRB); Irish Research Council for the Humanities and Social Sciences (IRCHSS).

RESEARCH-LED TEACHING: VIDEO ONE

Interviewee: Dr Roy Slator, lecturer in Bioformatics and Systems Biology, Cork Institute of Technology

In response to the question of how he integrated research and teaching, Dr Slator commented:

> *"I would like to think that my lecturing style included research led, research based and research orientated approaches. So, for example, with the biology and bioformatics, my own research features very heavily in the lectures which are delivered using PowerPoint presentations and an online learning environment … it's very much based on my own research papers and review articles …"*

Dr Slator discussed all four research-teaching linkages, indicating that one begets the other. It was clear from his comments that he expects the students to get involved in the research, as part of his and their work, thus leading seamlessly into research orientated teaching and, ultimately, to research informed teaching and the evidence for student learning. However, for the purposes of the workshop, we focused on his reference to research-led teaching, letting his student's learning speak for itself later in the workshop in Video Five.

RESPONSE: RESEARCH-LED TEACHING

To guide the response to each video and research definition, two questions were asked:

> *What are the kinds of research- teaching linkages being identified here?*
> *What are the challenges for the teacher regarding this kind of research?*

A lively discussion followed this first vignette and led to the following generic questions: Can the research interests of the lecturer be too esoteric or specialised to be usefully incorporated into the classroom? Do the students have the vocabulary of the research area to understand the research? Is it too easy for the lecturer to 'talk over' the student by assuming the students have some familiarity with the material? Some insightful comments were also made regarding the student perspective. Students at an early stage of their formation have a belief that all knowledge is incontestable, that the 'facts' are black and white. Students may be frightened or intimated if exposed too quickly to uncertain, ambiguous or contentious material which tends to form the basis of research. Students may be afraid to challenge the information and opinions presented in their lecturers' research.

RESEARCH–ORIENTED TEACHING: VIDEO TWO

Interviewee: Mr James Cronin, lecturer in History of Art and Adult and Continuing Education, UCC

Again, Mr Cronin invoked all four research–teaching linkages in indicating how he integrated research and teaching. We focused, however, on his commentary which most closely echoed our definition of research–oriented teaching for the purpose of this workshop:

> *"In terms of the research orientated teaching, one of the things we discover and find in adult education is, to quote Malcolm S. Knowles, adults returning to college have a huge bank of experience that they want to draw upon, but sometimes they are not familiar with the disciplinary understanding. So we try to foster the disciplinary understanding by linking back to their experience. So in the first week or so of the Certificate programme (in Art History in the Department of Adult and Continuing Education), we encourage them to sketch their map or metaphor of art history and to work with this over the year and to periodically revisit it. And then we also build into their work programmes gallery visits, field trips to museums, where they are encouraged to look at the art in a focused way and then reflect on it, not through essays but through critiques of art…that is, something that will be real and authentic within the art practice world as well as the art theory element of the discipline. We are in the process of moving away from essay based and terminal assessment and we move more to project, authentic and formative assessment… One of the most pertinent feedbacks that we have had in the last two years is students coming back to us and saying we now see the discipline of art history with new eyes – we go to a gallery and our viewing is transformed…"*

RESPONSE: RESEARCH-ORIENTED TEACHING

The first point of note in the generic discussion related to the importance of lecturers being aware of their own research processes, in order to make these explicit for students. Some challenging questions regarding this type of research - teaching synergy also emerged. For example, could such an approach become a straitjacket where the taught method of doing research is seen as the only way to do research? Could the process be flexible enough to allow students to develop a research style which suited them? There was also a key question regarding the inculcation of the student into the discipline/profession, for example, helping the student to learn to think as an engineer: Is an academic, teaching his/her own preferred research style, teaching the student to think like an engineer or like an engineering academic? Are these two one and the same? The latter question gave rise to some interesting discussion which found a common denominator in the idea that research – oriented teaching helps students to think in the discipline, ultimately opening the door to the scholarship of application or engagement, in the future. In that context, the student on work placement, for example, could begin to see how a 'real' engineer operates, while drawing on disciplinary perspectives to do so.

RESEARCH – BASED TEACHING: VIDEO THREE

Interviewee: Mr Daniel Blackshields, lecturer in Economics, UCC.

Once more, in response to the question of how he integrated research and teaching, Mr Blackshields discussed all four forms. For the purposes of the workshop, we focused only on the following comment to initiate our discussion about research–based teaching:

> *"… what I am attempting to do with the students, is 'self authorship' of their learning, so that the learning that they engage in is not centred on an authority, whether it be an economist or myself, but in their own beliefs, values, critical thinking faculties. What I have developed over the last number of years is a tool to scaffold them in terms of how they engage in problem solving using economics. I believe in taking economics out of the textbook… So how can we get the students to move beyond what they do in the classroom with me to actually using it in their everyday lives? This is where the Sherlock Holmes method comes in; as he says himself "my thinking is the art of systemised common sense". So what I am attempting to do is to get them engaged in the art of systemised common sense with their economics knowledge. And that entails them being much more self aware, much more reflective in their approach to how they use economics outside the classroom which, again, is what the stories of Sherlock Holmes can enable them to do because he is classified as an expert problem solver of social phenomena- a different type of social phenomena – crime. And what we do is to get the students to explore his methodology and how he engages with these problems and then to transfer that – what I call meta-cognitive thinking- to their own problem – solving issues with their economics knowledge".*

RESPONSE: RESEARCH-BASED TEACHING

This generic discussion formed the centre piece of the workshop and began by acknowledging that this approach moved the control of the learning to the student, away from the lecturer. In consequence, it was pointed out that such an approach "*needs good learning outcomes which emphasise that it is the process which is to be learned by the student*". In short, we have to ask ourselves the question "*Are we assessing the process or the product of research*"? Some felt that we should examine the process only and that the experience of students doing authentic projects leads to their ownership of knowledge, or their "*self-authorship*" of it.

Such an approach to research also raises practical issues if the projects are to remain authentic. For example, there are practical implications in engineering design and in building projects, such as the cost of the project, the availability of laboratories, the emergent health and safety issues, depending on the project, and the time factor involved in facilitating such research. The challenge of finding new projects which are authentic and bounded and which can be done in a twelve-week period was also noted.

Some concerns were also raised regarding the implications of undertaking authentic projects. There is, for example, the possibility of discouraging students if the authentic projects do not *'work'.* However, it was argued, again, that the focus should be on the *process,* rather than the *product,* and, indeed, that students demonstrate real learning if they can explain why their product doesn't work. It was suggested that they could focus on the question of how they might do it better next time, as part of the research – based process. This led to another concern - the danger of the lecturer setting up an experiment, or project, to ensure that it would work. Participants felt that this would be counter-productive, leading to closed problems which wouldn't match the more open-ended, risky problems that students would encounter later on, in research or industry. One lecturer commented that students have to be allowed to make their own mistakes, that there was a danger of falling into the trap of 'terminal remediation', where students' problems can be 'fixed'. To prepare for such a journey as inquirers, some participants pointed out that there was a need for scaffolding early on in the research–based process to build up student confidence and ability to tackle research problems. One delegate felt that setting up a problem and then saying 'off with you', without support, could be disastrous. This position was contested, however, with the counter claim that "throwing students in at the deep end and letting them sink/swim, at least initially, forces them to confront what they know and don't know and to take ownership of addressing their learning deficiencies". Another participant commented that this latter approach also helps the lecturer to understand what supports the students need, providing the opportunity for a dynamic, personalised response to the needs of a particular cohort or an individual student.

Two final points rounded up this discussion: the first was that lecturers need to be prepared for a certain amount of tension with colleagues who are using more traditional teaching methods and who don't see the need for such a student–centred and inquiry-based approach. The second sounds a more positive note and relates to the mutual trust required between student and lecturer who take a leap of faith together into the unknown when embarking on the road of research–based teaching.

RESEARCH–INFORMED TEACHING: VIDEO FOUR

Interviewee: Dr Bettie Higgs, Senior Lecturer in Geology and Academic Co-ordinator, Ionad Bairre, the Teaching and Learning Centre, UCC

Dr Higgs again ranged over the four definitions of research–teaching linkages in clarifying how she integrated them. However, her comments regarding research informed teaching and the scholarship of teaching and learning (SOTL) were particularly helpful and encouraging at this stage of the workshop. The video clip chosen reiterated the idea of seeing research and teaching in terms of a spectrum or continuum:

> *"I have a very broad vision of scholarship of teaching and learning and I think it just starts off by being scholarly. The academic staff within the university may be anywhere along a spectrum of scholarship of teaching and learning. … it starts with just reading a study of somebody who has made an enquiry into their teaching. … You might then get curious about your own. You might have a question or a puzzle, you might go that far: How can I change something, how can I tell if it is getting better, how can I collect evidence? … Move along that spectrum to wherever suits you. Maybe you investigate your teaching one year and the next year you are not perhaps collecting evidence to the same extent. …I don't think all of us can aspire to that in the time we have available. But just to take a scholarly approach where you are always curious, watching, observing, collecting evidence where you can and seeing what it is telling you".*

RESPONSE: RESEARCH-INFORMED TEACHING

This was a pertinent point on which to end our discussion of the four scenarios. Since time was moving on and we were anxious to hear the student voice, we endorsed Dr. Higgs' words regarding taking a scholarly stance to teaching and moving along the spectrum of scholarship as needed. It was clear from our summation that the focus in the research–informed approach must be on the evidence for student learning.

THE STUDENT VOICE: RESEARCH–TEACHING AND LEARNING LINKAGES: VIDEO FIVE

Interviewee: Mr Philip Kelleher, Fourth Year student, Bio-Pharmaceutical Science, Cork Institute of Technology.

Philip is a student of Dr Slator's whose work we discussed in Video One. From the detail of the eight questions answered by Philip we focused on the two definitions that impacted most on his learning:

RESEARCH-ORIENTED TEACHING

> *"In terms of being taught research methodologies for researching our project and our literature review, we had to be taught about databases. We would not have encountered these before, such as PubMed and Science Direct…There was also the ability to critique these (research) papers and review them to get the correct information that was required… As well as that in the subject we avail of the Blackboard system where we run discussion groups together …"*

RESEARCH–BASED TEACHING

> *"Also, in terms of the classroom, we would use presentations as a method of research, with each person researching a different topic on a weekly basis…on the e-learning system, there are discussion forums running which require topics to be researched. We*

discuss them as students. …The research project phase for fourth year is linked back to the subjects studied in class and to the lecturer's own research that he performed in the past".

RESPONSE: INVOLVING STUDENTS IN RESEARCH–ORIENTATED AND RESEARCH–BASED TEACHING:

All were agreed that it would be a dream to have more students like Philip in our classes! What was clear from this final phase of the discussion was that it was indeed possible to involve students as researchers in our approach to teaching and that this process should be a key part of undergraduate education. The support structures mentioned earlier in our response to Video Three, should be endemic and a given; equally, we need to trust the students and, as one participant commented, to "*gift the learning to the learner*".

The time-frame of the workshop did not allow us to play all the interview footage. However, in drawing this paper together, it is fitting to include the following clear account of research–based teaching as a way of reiterating Philip's message and acknowledging the centrality of student research across the disciplines. At the end of the day, integrating teaching and research is about providing opportunities for the students to present and celebrate their work. The following extract from Dr Carrie Griffin's interview captures the excitement of this process:

RESEARCH – BASED TEACHING AND THE STUDENT EXPERIENCE: VIDEO SIX

Interviewee: Dr Carrie Griffin, School of English, UCC

"I'm involving my undergraduate students in an authentic research project. The students conduct their own research investigating the changes in books and texts over time, as they are published in new versions and editions. This is their first experience of conducting research and the sense of enjoyment in this task is very apparent. Today we are showcasing the student's research at this conference which allows the students to present their research in poster form and also to become aware of the latest developments in this field and perhaps spark off ideas for how their research could evolve".

KEY FINDINGS OF THE WORKSHOP:

- All lecturers interviewed were linking their research and teaching in more than one way; hence the importance of placing the four definitions identified by NAIRTL along a continuum. To be anywhere along this spectrum is an authentic way to link teaching and research but to engage in some way with all forms of integrating research and teaching is the ultimate goal.
- There is a language and grammar of reflective practice involved in integrating research and teaching which all of the interviewees possessed and which the NAIRTL grant guidelines have helped to develop. Such a reflective, meta-cognitive capacity is enabled by the peer review context of colleagues meeting and presenting their teaching and their students' learning to one another Participants were keen to have similar workshops where higher education teachers could tease out the teacher–researcher relationship. NAIRTL conferences provide an opportunity to develop such a community of learners.
- The discussion phases of the workshop highlighted the complexities and challenges embedded in each definition. However, it became clear as the workshop progressed that whatever way we marry research and teaching, it should beget an enhanced student learning experience.

***MEMBERS OF THE WORKING GROUP.**

Stephen Cassidy, Teaching and Learning Centre, Cork Institute of Technology; **Kelly Coate**, Centre for Excellence in Learning and Teaching (CELT), National University of Ireland, Galway; **Mary Fenton**, Adult and Continuing Eduction, Waterford Institute of Technology; **Marian McCarthy,** Ionad Bairre, The Teaching and Learning Centre, University College Cork; **Jennifer Murphy**, NAIRTL; **Carmel O' Sullivan**, School of Education, Trinity College Dublin.

REFERENCES

Boyer, E. (1990). *Scholarship Reconsidered: Priorities of the Professoriate*. The Carnegie Foundation for the Advancement of Teaching, San Francisco: Jossey- Bass.

Brew, A. (1999). "Research and teaching: Changing relationships in a changing context", *Studies in Higher Education*, vol. 24, no. 3, pp. 291-301.

Elsen, M., Visser- Wijnveen, G.J., van der Rijst, R. and van Driel, J.H. (2009). "How to strengthen the connection between research and teaching in undergraduate university education", *Higher Education Quarterly,* vol. 63, no. 1, pp. 64-85.

Griffiths, R. (2004). "Knowledge production and the research – teaching nexus: the case of the built environment disciplines", *Studies in Higher Education*, vol. 29, no. 6, pp. 709-726.

Healey, M. (2005). "Linking research and teaching: exploring disciplinary spaces and the role of inquiry based learning", in *Reshaping the University: New Relationships between Research, Scholarship and Teaching*, ed C. Rust. London: McGraw Hill/Open University Press, pp. 67-78.

Higher Education Authority (HEA) (2010). *The Programme for Research in Third Level Institutions (PRTLI): Contributing to Ireland's Knowledge Economy and Society* [online]. Call for Proposals for Cycle Five, p. 9. Available from: http://www.hea.ie/en/prtli [accessed 29 June 2010].

National Academy for the Integration of Research, Teaching and Learning (NAIRTL) (2010). *Grants Initiative 2010: Guidelines for Application* [online]. Available from: http://www.nairtl.ie/funding [accessed 29 June 2010].

Shulman, L. (1993). "Teaching as community property: putting an end to pedagogical solitude", *Change,* vol. 25, no. 6, pp. 6-7.

Shulman, L. and Hutchings, P. (1999). "The scholarship of teaching: new elaborations, new developments", *Change,* vol. 31, no. 5, pp. 10-15.

LEARNING BY DOING: INTRODUCING RESEARCH SKILLS TO GEOGRAPHY UNDERGRADUATES

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Biographical Note

Niamh Moore is a lecturer in geography and a Senior Fellow in Teaching and Academic Development at University College Dublin. Her research interests are in the processes and outcomes of urban transformations in Western cities, and in geographic education. Recently, she has led an inter-disciplinary team of university fellows assessing the expectations and experiences of first year students and piloted innovative ways of engaging first year geography students. She is presently working on how the lessons of this research may be extended throughout the undergraduate curriculum and in particular through skills acquisition.

KEYWORDS

Skills; teaching-research nexus; autonomous learning; student expectations.

ABSTRACT

In an increasingly competitive economy, the capacity for self-motivation, problem-solving skills and an ability to think critically are core graduate attributes. However, the capacity to create an educational environment that develops and harnesses such skills is a distinct challenge as resources become increasingly restricted. Geographical Skills and Techniques was a new module introduced in January 2009 in the second year undergraduate geography curriculum at University College Dublin (UCD), Ireland, to introduce students to a range of skills and techniques relevant to their training as geographers, drawing on the recommended skills and attributes identified by the Quality Assurnace Agency (QAA) Subject Benchmark statement in the UK (QAA, 2007). The aim was to develop an awareness of, and ability to use, the range of material and approaches necessary to undertake successful geographical research in line with the strategic importance in the university of developing closer research-teaching linkages. The module was evaluated at the end of the semester through an online anonymous survey delivered using Zoomerang (http://www.zoomerang.com). The survey examined student's learning experiences generally as well as in each specific component: library skills, cartography, quantitative techniques, qualitative methods and fieldwork.

This paper assesses the effectiveness of this module in developing the research capacity of the undergraduate students. It highlights the key challenges of effectively embedding this module in the geography programme both from an institutional and from a learner perspective. It concludes that for the module to be successfully continued in future years, student behaviour and expectations must be managed more effectively and greater institutional support should be provided to enhance student learning.

INTRODUCTION

> *"All undergraduate students … should experience learning through, and about, research and inquiry"* (Healey and Jenkins, 2009, p. 3).

Moving away from the *"tired old teaching versus research debate"* (Boyer, 1990, p. 16) that has dominated the academic agenda for a substantial length of time, recent international experience has demonstrated the necessity of better integrating these two core activities in the contemporary university (Jenkins and Healey, 2005; Gunn, 2008). While research has traditionally been viewed

as a function of academics or graduate students, the value of embedding research at each stage throughout the academic cycle has been the subject of increasing recent attention. Linking the teaching and research functions in individual departments is crucial both from an academic and for a broader societal perspective (Jenkins *et al*, 2007) and this should begin with undergraduate students. The *"teaching-research nexus"* (Neumann, 1992) is what distinguishes higher education but it is argued that, left to chance, it very often fails to develop productively. This paper outlines the development of *GEOG 20030: Geographical Skills and Technique*, a new core module, at University College Dublin (UCD). It assesses the effectiveness of this module in developing the research capacity of the undergraduate students and identifies the key challenges of effectively embedding this module in the geography programme both from a learner and an institutional perspective.

THE 'TEACHING-RESEARCH' NEXUS AT UCD

In common with most other third level institutions across the island and internationally, UCD as an institution faces growing competition, scarcity of resources and increased monitoring and performance review. The *UCD Strategic Plan 2005-2008* addressed these challenges through a sharp focus on the development and potential for better relationships between the teaching and research functions. Part of the aim is to introduce research-driven modules/activities at all levels of study and to provide graduate students with opportunities to facilitate undergraduate learning in a structured manner. The plan argues that in a research-intensive university, undergraduate students *"cannot but internalise the very process by which new knowledge is generated, and are thus uniquely placed to contribute, to critique and to apply"* (UCD, 2004, p. 9). While students may be well placed, observations of student behaviour as well as evidence from submitted assessments would suggest that some undergraduate students do not have the necessary skills, experience or confidence to successfully become research active and that explicit intervention in the curriculum is required.

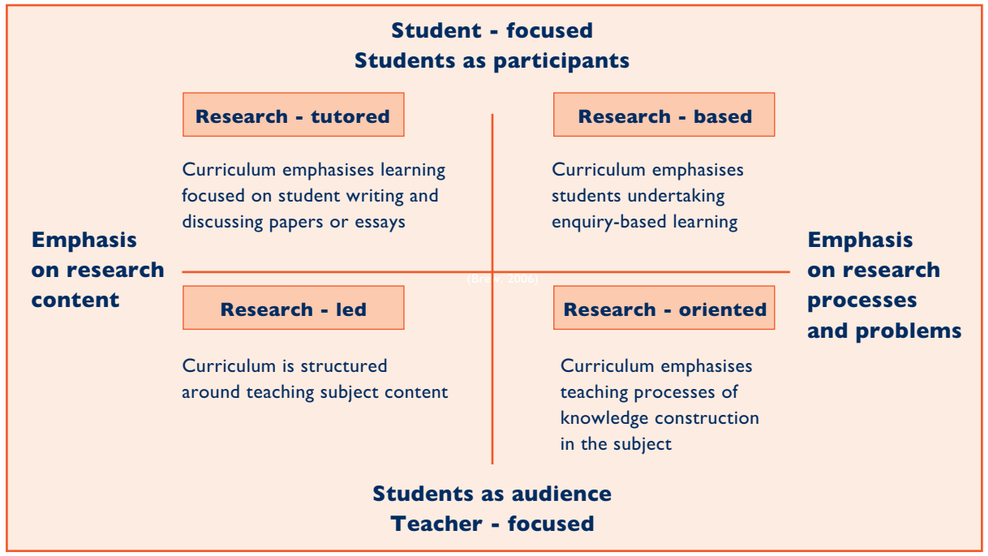
DESIGNING AND EVALUATING THE GEOGRAPHICAL SKILLS AND TECHNIQUES

The aim of the new core module was to develop an awareness of, and capacity to undertake, independent geographical research in line with the strategic institutional priority of developing closer research-teaching linkages. By the end of the module, it was anticipated that students would have a clear understanding of the skills available to geographers and would have gained experience in applying specific techniques. In the vocabulary of Healey (2005), through a range of exercises and other assignments the goal by the end of the semester was to move students from research-led learning through research-oriented to research-based learning (see Figure 1). The success of student progression along this continuum was measured through a final project requiring students to design, undertake and write an original independent research report using and combining their newly developed skills.

Given the limitations of the large class size (c. 250 students) and timetable constraints, the module was structured through one large group session per week attended by all students at which particular skills were introduced and one small group (c. thirty-five students) practical per student per week run by graduate students. One academic coordinated and taught a large number of the lecture classes, but three other staff members led the sessions on specific skills. These were complemented by one Saturday fieldwork session and by office/consultation hours held by both staff and graduate students.

A blended learning approach was adopted with face-to-face contact supplemented by a virtual learning environment within which preparatory work was assigned, additional resources

Figure 1: Curriculum design and the research-teaching nexus (Gunn, 2008, modified from Jenkins and Healy, 2005).



provided, assignments set and submitted, feedback returned and other module administration undertaken such as practical class and fieldwork enrolment. Peer discussion boards were established to facilitate student discussion and collaborative problem-solving. The site was structured around the five key skills being developed - library skills, cartography, quantitative techniques, qualitative methods and fieldwork - and had additional functionality including message boards and assignment reminders to facilitate the management of such a large enrolment and complex module structure. An end-of-semester online anonymous survey created through Zoomerang.com was also delivered via the Moodle interface allowing easy data collection and analysis. This survey assessed student learning experiences and behaviour generally as well as in each specific component of the module. The majority of questions used a Likert scale but some open-ended questions were also included to gain a deeper understanding of how the module had been received and its relative success. The online survey elicited a 69% response rate (166 responses) and the results are examined and analysed below.

LEARNER PERCEPTIONS

One of the central aspirations of the module coordinator was to highlight the importance and relevance of research skills and geographical approaches to understanding real-world problems. The results of the survey would suggest that this was successfully achieved with 68% of respondents considering the skills gained as useful or very useful to their current and future undergraduate study and 59% citing it useful or very useful to their future career or advanced study. An element of surprise characterised many of the student responses: *"researching be it maps or journals and fieldwork was actually enjoyable and educational"*; *"learning interview techniques and identifying the right questions to ask is very useful"*; *"[I] didn't realise the range of electronic sources out there that we could use e.g. databases"*.

The response of students to the module coordinator's expectation that they would become responsible for and direct their own learning, albeit in a supportive environment, was of significant interest. In general, students interpreted more independent learning as constituting a heavier workload; 91% considered it more or significantly more than other modules. Students experienced difficulty with the transition to more autonomous learning with 30% disagreeing that there was support available if they experienced difficulties. Given the level of support made available in practice, this perception may be explained by the divergent interpretations of staff and students related to support versus spoon-feeding. These issues aside, students seemed to respond enthusiastically to the research challenge and the general principle of self-directed learning; students articulated their learning experiences in various ways, realising: *"the value of doing independent research";* that *"a final project was an interesting new experience";* the value of *"motivating myself to work and complete the projects was important";* and that *"you really have to get your act together because no-one is going to do the work for you".*

One of the most surprising student perceptions from a teacher's point of view was that this module appeared to build confidence and engagement with the subject but also with university learning more generally. Representative comments in the open-ended questions included the realisation that students *"have to do independent study in college"; "can do important assessments on my own"; "were trusted to work on our own".* The importance of the module in developing lifelong learning and transferable skills was also noted with students citing the development of stronger organisational skills. For many, the module made students "*more focused";* taught them *"not [to] do … work an hour before the deadline"'* and developed *"skills to present … work in a more professional manner".*

LEARNING BEHAVIOUR

In a detailed question on student motivation, a clear set of performance-related rather than intrinsic, interest-driven motivations emerged. 32% of students stated that their most important motivation for attending classes was because they needed information for assignments; 30% attended because it was mandatory; and only 18% stated that their motivation was driven by an interest in learning new skills. While 94% of respondents agreed or strongly agreed that they "*understood the need to work independently outside of class to prepare and complete assignments",* this directly contrasts with observed student behaviour particularly during the early part of the semester. Students were highly resistant to spending time outside of dedicated classes working on and completing assignments. As the semester progressed, an increasing awareness and acceptance of the importance of autonomous learning to succeed in this module became more apparent. It would seem that this realisation links directly to the perception of a heavy workload and greater time demand on this module. When the students were asked specifically about the weekly time demands of this module, the mode was three to five hours. Far from being an excessive workload, this kind of time demand would be considered appropriate, even a little low, by staff for a five-credit module. There is thus a significant disjuncture in terms of the time that staff expect students to spend on each module per week and that which the students consider necessary, a finding borne out in a previous study with first year students (Gibney *et al,* 2008).

CHALLENGES IN ENHANCING THE 'TEACHING-RESEARCH' NEXUS

The evaluation suggests that this module successfully achieved the acquisition of discipline-specific skills but also generic graduate attributes, such as better organisational and time management ability as well as the capacity to work independently. The results of the evaluation raise interesting questions about student expectations of university life. It became apparent that even in second year, and at the midpoint of their course, students did not understand the requirement for significant autonomous learning or respond well to what was perceived as an 'intensive' workload. For future years, it will be important to clearly outline from the beginning of the semester the expected workload and time commitment required for this module. This will partly be achieved through a review of the sequencing of components, as the module began with a very undemanding introduction to library resources that may have shaped the idea that this was going to be an easy module.

While they had been exposed to research-led teaching in other modules, students were initially resistant to the concept of research-based learning and the need to work steadily over the course of the semester to build on experience rather than cram at the end. They had significant difficulty with mandatory practical attendance and this proved perhaps the most difficult aspect of the module from an administrative perspective. However, it was our firm belief that unless students attended the practical classes, they could not complete the associated assignments independently. This approach was based on the fact that these classes served as platforms where students had the opportunity to learn the skills in a hands-on manner. The policy was also aimed at transforming learning behaviour among the student body. One of the positive outcomes of mandatory attendance was that students welcomed the opportunity to get to know others in their class; in addition 50% of them suggested that it helped develop their sense of identity as geography students. The development of social networks of learning was thus an unexpected positive outcome of designing the module in this way.

However, there are a number of institutional challenges to the successful continuation and development of this module. One of the key issues for staff and a significant complaint from students was the demonstrator-student ratio in practical classes (35-40: 1). This was primarily a resource issue. If the university is committed, as the institutional strategic plan would suggest, to providing graduate students with opportunities to facilitate undergraduate learning in a structured manner then these types of activities need to be better supported and facilitated. The workload involved in delivering and administering an intensive module, such as this, is significant. The university might consider providing some additional administrative support to module coordinators who engage in innovative and intensive modules with large classes. One of the other mechanisms by which the institution could support research-based learning is to establish a better framework for challenging students from their introduction to university. Clear expectations regarding time commitment and the importance of independent learning, a hallmark of a university education, need to be more forcefully articulated. Learning as a collaborative process also needs to be more fully understood by students and the university may have a key role to play in establishing this norm from the beginning of first year. Without high-level support, individual schools and module coordinators will have an increasingly difficult job in encouraging and sustaining active and autonomous modes of learning.

CONCLUSION

The experience of delivering and evaluating *Geographical Skills and Techniques* has generated useful insights into how the 'teaching-research' nexus can be, and is, experienced by undergraduate students. The results of the module evaluation suggest that research has been successfully foregrounded among this cohort as a participatory process and that enthusiasm was generated within the undergraduate body for the research challenge. However for the module to be successfully delivered in future years, learning behaviour and expectations must be managed more effectively. Successfully meeting the university aspiration of developing "*further the research elements of undergraduate programmes, including specific research-based modules*" (UCD, 2004, p. 13) will depend on the emergence of a better understanding among students of the demands of third level study as well as a commitment from the university to supporting these modules through resourcing and the promotion of a challenging culture of learning.

ACKNOWLEDGEMENTS

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REFERENCES

Boyer, E.L. (1990). *Scholarship reconsidered: priorities of the professoriate*. New Jersey: The Carnegie Foundation for the Advancement of Teaching.

Gibney, A., Moore, N., Murphy, F. and O'Sullivan, S. (2008). "'Won't someone tell me all I need to know?': First Year Expectations of University Life", paper presented at *Universitas 21 Teaching and Learning Conference: Does Teaching and Learning Translate?*, Glasgow, 21-22 February 2008.

Gunn, V. (2008). *Research-teaching linkages: Enhancing Graduate Attributes*. Glasgow: Quality Assurance Agency Scotland.

Healey, M. and Jenkins, A. (2009). *Developing undergraduate research and inquiry*. York: Higher Education Academy.

Jenkins, A. and Healey, M. (2005). *Institutional Strategies to link teaching and research*. York: Higher Education Academy.

Jenkins, A., Healey, M., and Zetter, R. (2007). *Linking teaching and research in disciplines and departments*. York: Higher Education Academy.

Neumann, R. (1992). "Perceptions of the teaching–research nexus: A framework for analysis", *Higher Education,* vol. 23, no. 2, pp. 159–171.

Quality Assurance Agency (2007). *Geography 2007*. Gloucester: Quality Assurance Agency.

University College Dublin (2004). *Strategic Plan 2005-2008: Creating the Future*. Dublin: UCD.

BAUHAUS, CROWN HALL, FAU: A COMPARATIVE INVESTIGATION OF THE CURRICULUM DESIGN IN SCHOOLS OF ARCHITECTURE

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Biographical Note

Sarah graduated with a Bachelor of Architecture from University College Dublin. After graduation she spent over five years in professional architectural practice in Cork. She joined Cork Institute of Technology (CIT) in 2006 to teach in the design studio at the Cork Centre for Architectural Education (CCAE), a joint CIT and University College Cork (UCC) venture. At the CCAE, she presently co-ordinates the second year design studio and lectures in the History and Theory of Architecture. Sarah is currently researching the area of architectural education as her PhD thesis at UCC. She received a NAIRTL grant in 2008 to undertake comparative case studies on 'Studio Learning'

KEYWORDS

Architecture; design; education; curriculum; Frank Lloyd Wright; Walter Gropius.

ABSTRACT

One of the central themes addressed by this paper is the design of the curriculum for architectural education using three schools of architecture: the Bauhaus in Dessau, Crown Hall in Chicago and the Faculty of Architecture and Urbanism (FAU) in São Paulo. It also reflects on the practices in other schools such as Frank Lloyd Wright's Taliesin east and west which are modelled on an apprentice form of training. The Bauhaus introduced a preliminary curriculum - 'The Vorkurs' - which became the model for many foundation year design courses throughout the world. They also employed a system of Workshop Masters and Masters of Form which may have influenced the teaching of design technology in architectural education. Mies van der Rohe, who taught at the Bauhaus, later designed the building and curriculum at Crown Hall. He proposed a curriculum where students learn everything related to a particular building material with the materials getting progressively more complex. Vilanova Artigas had visited Crown Hall during its construction. He proposed a curriculum at FAU where all students in the school work together on different aspects of one large project. In this way students of all stages and ages would learn from each other. Each of the above curriculum designs places an emphasis on a particular ideology held by the architect/teacher. This study is part of a doctoral thesis which also examines the link between the curriculum and the school buildings. The work presented has been supported by NAIRTL funding in 2008-2009 which analysed the design of studio spaces for teaching and learning design based disciplines. Three new schools of architecture have been established in Ireland over the past five years and this research could help inform their curriculum and school design.

INTRODUCTION

One of the central themes addressed by this paper is the design of the curriculum for architectural education. A number of schools of architecture have been set up in Ireland over the past five years and this research may help inform the choices made in the design of their curricula and associated building design. This paper focuses on of the curricula of three schools of architecture: the Bauhaus in Dessau, Crown Hall in Chicago and FAU in São Paulo. This study is part of a doctoral thesis which also examines the link between these curricula and the buildings in which they are housed. The work presented, which analyses the design of studio spaces for the teaching and learning of design-based disciplines, was supported by NAIRTL funding in 2008-2009.

"The idea of providing a single large room for the School of Architecture and City Planning's 300 students was in theory the physical expression of the anti-ivory tower aspects of the curriculum; in fact this concept proved to be particularly workable; and because a student is not isolated from others who may be further or less advanced in the course than he, he soon becomes aware of his progress in its carefully planned development" (Carter, 1999, p. 86).

The design of the curriculum for a school of architecture is shaped by many factors, from utopian, social ideas, to pedagogical aspirations, to political or economic forces. This study looks at three schools of design which were led by individuals who not only shaped the overall curriculum but also designed the buildings where they taught. By examining the Bauhaus in Dessau, Crown Hall at the Illinois Institute of Technology (IIT) in Chicago and the Faculty of Architecture and Urbanism in São Paulo (FAU), the structure and ideas behind the curriculum and the manifested spatial strategies of these approaches are compared.

BAUHAUS

The young German architect Walter Gropius became the director of a new school of design in Germany in 1919. Gropius founded the Bauhaus which was initially located in Weimar and later relocated to Dessau where he had the opportunity to design a purpose-built structure in 1925. Gropius' opening manifesto outlined the aim of the school as uniting the arts through educating people who could design and also fabricate their work.

The plan of the school (Figure 2) shows how each function is given its own wing with workshops in one wing, classrooms in another and a bridge linking to a student accommodation wing.

Figure 1: Bauhaus curriculum proposed by Walter Gropius (author's own redrawn from Droste, 1998, p. 34).

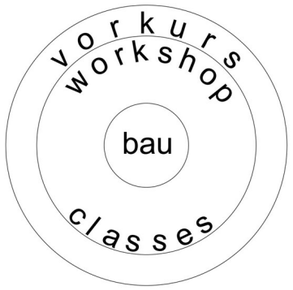
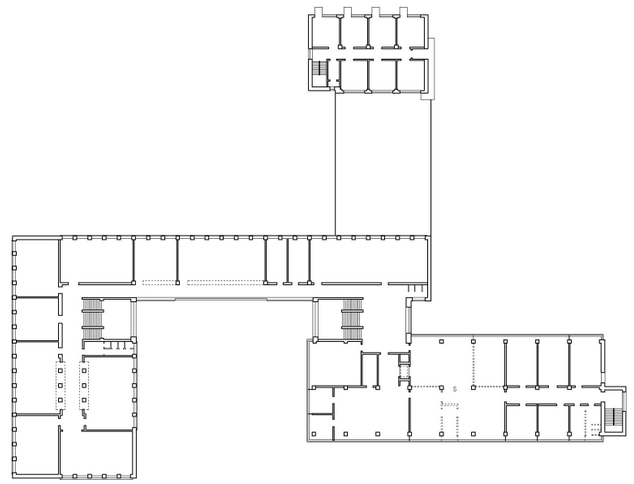


Figure 2: Second floor plan of Bauhaus Dessau (author's own, redrawn from Sharp, 2002).



Students on the course undertook a preliminary training period of six months called the *"Vorkurs"* before entering separate studios dedicated to a number of skills including textiles, woodwork and metalwork. The idea of the Vorkurs was to provide students with basic skills so as to cut down on wastage of materials and poor results in the workshops. The Vorkurs was initially taught by Johannes Itten, an artist with previous training as an elementary school teacher. The Vorkurs has influenced the majority of art and design schools throughout the world who now begin instruction with a foundation course. The central goal of the curriculum was to explore "*Bau*" or building. Gropius exclaimed *"the ultimate aim of all creative activity is the building!"* (Droste, 1998, p. 22).

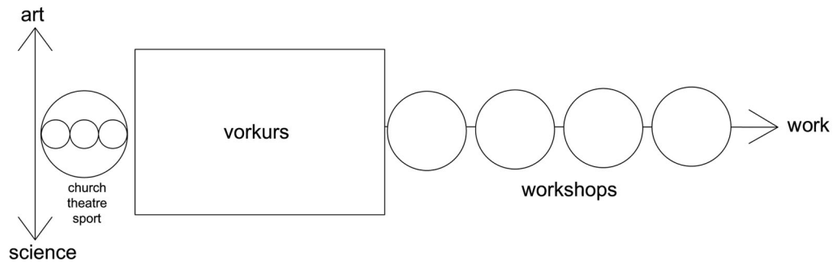
Itten's classes influenced student Josef Albers, who went on to teach in the Bauhaus (Horowitz, 2009, p. 17). He proposed that his students focused on working closely with a particular material to fully explore its physical possibilities and structural capabilities. Students focused on materials such as paper, glass and metal. This approach was quite different to the fine art schools that at that time based their lessons on making copies of the works of the old masters. This approach to materiality may have influenced Mies van der Rohe's curriculum at IIT which will be examined later in this paper (Harrington, 1986, p. 44).

Figure 3: Bauhaus, Dessau; exterior.

Figure 4: Bauhaus, Dessau; interior of studio.

When Gropius decided to end his time at the Bauhaus, he passed his directorship on to the Swiss architect Hannes Meyer. Meyer proposed a restructuring of the course in which students had time within the spheres of church, theatre and sport and then entered an expanded Vorkurs before entering one of four workshops (Droste, 1998, p. 168). The diagram is set on the poles of art and science and shows an output of *"Work"* (Figure 5). Meyer was soon forced to resign from his position, due to his Communist beliefs (Droste, 1998, p. 200).

Figure 5: Bauhaus curriculum proposed by Hannes Meyer (Author's own redrawn from Droste, 1998, pp. 168, 169).



The final director of the Bauhaus was the German born architect Mies van der Rohe, who later relocated the school to a disused telephone factory in Berlin and proposed a greater level of instruction in architecture. Mies decided to close the school 1933 citing political and economic factors as the reasons. He was offered a post as director of the school of architecture at the Armour Institute in Chicago (which was soon to become IIT) and was also invited to propose the new curriculum. Mies worked on the curriculum proposals with the help of colleagues and former students from the Bauhaus (Blaser, 1981, p. 25).

CROWN HALL AT THE ILLINOIS INSTITUTE OF TECHNOLOGY (IIT), CHICAGO

Mies proposed a curriculum with an emphasis on materiality (Figure 6). The students began by looking at projects using brick, stone and timber before studying the complexity of steel or reinforced concrete structures. The material was described as the *"Means"* while the uses were described as *"Purposes"* such as houses, schools and offices. Each purpose ascended in complexity throughout the course and ended with a study of *"Planning and Creating"* of how buildings related to each other in terms of cities, urban design and creative unity (Blaser, 1981, p. 26).

Crown Hall was designed by Mies van der Rohe in 1956 to accommodate this curriculum proposal. The open floor plan allows all students to have studios in a single space with the other functions of the school being located in a semi-basement (Figures 7 and 8).

Figure 6: IIT curriculum proposed by Mies van der Rohe (author's own, redrawn from Blaser, 1981, pp. 26, 27).

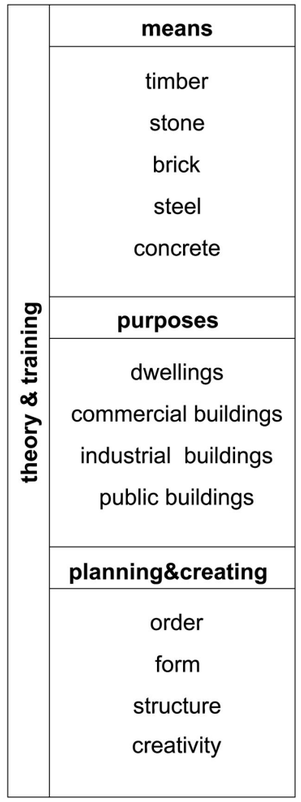


Figure 7: Exterior of Crown Hall, IIT, Campus

Figure 8: Interior of Crown Hall, IIT Campus

Figure 9: Raised ground floor plan of Crown Hall (author's own, redrawn from Blaser 2001)

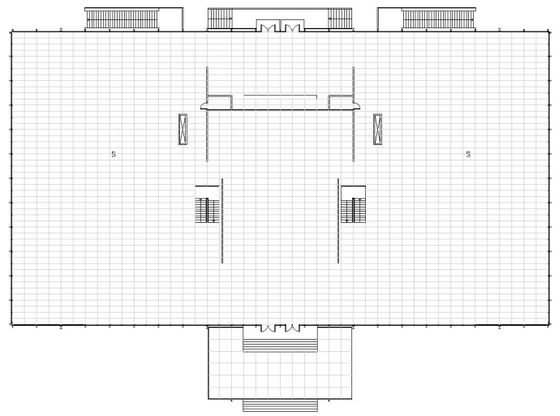


Figure 10: Artigas curriculum for FAU (author's own, redrawn from Ferraz, 1997, p. 105.

project			
group 1	**group 2**	**group 3**	**group 4**
product design	buildings	the city	graphic design

FACULTY OF ARCHITECTURE AND URBANISM IN SÃO PAULO (FAU)

The Brazilian architect Vilanova Artigas was familiar with the work of Mies, since he had visited IIT campus while Crown Hall was under construction. Artigas was involved with proposing major reforms to the architectural education curriculum in Brazil. In the FAU Reform of 1963, Artigas outlined his curriculum for the school where all students work together on different aspects of the same project. Four major groups would tackle issues from the areas of product design, to buildings, to the city, and graphic design. He proposed a vertical structure where students of all ages and stages work together in teams and inform each others progress. The school designed by Artigas to accommodate this curriculum was built in 1968. The studios are located on the top floor of the building so they are getting the advantage of the natural light through the roof lights. The other functions of the school are located on the lower floors which wrap around a large central space (Figure 12).

Figure 11: Split level second floor plan of FAU, (author's own, redrawn from Ferraz, 1997, p. 112)

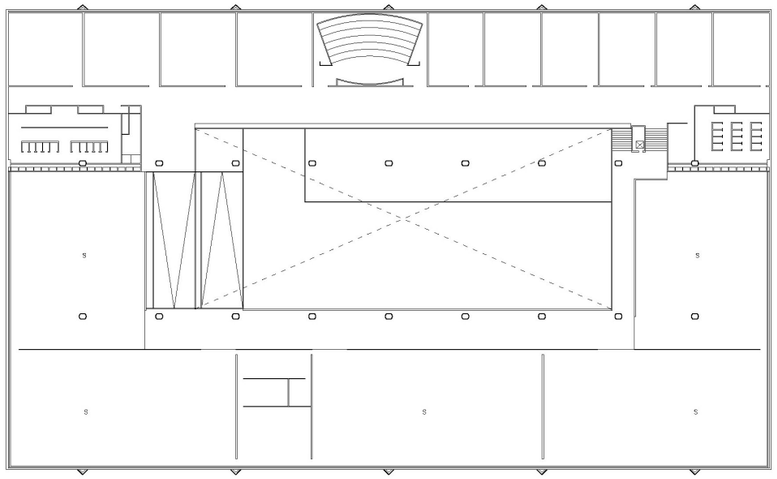
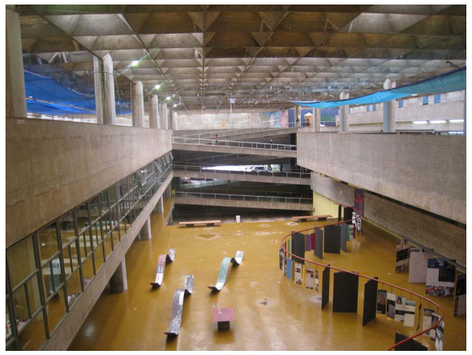


Figure 12: Interior of FAU



CONCLUSION

Each of the three schools proposes a type of educational approach which is shaped in the curriculum diagram (Figures 1, 6, and 10) and embodied within the building spaces. Mies van der Rohe was interested in the idea of a *"Universal Space"* so that the building could be used for a multitude of functions. Crown Hall is used as a one roomed school house which equally can become a gallery for exhibition of student work or the venue for a party where Mies' birthday is celebrated every year. Walter Gropius attempted to make a *"miniature world"* at the Bauhaus, Dessau (Droste, 1998, p. 22). The building includes a wing with studio apartments where students can live, a theatre and canteen as well as the studio and lecture spaces. Gropius wanted to grow the food on campus so that the school would be self sufficient. Artigas emphasised democracy in FAU which is a concrete structure with wide ramps connecting split levels wrapping around a central void. There are physical, visual and acoustic connections between the studios, social spaces and circulation within the school. The building aims to present itself without physical or psychological barriers as Artigas envisaged: *"This building depicts the worthy ideals of today: "I saw it as a spatialization of democracy, in dignified spaces, without front doors, as I wanted it as a temple where all activities are valid"* (Ferraz, 1997, p. 101). Each curriculum and associated spatial strategy studied in this paper presents certain advantages and challenges. It is hoped that this research will help to inform the choices made by those involved with the design of the curriculum and buildings for schools of architecture.

REFERENCES

Artigas, J.B.V. (1998). *Caderno Dos Riscos Originais*. FAUUSP.

Carter, P. (1999). *Mies van der Rohe at Work*. London: Phaidon.

Chang, P.C. and Swenson, A. (1980). *Architectural Education at IIT 1938-1978*. Illinois: Institute of Technology.

Blaser, W. (1981). *Mies van der Rohe: Continuing the Chicago School of Architecture.* Berlin: Birkhauser Verlag AG.

Blaser, W. (2001). *Mies van der Rohe: Crown Hall - College of Architecture, Illinois Institute of Technology.* Berlin: Birkhauser Verlag AG.

Droste, M. (1998). *Bauhaus*. Berlin: Bauhaus Archive.

Ferraz, M.C. (1997). *Vilanova Artigas*. São Paulo: Instituto Lina Bo e P.M. Bardi.

Harrington, K. (1986). *Mies van der Rohe: Architect as Educator*. Illinois: University of Chicago Press.

Horowitz, F. A., (2006). *Josef Albers: To Open Eyes*, Phaidon.

Sharp, D. (2002). *Bauhaus, Dessau, Walter Gropius*. London: Phaidon.

PHOTOGRAPHS

All photographs were taken by the author.

CHILDREN AND GLOBAL DIVERSITY: COLLABORATIVE DEVELOPMENT OF LEARNING MATERIALS

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Biographical Note

Jacqui O'Riordan joined the school of Applied Social Studies, University College Cork (UCC) in 2006 as part of the BA Early Childhood Studies (BAECS) team. She previously worked as an independent researcher in community related research areas in Ireland and Tanzania. Her work with the Higher Education Equality Unit gained her extensive experience in a range of equality concerns. Her research interests include equality in local and global contexts, and women's studies.

Shirley Martin is a social policy lecturer in the School of Applied Social Studies, UCC. She teaches social policy on the BAECS degree and the social science degree and contributes to the MA in Social Policy. Her main research interest is in the well-being of children and her research also relates to key areas of children's lives such as early years care and education/educational disadvantage.

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Caroline Shore worked as a social worker and senior social work practitioner in Health Service Executive (HSE) child protection and welfare teams from 1998 to 2006. She is a lecturer in the Department of Applied Social Studies at UCC. Since 2007 she has also worked as a freelance Guardian ad litem, advocating on behalf of children within the court system. Her research interests are in the area of child protection, particularly the social work response to separated children.

KEYWORDS

Global childhood diversity; children's rights; learning material development; active learning

ABSTRACT

This paper explores the work of an ongoing research project at University College Cork (UCC) which has sought to further the understanding of students in the BA Early Childhood Studies (BAECS) programme on issues of global diversity, set within childhood contexts. It tracks the process of development of the project thus far, highlighting key teaching and learning insights. The project has been developed in conjunction with members of the BAECS team in the School of Applied Social Studies, UCC and the Hope Foundation, Cork and Kolkata (Calcutta). The

rationale for the project arose through the experiences that students in our programme were having in applying aspects of theoretically based knowledge to placement contexts and reflective practices in increasingly diverse placement contexts. Beginning in 2007, teaching and learning materials were developed in the form of issue-based case studies based on the experiences of, and issues arising for, children with whom the Hope foundation are currently working in Kolkata. Development of materials involved the active participation of undergraduate students in a learning process whereby they are facilitated to deepen their understanding of how learning materials can be developed and of cultural and social diversity, in for instance areas of child trafficking, child labour and child abuse. In involving the students in a critical analysis and reflection of material development, it contributes to their understanding of issues relating to children's rights and facilitates their development as critical early years practitioners who are advocates for children.

INTRODUCTION

This paper outlines a project on the development of learning materials on childhood and global diversity for inclusion in the curriculum of the BA in Early Childhood Studies (BAECS) undergraduate degree at University College Cork (UCC). It traces the origins of this project and highlights the importance given to ongoing communication between Non Governmental Organisation (NGO) researchers, academic staff and students in this project. At the core of this project was the belief that an understanding of global diversity is essential for contemporary early childhood practitioners and that involvement in this project, and the resulting materials produced, would contribute to the development of early years practitioners who are advocates for children in an increasingly globalising world context. The project aimed to contribute to the students' understanding of issues relating to children's rights and citizenship through the development of learning materials on the following five issues: child trafficking, child labour, HIV/AIDS, child abuse, and religion, race and ethnicity, based on the work with which Hope Foundation, Cork and Kolkata, is involved in North East India. It built on existing relations between staff at the School of Applied Social Studies, UCC and personnel working with the Hope Foundation. It employed an approach to teaching and learning that valued the active participation of all involved in the process, in particular students, so as to ensure the materials fully respond to their learning needs. An integral part of the process was the development of new ways of assessing the student learning including student self-assessment. The approach views the teacher/lecturer as a facilitator of learning rather than an expert who imparts knowledge. A second aim of this project was the development of students' capacity to engage in a process of self-reflection that would enable them to become more aware of their own values, attitudes, biases and beliefs in relation to children from other cultures and backgrounds.

BACKGROUND AND RATIONALE OF THE PROJECT

The rationale for this project arose from difficulties identified by students in the BAECS in UCC, in making links between theory and their practice-based experience. Our students' placement locations are becoming increasingly diverse. While the more traditional focus of the BAECS has been within a national context, this national context is becoming increasingly multicultural. As such it is important that students have a greater understanding of global development issues and connections, in developing their roles within the diverse fields of social policy and childcare practice. The reality now is that work in childhood areas such as social support, policy, education and analysis is no longer restricted to geographical boundaries. Moosa-Mitha (2007) discusses the importance of understanding the global perspective for the full analysis of children's citizenship particularly for children who are trafficked or subject to sexual exploitation:

> *"Sexually exploited children who are trafficked into particular communities are not only the result of a global phenomenon, but also have social justice claims as citizens of the world community to the specific state in which they find themselves residing and working. This understanding would translate not only in terms of the importance of understanding the specific, or the local in terms of the global, but also as re-visioning student's own identities from a local or national basis to one where they understand themselves as members of a world community"* (p. 329).

Lindon argues that an important part of developing students' abilities as reflective practitioners is facilitating them to extend their "*knowledge and understanding of equality issues in practice around gender, ethnic group, and cultural background, faith and disability*" (Lindon, 2006, p. 3). Furthermore, Boud (1999) contends that self assessment is particularly important for the training of future practitioners, as students cannot develop into "*competent professionals unless they learn to be actively involved in constructing and reconstructing notions of good practice as they proceed*" (p. 2).

A survey of post-qualifying BAECS students who graduated from UCC between 1998 and 2007 and who were working in a range of early years settings indicated that students wanted input on global development issues. They were specifically concerned with knowing more about the daily lived experiences of children in developing countries as they believed that these insights would facilitate their work with migrant, refugee and asylum-seeking children in Irish child care and educational settings. Huber-Warring and Warring (2006) contend that development among students of a "*culturally responsive pedagogy requires deeper levels of reflection and more culturally sensitive awareness and language usage. Pre-service and in-service pedagogists need to transfer the knowledge base about social justice and global interdependence in actions, inclusive of language, behaviours and practices*" (p. 39). In order to promote such ideals of social justice and global interdependence within education, it is thought that critical reflection should be a central part of the curriculum.

DETAILING THE PROCESS

A pilot project was developed with a view to (i) engaging students in the development of materials, (ii) increasing their awareness and understanding of the diversity in the lives of children globally, and (iii) encouraging their critical reflection on material. The next stage involved bringing the materials together, to a selected pilot student group and the lecturing staff on the programme, in the form of workshop sessions. The project's origins, aims and objectives were introduced to the second year students in September 2008, and students were offered the opportunity to volunteer to participate in the project. Seventeen students volunteered and were offered the opportunity to liaise directly with the Hope Foundation workers and UCC lecturers in the development of these materials. The students were then divided into five thematic working groups, who each worked in small groups of three or four under the supervision of a member of the lecturing staff. Six tutorial sessions were scheduled between October to December 2008. During these sessions:

- Students were introduced to the project and an outline of its aims and objectives were detailed to them.
- Each group of students worked on one of the five topics already identified by the project.
- Initially, having introduced students to their topics, they were invited to discuss them in general and thereafter carry out some research on them, to familiarise themselves with key issues arising. They were facilitated in this process by the lecturing staff. The model was one of democratic discussion and sharing of information in which the lecturer had a facilitating rather than didactic role.

Thereafter, they were introduced to the materials produced by Hope Foundation, Kolkata and following discussion on them were requested to review the material specifically commenting on their accessibility to them. Students' responses were discussed and, where possible, UCC lecturing staff clarified any issues arising. Thereafter, issues were collated and communicated to Hope workers in Kolkata. A key part of this process was the recognition of the significance of whatever issues arose through students' participation, and their role within the constructive development of materials was emphasised. In November 2008 and February 2009 workshops with the Kolkata co-ordinator of the project were organised. In these workshops, students: (i) discussed their learning and sought further clarification on issues arising, and (ii) presented research posters that they had developed within their groups. Furthermore, a series of three lectures on equality, global diversity and childhood were incorporated into an existing module and delivered to the full student cohort. This series of lectures introduced issues of diversity arising in the contemporary context, they incorporated theoretical elements, and engaged the students in discussions of case studies presented on child labour and trafficking.

ASSESSMENT

Students in the pilot group undertook two assignments in lieu of the traditional essays students are required to submit for their second year social studies modules. Both of these assignments were completely new to the programme. The assignments focused on facilitating the students to develop their knowledge of childhood diversity, through the particular issue on which they were working, and encouraged them to locate the new learning materials within a theoretical and policy framework as well as critically reflecting on the content, structure, layout and scope of the material.

The first assignment focused on the learning and reflection process and had three elements. Firstly, students were awarded marks for attendance. Secondly, students self-awarded a mark for group participation; and finally, they had to produce an individual written reflection on the following:

- The group research process - organisation of tasks, meetings etc.;
- An outline of the individuals' contribution to the project– tasks, key areas of examination and analysis;
- Reflection on how their participation and learning in the project could assist in their development as an early year's practitioner.
- Students were given a self-assessment grid to complete at the end of each workshop with their tutor, with some guidelines on rating levels of participation.

The second assignment was aimed at bringing their knowledge and understanding together through developing a research project. For this, students were required to provide a twenty-five minute presentation and a group research poster outlining why they had become involved in the project, highlighting key areas of learning during their participation in this project and reflecting on the challenges of contributing to the development of learning materials.

PROJECT OUTCOMES AND EVALUATION

Given that this was the first time we had used the self-evaluation method with students, students were asked to discuss the usefulness of the self-evaluation tool for them. The students, in their evaluation of the project and through their assessments, identified the following as outcomes of their participation in the project:

- High levels of engagement with the project materials, assessments and the process in general;
- Connections being made between children living in different parts of the world and in diverse circumstances;
- Grounded understanding of issues of diversity emerging;
- Ability to critically analyse material;
- Engagement in reflective practice;
- Development of independent learning skills;
- Increased confidence in presentation skills;
- Development of good working relationships with individual staff.

As stated the intention in developing these materials was that they would facilitate students in making links between theory and practice and that they would develop knowledge and understanding among students of global development contexts and issues of cultural and social diversity. It also contributed to the students understanding of issues relating to children's rights and facilitated their development as early years practitioners who are advocates for children. The following comments made by students are noteworthy in this respect:

> "*We have now realised that although Ireland and India are different in many ways, child abuse is a global problem*".
>
> "*The project has given me as a practitioner the understanding of what cultural diversity actually means*".

Feedback from students also indicated that they found the production of research posters, in particular, a very worthwhile experience, firstly because it developed a new skill, and secondly because they have a concrete result from their work (each student was presented with a professionally produced copy of their research poster at the end of the academic year). Also, the group work assignment was insightful in that students commented on the value of this approach over individual work, Again it is worth drawing attention to student comments in this regard:

> "*the group influence encouraged me to work to my full potential', 'each person's contribution would generate ideas for the whole group*".

Students were asked to complete a form at the end of each meeting with their tutor, awarding themselves a mark for their level of participation in order to develop their capacity for self-evaluation and reflection (from one to two for very poor participation in discussion with limited evidence of preparation for the tutorial and a negative or unmotivated attitude, to eight to ten for all round excellence in terms of preparation and engagement with the process). Students at first found this very challenging as demonstrated by this comment from one student participant:

> "*I was … shocked at the fact that we were given the responsibility of evaluating ourselves. I was initially very unsure about this and thought that everyone would give themselves top marks so as to get a good grade. Knowing the responsibility was on us to evaluate ourselves, each week I found myself asking what more could I do this week? Why do I deserve to get a good mark this week?*"

However, students did not automatically give themselves 'top marks' and took the process very seriously, engaging in good levels of argument and reflection on their work in justifying marks awarded. This also proved to be a useful tool for lecturers, in that it helped to clarify expectations of students in the process and offered insights into students' perceptions of the tutorials.

CONCLUSION

From the outset we were interested in providing the students with an active learning context and were informed through a teaching ethos that views the student as a participant in their learning, and not a passive recipient of knowledge. We also wished to contribute towards an applied learning experience in which the students would also be facilitated in linking their more theoretical knowledge with practice contexts. We found the students responded in a very positive manner to such an approach. They felt privileged to be involved in the process of developing learning materials. They organised extra group research classes and requested further class time with lecturers in order to more fully understand the issues they were researching. Students were asked to self-assess their participation, and were given guidelines on how they might do this. This was not a method of assessment with which they were familiar and initially some students resisted it. Later, they all commented on how it encouraged their own critical self-reflection. However, acceptance of students' self assessment is not wholly encouraged within traditional systems of assessment, and could only be incorporated as a portion of the overall assessment exercise, reducing its effectiveness. Furthermore, the emphasis in this project was on the process, and again, attempting to measure this sort of engagement within a modular system that is focused on measurable outputs was challenging. The ongoing goal is to sustain the process-driven elements of the course, within this less flexible modular system.

A further consideration is that of incorporating the materials into the BAECS curriculum. The learning materials are now available as working papers. The development of learning has engaged the lecturing staff and students in the programme in active participatory collaborative research which is grounded in the learning needs of students on the programme and which will contribute to the development of the curriculum in contemporary global contexts.

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REFERENCES

Boot, R. and Reynolds, M. (eds) (1983). *Learning and Experience in Formal Education*. Manchester: Manchester Monographs.

Boud, D. (1999). "Avoiding the traps: seeking good practice in the use of self assessment and reflection in professional courses", *Social Work Education*, vol. 18, no. 2, pp. 121-132.

Cerbin, W. (1995). "Connecting assessment of learning to improvement of teaching through the course portfolio", *Assessment Update*, vol. 7, no. 1. pp. 4-6.

Dickins, M. (2002). "All about...Anti-discriminatory Practice", *Nursery World*, vol. 102, no. 3756, pp. 15-22.

Huba, M.E. and Freed, J.E. (2000). *Learner-centred assessment on college campuses: Shifting the focus from teaching to learning*. Needham Heights, MA: Allyn and Bacon.

Huber-Warring, T. and Warring, D. (2006). "Are You Teaching for Democracy? Developing Dispositions, Promoting Democratic Practice, and Embracing Social Justice and Diversity", *Action in Teacher Education*, vol. 28, no. 2, pp. 38-52.

Lindon, J. (2006). *Equality in Early Childhood: Linking Theory and Practice*. London: Hodder Arnold.

Moosa-Mitha, M. (2007). "Citizenship Rights in a Globalising World", in *Revitalising Communities in a Globalising World*, ed. L. Dominelli. Aldershot: Ashgate.

O'Connor, P. (2009). *BA Early Childhood Studies, University College Cork: A Graduate Perspective 1998 – 2007*. Cork: UCC.

Perkins, D. and Blythe, T. (1994). "Putting understanding up front", *Educational Leadership*, vol. 51, no. 5, pp. 4-7.

Schon, D.A. (1983). "The Reflective Practitioner: How Professionals Think in Action", in *Readings for Reflective Teaching*, ed. E. Pollard. London: Continuum.

Separated Children in Europe Programme/Save the Children, (2007). Position Paper on Preventing and Responding to Trafficking of Children in Europe. Brussels: SCEP/SC.

TRANSFORMING SUBJECTIVES IN TEACHING AND LEARNING: BRIDGING THE TEACHER-LEARNER, THEORY-PRACTICE DIALECTIC

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Biographical Note

Meabh returned to college as a mature student, graduating with a degree in Applied Social Studies and Social Care in 2007. She holds a postgraduate diploma in Adult and Community Education and recently completed a Masters in Education in Adult and Community Education at National University of Ireland, Maynooth. Her research identifies creative, inclusive approaches to teaching and learning. Meabh currently works as a part-time lecturer in the Department of Adult and Continuing Education, Waterford Institute of Technology and in a transitional housing unit for women who are experiencing homelessness.

KEYWORDS

Feminist poststructural methodologies; teacher/learner identity; positionality; subjectivities; reflexivity; inclusivity; social change.

ABSTRACT

This research identifies effective, inclusive approaches to teaching and learning. Specifically, I identify spaces in discourse on teaching and learning where resistances to oppressive power relations can emerge, by identifying how power operates within the classroom at a relational level within different discourses. This involves examining my own teacher-learner positionality and its effects on the dynamics within a teaching- learning setting. The case study is an eight-week art-based learning group underpinned by critical feminist methodologies. Using Freirean generative themes I create dialogue on learning experiences in a group of women who have been marginalised in a variety of ways. Through the process of action and reflection, and reflexivity, I developed a critical narrative which transforms my former teacher-learner subjectivities, allowing the emergence of more inclusive ways of knowing, teaching and learning.

INTRODUCTION

This paper is based on a case study conducted for a Masters in Adult and Community Education. It seeks to identify effective, inclusive approaches to teaching and learning. This paper is underpinned by an awareness of the complex nature of society, specifically recognising that individual identities are (re)formed by a multitude of complex discourses leading to contradictions in how individuals experience life (Ryan and Connolly, 2000). It reveals ways in which unitary constructs or traditional discourses of teaching and learning no longer bear relevance in modern society. It recognises that 'power', once conceived of as an exclusive, oppressive force (Welton, 1995, cited in Kilgore, 2001) is now conceived of as everywhere and ever present (Foucualt, 1981, p. 93). Consequently, this paper identifies spaces in discourse on teaching and learning where resistances to dominant discourses can emerge. Through the process of reflexivity it aims to bridge the teacher-learner, theory-practice dialectic (Etherington, 2004, p. 32) by democratising teaching-learning practices within the classroom. As both the researcher and the teacher/learner I initially sought to understand how adults learn; what factors hinder/help this process; the role of the adult educator in helping/hindering this process; and how to create inclusive practices for learners.

THE ROLE OF EDUCATION AS AN AGENT FOR CHANGE

West (2006) describes modern society as one where change is rapid and constant and where,

for many, traditional or predictable life courses have broken down. It has been widely acknowledged that education can play a key role in terms of economic development and social transformation (Clancy, 2005). The education system, while itself purporting to be an agent of change to help individuals grow, all too often fails. Education at all levels frequently has the contradictory effect of perpetuating inequalities in society (Drudy and Lynch, 1993, pp. 175-177; Connolly, 1997, 1999; Kellaghan *et al*, 1995; Mc Givney, 1999; O'Brien, 2008; Smyth and Hannon, 2000; Smyth and McCoy, 2009).

In recent years liberal discourse has made efforts to allow for the democratisation of education through "*widening participation*" and "*equality of access*" (Murphy, 2007, p. 142). However, such ideas and their instruments of policy, e.g. the *White Paper on Adult Education* (DES, 2000), often fail to challenge the power and status of the academy (Murphy, 2007, p. 142). For example, teaching practices within the education system have yet to allow for the democratisation of knowledge (Gore, 1998; Tisdell, 2001).

The bulk of received knowledge of theory and practice in adult education suggests a broad claim of universality (Hemphill, 2001; see also Belenky *et al*, 1986/1997; Knowles, 1975; Mezirow, 1991). Recently, however, there has been a growing awareness "*that there is no such thing as one type of learner, learning goal, one way to learn, nor one setting in which learning takes place*" (Kilgore, 2001, p. 53). Also, many of the commonly held assumptions about generic learners and learning are now viewed as inappropriate, exclusionary and even oppressive when "*objectively*" applied universally without considering individual life experiences and factors like race, gender, and class (Kilgore 2001, p. 53).

In attempting to identify an inclusive theory of knowledge, feminist theorists such as Chapman (2004), Dune (1996), Kilgore (2001) and Tisdell (1998, 2001a, 2001b) have offered alternative accounts couched in Foucauldian notions of power knowledge. Their analyses of the power relations within classroom settings highlight that at all times in the teaching/learning context different discourses compete for meaning. For example, Tisdell highlights the role race, gender, socio-economic class and ethnicity have on the teaching and learning process, on the construction of knowledge by teachers and students, and on the dynamics within any adult classroom (Tisdell, 1998). Pedagogical practices need to be cognisant of this, in particular the influence of the teacher-learner positionality (Tisdell, 1998). Questioning how power relations within educational settings can be identified, Chapman (2004) suggests the use of stories of struggles against power.

LOCATING MY TEACHER – LEARNER PERSONALITY

> "*The more conscious we are of how structural systems of privilege and oppression inform our identity and behaviour, the more we have the capacity to change our behaviour on behalf of ourselves or others, thus shifting our identity*" (Tisdell, 1998, p. 275).

I returned to education as a mature student in my mid-twenties (having 'dropped out' when younger), attending a course informed by traditional teaching and learning methodologies. My return was fuelled by a desire to prove to myself, and I worked hard to combat failure. Many different things had influenced my self-conception and my idea of my 'self' including "*my beliefs about my character traits, past deeds, present abilities and possibilities, and my awareness of my intentions, aspirations and hopes*" (Woods, 2004, p. 19). Learning for me was not simply a psychological process detached from my social milieu as a learner: it was intimately connected to my world and affected by it (Jarvis, 1987, p. 11).

My postgraduate diploma in Adult and Community Education was characterised by a radical approach to teaching and learning. I was heavily influenced by the emancipatory and transformative potential of this, particularly the theoretical and practical solutions to issues of exclusion and alienation offered, and I wanted to embody this radical way of teaching.

Shortly into my first year teaching adults I became aware that I tended to replicate my own earlier experiences of teaching when it was brought to my attention that one group complained that my classes were mainly lecture based, involving little interaction. In beginning my practice as an adult educator, I had failed to recognise the value of the experiences of learners, instead promoting objective knowledge through lecture-based sessions, despite my desire to create the right conditions for emancipatory learning to occur (Freire, 1970). Foucault offers insights into such contradictions, highlighting the manner in which disciplinary power becomes internalised as individual subjectivities formed within normalising discourse regulate themselves (e.g. the teacher as 'expert') (1980, p. 39). Despite my desire to create "*possibilities for the production or construction of knowledge*" (Freire, 1998, p. 30), the 'banking' discourse of education had become dominant, and I, as the banker, 'deposited' the prescribed objective knowledge to the learners (Freire, 1970, p. 29). Searching for a way to allow the emergence of praxis (Freire, 1970), I turned to hooks, who affirms a "*return to a state of embodiment in order to deconstruct the way power has been traditionally orchestrated in the classroom, denying subjectivity to some groups and according it to others*" (1994, p. 139).

The case study recognises that appropriate ways of teaching begin with conceptions of learning (Kerka, 2002). Stories of learning have been shown "*to offer valuable insights into the complexity of layers that construct each individuals learning experience*" (Daniels, 2008, p. 99; see also Ettling, 2001; Weissner, 2001). In order to identify stories of learning I facilitated an eight-week art based learning group (described above) with a group of women who have experienced multiple forms of marginalisation. Together we investigated the factors that have helped/hindered our learning. Through the process of action and reflection, and reflexivity, I then created a critical narrative (Chapman, 2004), through which I transformed my former teacher-learner subjectivities allowing for more inclusive ways of knowing, teaching and learning, by examining the influence of my own teacher-learner positionality and its effects on classroom dynamics (Tisdell, 2001, p. 275).

AN EXAMPLE OF 'LETTING GO' OF EXCLUSIONARY PRACTICES

Following an art-group activity where we represented our hopes and fears through collage, I discussed my collage. I had experienced difficulty in completing the task as I had focused my thoughts on sea-based images which I felt represented part of my identity. However, as there were few of these images available I had found the task difficult to complete. I relayed this back to the group, and through discussing my difficulties with the group I became aware that in limiting my focus to only sea-based images I had made both the process and the task of completing this activity difficult. I reflected on the significance of this experience at a deeper level. I began to sense how this experience verified how much more we can learn by taking risks and by engaging in a process outside of our 'normal' range of vision. Lawrence (2008, p. 65) describes the way in which "*our dominant Western culture prizes rational cognitive ways of knowing'*; where '*in a milieu where logic rule and reason prevails, emotional and embodied ways of knowing are often dismissed and ignored"*. She discusses too how 'letting go' of "*technical rationality"* allows us to make room for *sensory imagery in a world dominated by cognitive processes*" (2008, p. 66). It is in this act of letting go that we can disturb and provoke, upset the status quo, and be made aware of negative aspects of the world (Lawrence, 2008).

In focusing so much on one theme I excluded the value of other images or other ways of knowing. I discovered the value of learning by sharing experiences. I also realised why so many educational plans have failed: because, as Freire affirmed, their authors designed them according to personal views of reality, failing to consider those individuals to whom their program was supposedly directed. "*Educational… action which is not critically aware of this situation runs the risk of either 'banking' or of preaching in the desert*" (Freire, 1970, p. 77). In this sense, practices within the classroom which allow for little discussion or interaction fail to allow for the emergence of learning based on the experiences of the learners. Learners are alienated from the process and become passive consumers of objective knowledge. Learning becomes a process of banking or reproduction rather than emancipation.

EDUCATION AS A PRACTICE FOR SOCIAL CHANGE

In understanding ways of creating inclusive classroom practices, it is important to be aware of the multiple layers of social/power relations which are at work. As a teacher I came to realise that I had internalised the traditional discourse on teaching and learning into my actions and my attitudes, my discourses, learning processes and my everyday life (Foucault, 1980, p. 39).

By using narratives of my teaching and learning experiences and critically reflecting on the experiences of participants, I identified points of resistance from where I could challenge dominant discourses. By reflecting on my experiences, and on dialogue, I identified the structures of privilege and oppression which had informed my practice and how these are reinforced because the logic that maintains those structures becomes a common sense lens through which we view and interpret our experiences (Kilgore, 2001).

Through art creation and dialogue I abandoned my former teacher identity in favour of more creative and insightful ways of knowing and learning. This transformation became possible through the process of reflexivity, through which we can discover historical links between certain ways of understanding ourselves and certain modes of domination. Specifically, I identified the influence that my experience of education had on the formation of my identity, in particular my beliefs and values. By becoming aware of how social structures of both privilege and oppression influenced my identity I could disrupt the 'discourse' that had defined its development (Tisdell 2001a) and create space to allow for change. I also realised that promoting inclusive practices allows for the emergence of 'really useful knowledge' (Thompson, 1997; Ryan and Connolly, 2000) based on the experience and lives of the learners. Promoting inclusive practices thus lies in our ability to resist the ways in which we have been classified and identified by dominant discourses. The discovery of new ways of understanding ourselves and one another, as humans, teachers and learners, the refusal to accept the characterisations of our practices by the dominant culture, and the redefinition of them from within resistant cultures, that we can emerge as free agents ready for action and to bring about change (Sawicki, 1991, p. 44).

CONCLUSION

This paper has highlighted the complexities which exist in teaching and learning environments, and the ways the positionality of the teacher affects dynamics in these environments highlighted the value of creating conditions conducive to learning. In particular, in promoting teaching practices underpinned by feminist post structural methodologies, the value of learning as "*a process of continuous deconstruction of knowledge, of playing with contradictions, and of creatively and productively opening the discourse of a field to an eclectic mosaic of many truths*" can emerge (Kilgore, 2001, p. 60). In this regard, education which promotes inclusive practices "*claims knowledge as a field in which we all labor*" (hooks 1994, p. 14). This allows for the democratisation of teaching-learning practices. Reflexivity clearly plays a pivotal role in this process, bridging the dialectic between teacher-learner and theory-practice and facilitating ways of conceptualising the teaching-learning process. It enables the teacher to become a learner, and recognise the discourses which have informed teacher identity. It allows the emergence of rational and affective ways of teaching, learning and knowing. This in turn allows for the possibility of personal and social change as the teacher identifies and challenges the hierarchical way in which power has traditionally operated in the classroom. Learning is no longer a predictable generic passage but rather one that can be examined for and by many individuals and groups with different voices (Kilgore, 2001, p. 60). Learning becomes inclusive, participatory, democratic and transformative, as teacher and the learner become active agents, teaching and learning from one another in a dynamic fashion. Learning becomes emancipatory, and education becomes a tool for the practice of freedom (hooks 1994, p. 14).

REFERENCES

Belenky, M.F., McVicker Clinchy, B., Goldbeger, N.R. and Tarule, J.M. (1997). *Women's Ways of Knowing: The Development of Self, Voice and Mind*. New York: Basic Books.

Chapman, V.L. (2004). "Using critical personal narratives: A poststructural perspective on practice," *New Directions in Adult and Continuing Education* vol. 102, pp. 95-103.

Clancy, P. (2005) "Education policy," in *Contemporary Irish Social Policy*, eds S. Quin, P. Kennedy, A. Matthews and G. Kiely. Dublin: UCD Press. pp 80-114.

Connolly, B. (1999). "Group work and facilitation: A feminist evaluation of their role in transformative adult and community education," in *Women and Education in Ireland: vol. 1*, eds B. Connolly and A.B. Ryan, A.B. Maynooth: MACE. pp. 109-130.

Connolly, B. (1997). "Women in community education and development-Liberation or domestication", in *Women and Irish Society: A Sociological Reader*, eds A. Byrne and M. Leonard. Belfast: Beyond the Pale. pp. 40-55.

Daniels, J. (2008). "Negotiating learning through stories: Mature women, VET and narrative inquiry," *Australian Journal of Adult Learning*, vol. 48, no. 1, pp. 93-107.

Drudy, S. and Lynch, K. (1993). *Schools and Society in Ireland*. Dublin: Gill and Macmillan.

Dune, J. (1996). "Emancipatory education and classroom practice: a feminist poststructuralist perspective," *Studies in Continuing Education,* vol. 18, no. 2, pp. 135-146.

Etherington, K. (2004). *Becoming A Reflexive Researcher: Using Ourselves in Research*. London: Jessica Kingsley Publishers.

Ettling, D. "Community based transformative learning", Paper presented at SCRUTERA, 31st Annual Conference, 3-5 July 2001, University of East London. Available from: http://www.leeds.ac.uk/eduol/documents/00002450.htm. [accessed 27 December 2007].

Foucault, M. (1980). *Power/Knowledge: Selected Interviews & Other Writings 1972-1977*. New York: Harvester Press.

Freire, P. (1998) *Pedagogy of Freedom. Ethics, Democracy and Civic Courage*. Lanham: Rowman and Littlefield.

---. (1970). *Pedagogy of the Oppressed*. London: Penguin.

Gore, J.M. (1998). "On limits to empowerment through critical and feminist pedagogies," in *Power/Knowledge/Pedagogy: The Meaning of Democratic Education in Unsettling Times*, eds D. Carlson and M.W. Apple. USA: Westwood Press. pp. 271-288.

Government of Ireland (2000). *Learning for Life: White Paper on Adult Education*. Dublin: Stationary Office.

Hemphill, D.F. (2001). "Incorporating postmodern perspectives into adult education," in *Making Space: Merging Theory and Practice in Adult Education*, eds P.A. Sissel and V. Sheared. USA: Bergin and Garvey. pp. 15-28.

hooks, B. (1994). *Teaching to Transgress. Education as a Practice of Freedom*. New York, London: Routledge.

Jarvis, P. (1987) *Adult Learning in the Social Context*. London: Croom Helm.

Kilgore, D.W. (2001). "Critical and Postmodern Perspectives on Adult Learning," *New Directions for Adult and Continuing Education,* vol. 89, pp. 53-60.

Knowles, M. (1975) *Self-Directed Learning: A Guide for Learners and Teachers*. New York: Association Press.

Lawrence, R.L (2008) "Powerful Feelings: Exploring the affective domain of informal and arts-based learning," *New Directions for Adult and Continuing Education,* vol. 120. Available at: http://www.interscience.wiley.com. [accessed 12 March 2009].

Murphy, A. (2007). "In mindful search of a good theory of learning at work," in *Radical Learning for Liberation* 2, eds B. Connolly, T. Fleming, D McCormack and A. Ryan. Maynooth: MACE. pp. 142-159.

Ryan, A.B and Connolly, B. (2000). "Women's community education in Ireland: The need for new directions towards 'really useful knowledge'", in *Stretching the academy: The politics and practice of widening participation in higher education*, ed J. Thompson. Leicester: NIACE. pp. 94-110.

Sawicki, J. (1991) *Disciplining Foucault: Feminism, power and the body*. New York: Routledge.

Smyth, E. and McCoy, S. (2009) *Investing in Education: Combating Disadvantage*. Dublin: ESRI, Barnardos.

---, and Hannon, D. (2000) "Education and Inequality" in *Bust or Boom*, eds B. Nolan, P. O'Connell and C. Whelan. Dublin: IPA. pp. 147-162.

Thompson, J. (1997) *Words in edgeways. Radical learning for social change*. Leicester: NIACE.

Tisdell, E.J. (2001a) "The politics of positionality: Teaching for social change in higher education," in *Adult Education and the Struggle for Knowledge and Power in Society*, *Power in Practice*, eds R.M. Cervero and A.L. Wilson. San Francisco: Jossey-Bass. pp 145-163.

---. (2001b). "Feminist perspectives on adult education: Constantly shifting identities in constantly changing times," in *Making Space: Merging Theory and Practice in Adult Education*, eds P.A. Sissel and V. Sheared. USA: Bergin and Garvey. pp. 271-286.

---. (1998). "Poststructuralist feminist pedagogies: The possibilities and limitations of a feminist emancipatory adult learning theory and practice," *Adult Education Quarterly*, vol. 48, no. 3, pp. 139-156.

Weiler, K. (1988). *Women teaching for change: Gender, class and power*. South Hadley: Bergin and Garvey.

Weissner, C.A. (2001). *Stories of Change: Narrative in emancipatory adult education*. Unpublished Ed Doc: Columbia University Teacher's College.

West, L. (2006). "Managing change and transition: a psychosocial perspective on lifelong learning," in *Lifelong Learning: Concepts and Contexts*, eds P. Sutherland and J. Crowther. London: Routledge. pp. 39-47.

Woods, A.W. (2004) *Karl Marx* (2nd edn). London: Routledge.

Part 4:
Conference Paper Presentations on Scholarship of Teaching and Learning

MAKING CONNECTIONS FOR MINDFUL INQUIRY: USING REFLECTIVE JOURNALS TO SCAFFOLD AN AUTOBIOGRAPHICAL APPROACH TO LEARNING IN ECONOMICS

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Biographical Note

Daniel Blackshields has been a lecturer at the Department of Economics in University College Cork since 1999. In 2009 he received an MA in Teaching and Learning in Higher Education for his thesis on the use of the Sherlock Holmes narratives as a teaching tool in Economics. He was nominated for a NAIRTL National Excellence in Teaching Award in 2009 and he is a member of the NAIRTL supported Irish Integrative Learning Project.

KEYWORDS

Intentional learning; integrative learning; transfer learning; self-authorship; reflection; reflective writing; Teaching for Understanding.

ABSTRACT

This research develops a narrative of incidents of intentional learning by students studying undergraduate economics as represented in their written reflective journals. The deliberate integration of learner reflection, reflective practice and reflective writing into the pedagogy may facilitate transfer learning (Sousa, 2006). Transfer has been identified as an important factor for how the brain learns. The more connections that learners can make in their learning the more likely it is that the sense and meaning of learning will be appreciated and the more likely it is that new learning will be retained (Sousa, 2006). By supporting an autobiographical approach to learning in economics wherein learners individualise learning, connecting their experiences (past and present, academic and non-academic) a pedagogy that advances self-authorship on the part of the learner is encouraged and facilitated. Self-authorship is a central goal of higher education (Baxter Magolda and King, 2004). Students find associative learning in a manner that supports full transfer quite difficult. It is thus important for educators to bridge students' learning from one learning situation to another (Blanchette and Dunbar, 2002). Reflective journaling is introduced as a performance of understanding to scaffold this learning. Student reflective journaling can establish the sense of new learning for them, connect this learning to their existing learning networks and find the meaning in this learning for them. This research describes the design, enactment and results of the development of reflective journaling as an assessment strategy in an undergraduate Bachelor of Arts module in economics in University College, Cork.

INTRODUCTION

This research reports on an assessment strategy designed to scaffold mindful inquiry by students through an autobiographical reflection on their problem-solving processes with economics. Integrative learning is at the heart of this assessment strategy as students are encouraged and enabled to draw together their past, present and future experiences and connect their identity with their learning.

THE IMPORTANCE OF STUDENT SELF-AUTHORSHIP

Foreshadowing constructivist thought Magritte said of *La Condition Humaine* (Figure 1) that we "*see [the world] outside ourselves, yet all we have of it is a representation inside ourselves*" (cited in Gablik, 2003, p. 87).

Figure 1: ***La Condition Humaine***
[Source http://www.stanford.edu/dept/DLCL/research/workgroups/aesthetics.html].

Contemplation of this work drew me gradually from situating learning in authority to recognising ***deep learning*** as situated in the ***experience*** of the ***learner***. I came to recognise that educators must be aware of this, and develop strategies that enable learners to become *"critically aware of [their] … own composing of reality"* (Parks, 2000, p. 6, cited in Baxter Magolda, 2004a, p. xviii).

Kegan (2004) calls the composition of one's own world ***Self-authorship,*** defined as *"internally co-ordinating beliefs, values and interpersonal loyalties"* (cited in Baxter Magolda, 2004a, p. xviii). Baxter Magolda (2000b, p. 6)[1] argues that this is a central goal of higher education to enable ***effective citizenship.*** Self-authorship requires a capacity for intentional learning wherein learners are self-aware and purposeful about *their* learning (Huber and Hutchings, 2005, p. 8). Such learning is integrative in nature with learners making meaningful connections between seemingly disparate information, drawing on a variety of expertise and experience to derive considered judgments and transferring learning between experiences (Baxter Magolda, 2004b, p. 5).

Educators have a crucial role in fostering intentional learning – the habits and habitats of integrative learning (Hutchings, 2005) - through pedagogical design. The *Teaching for Understanding Framework (TfU)* is a pedagogical tool enabling educators design pedagogies to help learners to develop *"deep and flexible practice"* (McCarthy 2008, p. 102; Blythe *et al*, 1998). TfU has a performance perspective of understanding. A key component of this is *ongoing assessment* (Hetland, 1997, p. 24). One form of such assessment is *reflection* by learners on their learning (*ibid*, p. 77). Reflection can scaffold intentional learning by *individualising* learning engendering an *autobiographical approach* to learning (Moon, 1999a, 1999b, 2007). Researchers focusing on the functioning of the brain, have identified such associative learning as fundamental to the development of the brain's learning capacity (Jensen, 2000; Sousa, 2006). Frank (2007) argues for the importance of transferring learning of economics taught in the classroom to students' lives.

1 Effective citizenship is defined as coherent and ethical action for one's own good and the good of society. In turn this requires cognitive maturity where citizens have the ability to interpret phenomena in their specific contexts, evaluate actions and make choices accordingly. Such ability requires an integrated identity and internal belief system guiding one's choices and this requires a capacity for mutuality and mature interdependence (Baxter et al, 2004).

Blanchette and Dunbar (2002) suggest that students find associative learning difficult. Hence an educator's role is to bridge students' learning from one situation to another. Writing is one such bridge. Writing about one's reflections allows one to capture experiences, thoughts, ideas and feelings allowing learners to *"…process and understand better what they know, don't know, want to know – and how it all relates to them"* (Fulwiler, 1987, p. 13, cited in Brewer and Jozefowicz, 2006, p. 203). One form of reflective writing is the reflective journal: a reflective inventory of learning experiences. Therefore, as an assessment strategy, reflective writing may support students' journeys to self-authorship.

SCAFFOLDING STUDENT REFLECTION

In this research I documented incidents and impact of intentional learning reportedly experienced by students in an undergraduate economics course: *EC2107: Reasoning and Persuasion in Economics* in 2007/2008 at University College Cork. The through line of EC2107 is for students to reason effectively with economics in their public and private lives.

Students developed a reflective journal at three critical junctures throughout the course: twice after submitting assessment for their course portfolio, and once at the end of the course. Prompts were used to scaffold students' writing directing them to reflect on their ***metacognitive competencies*** (Van Sickle, 1992) and to think about their learning through engagement with their portfolio assessment (see appendix 1).[2] This, I hoped, gave students a sense of ***ownership*** over their learning. The journal entries were assessed through a marking rubric I designed in terms of levels of reflective writing (Hatton and Smith, 1995) and the principles of integrative learning (Huber and Hutchings, 2004; Hutchings, 2005) (Appendix 2).

EMERGING JOURNEYS OF SELF-AUTHORSHIP

Figure 2: ***La Tentative de l'Impossible*** [Source: jigiart.blogspot.com/2009/12/1926-1930-surrea]

Considering the emergent findings of this research I am reminded of Magritte's *La Tentative de*

l'Impossible (Figure 2). If we construct our representations of the world then we are, in a sense, artists developing our own learning. In this work, Magritte realised that the artist, through his art, brings the model to life through his powers of imagination. The model's form is emergent from the artist's imagination. If reflection is a means of transforming learning, and as learners begin to appreciate the role of their identity for one's learning, then perhaps learners are an embodiment of Magritte's artist, their identities emerging from their reflective imagination. However, learners

2 For more on the importance of metacognition for deep learning see (Flavell, 1971; Chi et al, 1989; Van Sickle, 1992; Chi et al, 1994; Nickerson, 1994; Davidson and Sternberg, 1998; Otero, 1998 and Van Lehn, 1998).

are both artist and model, with our identities and learning evolving through time. From the incidents of intentional learning many students seem to be on the journey to self-authorship. As with *La Tentative de l'Impossible*, this transformation is emerging, not yet complete.

Some students reported a growing confidence in asserting their own values and sense of identity distinct from that of peers and authority figures:

> *"…I feel I have more control, in the things I do or say or think. I seldom, yet, still occasionally get the urge to set my mind, maintaining unchangeable thoughts and feelings. This has improved greatly. I am now able to unlock these thought processes which thinking back may have been blurred and thus jeopardised my decision making at times. Although despite that, I still trust my instincts and have my own, independent point of view…" (RJ1FBAJ10).*

Some students might be said to be at the crossroads on their journey recognising the fallibility and contextual nature of the knowledge of others but not necessarily the fallibility of their own knowledge claims:

> *"…I often tend to believe that just because someone might be better qualified than me in a certain area then they must be right. For example if I read something that I believe not to be true, I tend not to question it with the belief that, the author must know more than me. The same is true concerning lecturers, should a lecturer say something in class that I don't agree with, again I don't question it, even though he/she may be wrong….. I will no longer take the opinion of someone better qualified as myself at face value as it is possible that they could too be wrong and ask more questions" (RJ1MBAJ9).*

Other students did recognise a more maturing relationship with the claims of others, while recognising the fallibility of their own claims:

> *"It is impossible to look at an argument as a blank canvas. When it comes to an argument, the way in which we are persuaded comes down to our background, our morals, our beliefs and our religion…often I would find it extremely difficult to accept the view points of others when I feel strongly about a subject. I do think there is room for improvement, when it comes to me being more open to others, and also to allow myself to engage differently with others who disagree with me or have conflicting opinions to my own" (RJ1FBAJ1).*

Some students explored the impact of other learning experiences on their knowledge claims with economics:

> *"I am also studying psychology and this too gives many opportunities to develop analytical and critical skills. Whilst the subject matter is different, where in economics facts and figures serve as a framework for thinking, in psychology one is presented with scenarios and behaviours. I believe there is great similarity in how one approaches the process of gaining understanding and insight, I am beginning to see a pattern and framework for thinking….the application of the techniques learned in both economics and psychology will enable me to be a good critical thinker"(RJ1FBAM6).*

> *"…I found being interested in economics and music and having witnessed first hand the increase in concert prices over the past years a huge advantage in dealing with the article. My interests in economics helped in analysing these aspects of the article and being able to pinpoint areas Mr. Sabbagh failed to address such as the theory of supply and demand. Surprisingly I found my interest in music even more helpful as I was able to analyse the article as a sceptic of ticket touting from a fan of music's point of view, but understood their existence from an economist's perspective" (RJ1MBAS8).*

In some cases, students' reflections on their performances seemed to prompt the urge to accept responsibility for their beliefs and for crafting their identities:

> *"The first thing that came to mind… was self-belief – that is what I would change. I would believe in myself more. In an odd way, I wish I knew then what I know now. I suppose it ultimately comes down to confidence in my ability to be objective. I initially felt rather uninformed, inexperienced or even overwhelmed, however, looking back, this was not entirely the case. I had a pool of information, whether from my seminars, previous experiences etc, I just was not aware of this at the time" (RJ1FBAJ3).*

Some students reported that it was the nature of the reflective journal that enabled them to explore their own learning:

> *"Self-reflection has changed my opinion on my thinking process. The more I use it, the more I became aware of not only how much more I need to improve it, but it can also reassure me as to my strong points also" (RJ1MBAJ4).*

CONCLUSION

By fostering and enabling reflexivity in their economics learning students understand more about themselves, their knowledge(s), their identities, their values, their relationships with others and, ultimately, the basis for their knowledge claims. Recognition of their role and responsibility for their own learning emerges and this is a transformative experience. Students develop a deeper understanding of economics as "*the ordinary business of life*" (Marshall, 1920, Book 1.I.1). Furthermore such incidents of deep learning may not 'merely' help students to understand problem-solving with economics, but rather help them to place economics education in the context of their overall development, and this I believe is the essence of self-authorship.

REFERENCES

Baxter Magolda, M.B. (2004a). "Preface", in *Learning Partnerships: Theory and Models of Practice to Educate for Self-Authorship*, eds M.B. Baxter Magolda and P.M. King Serling. Virginia: Stylus Publishing LLC. pp. xvii-xxvi.

Baxter Magolda, M.B. (2004b). "Self-authorship as the Common Goal of 21st Century Education" in *Learning Partnerships: Theory and Models of Practice to Educate for Self-authorship*, eds M.B. Baxter Magolda and P.M. King. Serling, Virginia: Stylus Publishing LLC. pp. 1-36.

Blanchette, I., and Dunbar, K. (2002). "Representational Change and Analogy: How Analogical

Inferences Alter Target Representations", *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 28, pp. 672-685.

Brewer, S. and Jozefowicz, J. (2006). "Making Economic Principles Personal: Student Journals and Reflection Papers", *Journal of Economic Education*, vol. 37, no. 2, pp. 202-16.

Blythe, T. *et al* (1998). *The Teaching for Understanding Guide*. San Francisco: Jossey-Bass.

Chi, M.T.H., De Leeuw, N., Chiu, M.H. and La Vancher, C. (1994). "Eliciting Self-Explanations Improves Understanding", *Cognitive Science*, vol. 18, pp. 439-477.

Chi, M.T.H., Bassok, M., Lewis, R., Reiman, P., and Glaser, R. (1989). "Self-Explanations: How Students Study and Use Examples in Learning to Solve Problems", *Cognitive Science*, vol. 13, pp. 145-182.

Davidson, J.E. and Sternberg. R. (1998). "Smart Problem Solving: How Metacognition Helps", in *Metacognition In Educational Theory and Practice*, eds D. Hacker, J. Dunlosky and A. Graesser, Mahwah New Jersey: Lawrence Erlbaum Associates. pp. 47-68.

Flavell. J.H. (1971). "First Discussant's Comments: What is Memory Development the Development of?", *Human Development* vol. 14, no. 4, pp. 272-8.

Frank, R. (2007). *The Economic Naturalist: Why Economics Explains Almost Everything*. London: Virgin Books.

Fulwiler, T. (1987). *The Journal Book*. Portsmith, NH: Boynton/Cook.

Gablik, S. (2003). *Magritte*. London: Thames and Hudson.

Hatton, N., and Smith, D. (1995). "Reflection in Teacher Education – Towards Definition and Implementation", *Teaching and Teacher Education*, vol. 11, no. 1, pp. 33-49.

Hetland, I. (1997). "Teaching for Understanding", in *The Project Zero Classroom: New Approaches to Thinking and Understanding*, eds S. Veenema, L. Hetland and K. Chalfen. Harvard: Project Zero Harvard University. pp. 11-60.

Higgs, B., Ryan, T., and Kilcommins, S. (2009). "Making Connections: The Irish Integrative Project", in *Teaching and Learning in Higher Education: Challenging Assumptions*: *Proceedings of the National Academy for the Integration of Research, Teaching and Learning Second Annual Conference,* eds J. Murphy and B. Higgs. Cork: NAIRTL. pp. 177-183.

Huber, M.T., and Hutchings, P. (2004). *Integrative Learning: Mapping the Terrain*. Washington, D.C.: Association of American Colleges and Universities.

Hutchings, P. (2005). "Building Habits – and Habitats – of Integrative Learning". *Plenary Address: Network Conference on Integrative Learning*. The Association of American Colleges and Universities Denver, Colorado 20th-22nd October 2005. Denver, Colorado.

Jensen, E. (2000). *Brain-Based Learning: The New Science of Teaching and Training*, San Diego: Corwin Press.

Kegan, R. (1994). *In Over our Heads: The Mental Demands of Modern Life*. Cambridge: Harvard University Press.

Magritte, R. (1928). *La Tentative de l'Impossible* [online]. Available from: jigiart.blogspot.com/2009/12/1926-1930-surrea [accessed 18 February 2010].

Magritte, R. (1933). *La Condition Humaine* [online]. Available from: www.stanford.edu/.../workgroups/aesthetics.html [accessed 18 February 2010].

Marshall, A. (1920). *Principles of Economics* 8th ed. [online]. London: Macmillan. Available from: http://www.econlib.org/library/marshall/marP.html [accessed 4 August 2009].

McCarthy, M. (2008). *The Scholarship of Teaching and Learning in Higher Education: An Overview*. Course Document, Masters in Teaching and Learning in Higher Education, Ionad Bairre: The Teaching and Learning Centre, University College Cork.

Moon, J. (1999a). *Reflection in Learning and professional Development*. London: Kogan Page.

Moon, J. (1999b). *Learning Journals: A Handbook for Academics, Students and Professional Development*. London: Kogan Page.

Moon, J. (2007). "Getting the Measure of Reflection: Considering Matters of Definition and Depth". *Journal of Radiotherapy in Practice*, vol. 6, no. 4, pp. 191-200.

Nickerson, R. (1994). "The Teaching of Thinking and Problem-Solving", in *Thinking and Problem-solving*, ed. R. Sternberg. San Diego: Academic Press. pp. 409-449.

Otero. J. (1998). "Influence of Knowledge Activation and Context on Comprehension Monitoring of Science Texts", in *Metacognition in Educational Theory and Practice,* eds D. Hacker, J. Dunlosky and A. Graesser. New Jersey: Lawrence Erlbaum Associates. pp. 145-164.

Sousa, D.A. (2006). *How the Brain Learns*. California: Corwin Press.

Van Lehn, K. (1998). "Analogy Events: How Examples are Used During Problem-solving", *Cognitive Science*, vol. 22, no. 3, pp. 347-388.

Van Sickle, R. (1992). "Learning to Reason with Economics", *Journal of Economic Education*, vol. 33, no. 4, pp. 377-86.

APPENDIX 1: THE REFLECTIVE PROMPTS USED IN THE RESEARCH

Reflective Prompts for Reflective Journal Entry 1

When considering these self-reflective questions, think of your work in terms of your assignment. The aim of this specific reflective exercise is to get you to consider how you approached the assignment on critical thinking as a critical thinker and what you have learned about yourself as a critical thinker coming from this assignment. This reflection aims to make you aware of the importance of metacognition in your approach to problem-solving.

1. Describe your process of addressing the problem set for you in assignment 1 (not your ideal image, but what you actually did).
2. Based on the above, how strong do you think your process for addressing the assignment was? Make sure that you can justify your assertion to yourself with evidence.
3. In light of your work on the assignment, in terms of being a critical thinker what do you think are your current strong points? (The aim here is to get to you to reflect on those elements of being a critical thinker that you can identify, have confidence in and ensure that you maintain and develop them). Make sure you provide evidence.
4. In terms of being a critical thinker what do you think are your weak points? (The aim here is to get to you to reflect on those elements of being a critical thinker that you can acknowledge might need development. This in turn will give you something concrete to aim for in terms of planning for such improvement). Make sure that you provide evidence.
5. In light of your reflection, in terms of your approach to your assignment and your self-assessed critical thinking skills coming from the assignment: What would you do differently if you had to complete this assignment again and why would you do this differently? What will you do to develop your strong points and work on your weak points and why do you think that this strategy will benefit you.

Reflective Prompts for Reflective Journal Entry 2

1. What do you think is the most important part of the scientific problem-solving process? Why?
2. Do you recognise any aspects of the scientific problem-solving process in your own

problem-solving (academic or non-academic)?

3. In light of the idea of thinking about your thinking, what have you learned about your own problem-solving process from our work in the Sherlock Holmes workshop and assignment in terms of the way that you might now tackle the Robin Hood Business consultancy workshop that we explored before Christmas.
4. In terms of your development as an expert problem-solver in Economics, what do you think you are most likely to take with you from this workshop and assignment to your work in Economics? Why do you think this?

Reflective Prompts for Reflective Journal Entry 3

This is the last official reflective journal of the academic year. I would like you to consider the year that you have just participated in - in terms of your preconceptions, perceptions, ideas and opinions about being an expert thinker in economics process. Be honest with yourself in your exploration as not only will this help you but it will help me to develop and deliver this course in the years ahead – you are the experts.

1. You have completed an academic year in a module entitled: Reasoning and Persuasion in Economics. In your opinion what have been the key aspects of learning to reason in economics (Van Sickle's types of knowledge – see attached) that you will bring with you from this module and why?
2. In terms of your development as an expert thinker in economics what do you think was the most successful aspect of the course for you and why do you think this? Please give evidence.
3. In terms of your development as an expert thinker what do you think was the least successful aspect of the course for you and why do you think this? Please give evidence.
4. Now that you have the experience that you have do you think that students of economics should be exposed to this type of module and why to you think as you do?
5. If you were to deliver a course on expert thinking in economics, given your experiences in this course, what one change would you make and why would you make this change?

The marking rubric for the reflective journals is available from the author: d.blackshields@ucc.ie.

IRELAND'S MULTICULTURAL CLASSROOMS AND INITIAL TEACHER EDUCATION: THE CONVERGENCE OF CULTURE AND PEDAGOGY

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Biographical Note

Maria Campbell lectures in sociology, development education and information and communication technology and is coordinator of graduate programmes at St Angela's College, Sligo. Her research interests focus on pedagogy, identity development and in exploring how educational policy, structures and practices engage with disadvantaged learners both in the Irish context and in relation to overseas contexts.

KEYWORDS

Multicultural; pedagogy; Vygotsky; Bernstein; Initial Teacher Education

ABSTRACT

In the context of Ireland's changing demographics, this paper explores the importance of pedagogic research in informing both philosophies and pedagogical practices in Initial Teacher Education (ITE) which endeavours to facilitate student teachers' engagement with the teaching and learning process in Ireland's multicultural classrooms. By utilising firstly the insights provided by Lev Vygotsky, via others into the meditational role of cultural tools and his concept of the Zone of Proximal Development and, secondly, Basil Bernstein's exploration of curriculum and in particular his concept of the Pedagogic Recontextualising Field, it examines through engagement with data obtained from semi-structured interviews carried out with newly qualified teachers (NQTs) how specific pedagogic practices can be informed by this convergence of culture and curriculum. It discusses the manifestations of the tensions between theory and practice both in the college and classroom context, as experienced by the NQTs and in doing so, provides the author with valuable insights into the need for adapting her own philosophical and pedagogical practices within ITE to enhance the learning experience of the student teacher and to facilitate their future engagement with teaching and learning in the multicultural classroom.

INTRODUCTION

The challenge for those of us who endeavour to prepare student teachers to teach in Irish multicultural classrooms is to facilitate student teachers' engagement with their practices in order that they may exhibit sensitivity in relation to the identity, curricular and pedagogical challenges that face all their pupils. The magnitude of this task is evident when one considers that currently ten percent of primary pupils and seven percent of post-primary pupils are categorised as non-national (GOI, 2009).[1] Many students are new arrivals to Ireland from different cultural backgrounds, bringing with them a wide variety of mother tongues.[2] By endeavouring to facilitate cultural sensitivity in relation to their teaching practices, one would hope that as future teachers, they would ensure that pupils of varying cultural backgrounds at best partake in the optimum learning experience and at the very least are not disadvantaged. In light of this, two questions come to the fore: firstly, to what extent do we understand how varying cultural backgrounds affect the teaching and learning process; and secondly, does initial teacher education (ITE) facilite potential teachers to engage with this?

In order to answer these questions, this paper utilises the insights provided by Zembylas (2003) and others on the work of Lev Vygotsky into the meditational role of cultural tools in the development of

1 Non-national: the legal term in Irish literature (Citizens Information Database, 2005) when referring to people often termed 'refugee', 'immigrants', 'foreigners', 'illegals', 'aliens' and 'non-Irish' and those who do not have Irish citizenship. While many in the media, education and politics have expressed their discomfort with this expression it still remains the official term.

2 The term 'culture' is used here to describe various national, regional, traditional, religious, racial, ethnic, gender related and economic dimensions of identity which is reflective of the nature of Ireland's non-national population.

the mind, with a view to enhancing our understanding of the influence of cultural backgrounds on how we learn. It then explores his concept of the Zone of Proximal Development (ZPD) which provides a broad conceptual framework with which to examine teaching and learning practices in multicultural contexts. However, in order to examine how specific pedagogic practices can be informed by the convergence of culture and curriculum in the multicultural classroom context, this paper draws upon Basil Bernstein's exploration of curriculum and in particular his concept of the Pedagogic Recontextualising Field (PRF). From this starting point, this paper then discusses the findings of a research initiative, with twenty-seven second-level newly qualified teachers (NQTs) as they completed their first year of teaching. In doing so it examines the manifestations of tensions between theory and practice both in the college and classroom context, as experienced by the NQTs.

THE CONVERGENCE OF CULTURE AND CURRICULUM

Lev Vygotsky, during his relatively short life, wrote extensively about the relationship between cultural factors or cultural tools and the development of the mind. He was particularly concerned with higher mental functions and his theory of cultural mediation focused on exploring how cultural tools influenced how individuals conceptualise the world. Vygotsky stressed that *"individual mental functioning can be understood only by going outside the individual and examining the social and cultural processes from which one is constructed"* (Vygotsky, 1978, cited in Zembylas, 2003, p. 217). Vygotsky viewed mental functioning as occurring within the context of activity or engagement with the cultural tools of ones environment, namely *"speech, symbols, physical structures such as houses, works of art and writing for example"* (Lasky, 2005, p. 902). Thus the tools which enable action move beyond the remit of representational systems (Wertsch, 1995) and constitute resources with the potential to empower, constrain, or transform action.

Furthermore, Vygotsky noted that that speech is not a direct translation of our thoughts; rather, the words we use in speech are an attempt to express our understanding or the meaning we have made (Vygotsky, 1987). In the Irish multicultural classroom, various words may have different meanings both for the children and the teacher due to the variety of lived experiences resulting in the pupils' struggle to understand both the language and the concepts they strive to convey.

This presents challenges for the teacher at a pedagogical level. Vygotsky's concept of the Zone of Proximal Development (ZPD) is particularly helpful in engaging in the complexity of this situation. According to Vygotsky, learning occurs within the ZPD, or in other words, in order to support a child as they attempt to grasp a concept it is necessary for a teacher or expert to support them in moving from what they know to what they do not know (Vygotsky, 1978). For example, if one is attempting to teach the concept of condensation and how it occurs, it is necessary to ensure that the child has a basic understanding of the nature of solids, liquids and gasses and what constitutes each. In the absence of this, progressing to a lesson which explores the transition between the various states would be futile and result in the memorisation of a meaningless word at best. This pedagogic challenge was of particular concern for Vygotsky (1987, p. 170, cited in Guile, 2009, p. 281) who noted that:

> *"The teacher who attempts to use this approach achieves nothing but a mindless learning of words, an empty verbalism that stimulates or imitates the presence of concepts in the child. Under these conditions, the child learns not the concept but the word, and this word is taken over by the child through memory rather than thought".*

What is needed is some form of bridging device, a means to link our understanding of one's cultural background or identity to enhanced engagement with subject matter or curriculum. One way to address this is by exploring the insights provided by Basil Bernstein and his work on curriculum (Bernstein, 1990). Bernstein was a passionate supporter of the rights of the disadvantaged and his work primarily focused on examining how educational structures and practices further disadvantaged the disadvantaged. He engaged primarily in looking at hierarchical issues of power and power associated structures such as class within educational contexts (Bernstein, 2000). His insights, when applied in the context of culturally diverse classroom, may offer us a way forward.

According to Bernstein, the practices of teachers are regulated and contained within larger educational structures and entities in that the "*what*" or subject matter they teach is defined by both the school and by the state. Bernstein (2000, p. 32) referred to the "*what*" of teaching such as physics, maths or geography as the "*instructional discourse*". He further notes that the "*how*" of teaching constitutes a discourse of social and moral order which he refers to as the *"regulative discourse*" (2000, p. 32) which is related to theories of instruction and according to Ivinson and Duveen (2005, p. 629) "*concepts of rules, pacing, transmission, acquisition, etc., which are not socially-ideologically neutral*". While Bernstein (2000) maintains that the regulative discourse dominates the instructional discourse in the process of constructing knowledge that is legitimised by the school and state, he maintains that the creation or enabling of a space which he refers to as the pedagogic recontextualising field (PRF) allows for knowledge to be remade.

According to Jacklin (2004, p. 383) this process involves the teacher engaging with the pedagogic discourse which "*is constructed through a process of selection and recontextualisation from the discourse from which the instructional content is derived (say, mathematics) and from theories of teaching and learning (such as child development theories)".*

Furthermore, Daniels (2004) stresses that this occurs where the theory of instruction utilised by the teacher does not give rise to a strong classification, for example, in relation to the role of the teacher, allowing pupils to pose the questions and to discuss their ideas within the classroom, which would cause the teacher to "*shift identity positions ... with less emphasis on teacher talk*" (Bourne, 2004, p. 131-132). Similarly, weak framing in relation to pace and sequencing would require the pupils to demonstrate their understanding either orally or through the use of concrete classroom tools before moving on to the next phase of the lesson, thus passing control of the learning pace at the very least, to the pupil. Indeed Morais (2002, p. 561) notes that Bernstein viewed the importance of allowing the child to have some control in relation to the pacing of lessons "*as central to successful learning*". However Bernstein (1999, p. 169) notes that the trend within pedagogy to "*relate institutional knowledge or vertical discourses to the everyday experience of learners or horizontal discourse, in order to make the knowledge more accessible can result in the knowledge being fragmented and segmented*" and as a result, learners are denied access to the grammar of the instructional discourse and are further disadvantaged.

WHAT IS HAPPENING IN THE FIELD?

In order to establish the extent to which one ITE programme engaged with the cultural dimension of teaching and learning and with pedagogical practices which facilitated enhanced cultural sensitivity, the author undertook field research in May 2008, with twenty-seven female[3] NQTs as they completed their first year of teaching in second level schools. The schools were located throughout the country, in both rural and urban locations, with a diverse range of pupil enrolments and varying numbers of pupils from other cultures ranging from three pupils in one school to forty per cent of

3 No male students graduated from the Bachelor of Education at St Angela's College in 2007 and thus there were no male NQTs in the sample.

the pupils population in another. Data was gathered by means of semi-structured interviews which explored the personal and professional narratives of the NQTs, which was subsequently transcribed and analysed.

WHAT THE RESEARCH UNCOVERED

In general the NQTs noted that it was difficult to engage with ZPD as they felt their ITE programme did not prepare them sufficiently in light of the varied cultural backgrounds of their pupils and therefore they struggled to relate both the subject content and classroom norms and practices to the lived experiences of many of their pupils. While they acknowledged that their programme engaged substantially with conceptual tools which emphasised the role of morals, rights, and identity in teaching and learning, they indicated that further input was needed in relation to practical tools or pedagogical practices which, as Vygotsky notes, links the concept to action. Similarly, while they noted that they had engaged with differentiation in light of the varied nature of the learner, their lack of previous experience of interacting with people from other cultures and their lack of understanding of the variety of lived experiences of their pupils and in many instances of the various mother tongues, proved challenging for them.

They indicated that the instructional discourse of the schools was dominant and noted that support from individual teachers, usually the resource teacher, and the underpinning ethos of the school was influential in facilitating flexibility in relation to the regulative discourse. To varying degrees they indicated that they had endeavoured to facilitate a PRF through the weak framing of pace and teacher role in particular. However for approximately half of the NQTs the task of contending with life as a NQT meant that while awareness of good practice was evident, the transfer of this into actions proved challenging.

CONCLUSION

The findings of this research has served to inform a review of both the philosophical perspectives and pedagogical practices of the author. It has highlighted the need for enhanced dialogue with colleagues in order to ensure a more cohesive approach in relation to the "*what*" and the "*how*" of teaching and learning. Efforts have been made to include more references to practical tools for teaching and assessment. It has highlighted the necessity to provide further inservice for practicing teachers and school principals and the value of bringing together both inservice and preservice teachers in order to facilitate the meeting of minds and experiences. Finally the research findings have reinforced the important relationship between research and practice if we are to continue to capitalise on the opportunities and address the challenges that teaching and learning poses.

REFERENCES

Bernstein, B. (1990). *The structuring of pedagogic discourse, vol. IV: Class, Codes and Control.* London: Routledge.

Bernstein, B. (2000). *Pedagogy, Symbolic Control and Identity*. New York: Rowman and Littlefield.

Bourne, J. (2004). "Framing talk: towards a radical visible pedagogy", in *Reading Bernstein, Researching Bernstein*, eds J. Muller, B. Davies, and A. Morais. London: RutledgeFalmer.

Daniels. H. (2004). "Activity Theory, Discourse and Bernstein"*, Educational Review*, vol. 56, no. 2, pp. 122-132.

GOI (2009). The Minister for Integration's speech (Lenehan) as quoted by the Department of Education and Science during their consultative forum on devising an Intercultural Education Policy. Dublin: 24 November 2009.

Guile, D. (2009). *The Learning Challenge of the Knowledge Economy*. Rotterdam: Sense.

Ivinson, G. and Duveen, G. (2005). "Classroom structuration and the development of social representations of the curriculum", *British Journal of Sociology of Education,* vol. 26, no. 5, pp. 627–642.

Lasky, S. (2005). "A sociocultural approach to understanding teacher identity, agency and professional vulnerability in a context of secondary school reform", *Teaching and Teacher Education*, vol. 21, pp. 899-916.

Morais, A. (2002). "Basil Bernstein at the Micro Level of the Classroom", *British Journal of Sociology of Education,* vol. 23, no. 4, pp. 559-569.

Vygotsky, L. (1987). *Thinking and Speech*. New York: Plenum.

---. (1978). "Interaction between learning and development", in *Mind in Society*, Cambridge, MA: Harvard University Press. pp. 79-91.

Wertsch, J.V. (1995). *Voices of the mind: A sociocultural approach to mediated action*. Cambridge: Harvard University Press.

Zembylas, M. (2003). "Emotions and Teacher Identity: a poststructural perspective", *Teachers and Teaching: theory and practice*, vol. 9, no. 3, pp. 213-238.

TECHNOLOGICAL CHANGE IN ASSESSING ECONOMICS: A CAUTIONARY WELCOME

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Biographical Note

Brendan Kennelly is a lecturer in economics at the J.E. Cairnes School of Business and Economics at National University of Ireland (NUI) Galway. He has a strong interest in exploring the use of innovative assessment and learning methods in economics. Brendan was the first lecturer in Europe to use an on-line assessment system known as Aplia in an economics course. His research on the effectiveness of Aplia has been presented at several conferences in Ireland, the UK and the United States. Most of his other recent research has been in mental health economics. He has published papers on the economic cost of suicide and of schizophrenia as well as a paper on preferences for mental health programmes.

John Considine is a lecturer in the Department of Economics, University College Cork (UCC). He obtained his PhD from the University of York and has completed both the Certificate and Diploma in Teaching and Learning in Higher Education delivered by Ionad Bairre at UCC. He was awarded a President's Award for Excellence in Teaching and is a member of the UK Higher Education Academy Economics Network. He has published work in Economic Affairs and the Journal of Economic Education on the use of literature, fiction and humour in the teaching of economics.

Darragh Flannery is a teaching assistant in economics at the Kemmy Business School, University of Limerick. He is also conducting a PhD through NUI Galway and has spent time conducting research at the University of Essex through the European Centre for Analysis in the Social Sciences (ECASS) programme. While his PhD research has focused upon participation and redistribution issues within higher education in Ireland he also has a keen interest in teaching and learning methods within economics, specifically with the use of technology. Darragh has published previously on the topic of the decision of young people in Ireland to enter third level education in Ireland.

ABSTRACT

The use of computer-based automated assignment systems in economics has expanded significantly in recent years. The most widely used system is Aplia which was developed by Paul Romer in 2000. Aplia is a computer application designed to replace traditional paper-based assignments in economics. The main features of Aplia are: (1) interactive content including problem sets, experiments and news analysis; (2) digital editions of a textbook; (3) assignment sets that are customised to specific textbooks; and (4) immediate feedback for both students and instructors. Its ability to present the dynamics of diagrams and graphs is critical to its use in economics.

This paper analyses the effectiveness of Aplia and traditional paper-based assignments and tutorials using summative assessment results. The analysis is based on a managerial economics course that was taught to over 380 students at NUI Galway in the first semester of 2008-09. The course was designed so that each student was required to complete eight assignments for 25% of the total

marks available for the course. They completed six of the eight assignments by Aplia and the remaining two by paper.

The final exam was organised into eight sections with each section corresponding to a particular assignment. Our basic test is to examine whether a student's performance in a particular section of the exam is affected by whether the student completed the corresponding assignment on paper or online. We also examined if how the student performed on a particular assignment, regardless of the type, predicted how well they did on the corresponding examination question. We found little statistical evidence in support of either hypothesis.

INTRODUCTION

Economists like to point out that everybody faces trade-offs. A country can spend more on health but will then have less to spend on new cars. An individual can choose to work longer hours but will then have less time to spend with her family. And so it goes with large classes and continuous assessment. A lecturer can assign regular graded assignments to students but will then have little time to do all the other things that a lecturer is supposed to do. Have a look at the first or second chapter of any textbook in introductory economics and you will find a precise definition of opportunity cost as well as a concept called the production possibilities frontier which neatly illustrates the essential concepts of scarcity and choice (Mankiw and Taylor, 2006; Turley *et al*).

Dismal as it may be, economics also teaches us that trade-offs can change, often dramatically so, over time. Individuals and societies can produce far more goods and services today than they could fifty or a hundred years ago. The reason generally lies in technological change which allows the production possibilities frontier to be pushed out further and further from the origin. The issue we are concerned about in this paper is whether technological change could change the tradeoffs facing lecturers who wish to give regular assignments to large classes.[1]

Economics has long been taught to large classes in first and second year at National University of Ireland (NUI) Galway. Brendan Kennelly has taught either principles of economics (first year) or managerial economics (second year) at NUI Galway since 1998. Like most economics lecturers, he believed that economics is best learned by doing problems and assignments rather than by learning off theories and definitions but felt unable to give regular assignments because they could not be graded. For many years the solution was to give the students a certain number of assignments each semester and to grade only one of them. To ensure that the students had an incentive to do all of the assignments the assignment that was graded was not returned to the students until the semester was finished. But this meant that one of the main goals of assignments – to give students feedback on what they knew and (more importantly) what they did not know – could not be realised. It was a decidedly second best solution.

While Brendan was struggling with large classes in Galway, an economist called Paul Romer was developing an online automatically graded assignment service called Aplia for his economics students at Stanford University. While it was initially designed simply as a product for his own classes Romer quickly realised that other economists might be interested in his product and its use has expanded dramatically in the last ten years.[2] Aplia is now used in well over 1,000 universities around the world. Over 580 million answers have been submitted and automatically graded and every minute about 200 more answers are submitted.

The main features of Aplia[3] are: (1) its interactive content including problem sets, experiments and news analysis; (2) the digital editions of a textbook; (3) the assignment sets that are customized to specific textbooks; and (4) the immediate feedback for both students and instructors. It provides facilities for both formative and summative assessment. Aplia appeals to those with responsibility for educational budgets on the grounds of cost.[4] It also appeals to educationalists who value the direct student interaction with the formative assessment plus immediate feedback on both summative and formative assessment.

In 2006, Brendan Kennelly and his colleague David Duffy became the first economists in Europe to use Aplia. Our aim in this research project is to evaluate the effectiveness of Aplia, by comparing Aplia and traditional paper-based assignments using summative assessment results. Do students learn as much from Aplia as they do from traditional paper-based assignments? We also wanted to find out how students used Aplia and what they thought of it as a learning tool for examination preparation purposes.

DATA AND ANALYSIS

The research is based on a managerial economics course that was taught to over 380 students at NUI Galway in the first semester of 2008-09. Previous work in this area has yielded mixed results. Nguyen and Trimarchi (2010) found that Aplia, and a similar product, MyEconLab were responsible for increasing the average class mark by about 2% regardless of whether the technology used was a required or optional course component. O'Dea and Ring (2008) found that the percentage of Aplia questions attempted had a significant negative impact on test performance. They also found that the percentage of Aplia questions answered correctly had no effect on test performance. These and other studies on Aplia have compared the performance of one group of students who did assignments on Aplia with another group of students who did assignments on paper (Lee et al, 2010). A unique feature of our analysis is that all of the students were required to do six of their assignments on Aplia and two on paper and had no choice over which assignments to do on paper. The final exam was organised into eight sections with the material examined in each section corresponding to a particular assignment. Our basic question is to examine whether a student's performance in a particular section of the exam is affected (a) by how s/he performed in the corresponding assignment; and (b) by whether the student completed the corresponding assignment on paper or online. We have up to six observations on exam performance for each student with corresponding data on assignment performance.

A panel data set is one where the variable being analysed varies over two dimensions. The variation across both students and sections in exam performance meant that our data could be analysed using panel data techniques. Standard statistical tests indicated that a fixed effects model was appropriate. The dependent variable was the student's performance in each section of the exam and the critical explanatory variables were the student's score in the corresponding assignment and a dummy variable that indicated whether the student had done the assignment on Aplia or on paper. The coefficients on the assignment score and the Aplia/paper dummy were both statistically insignificant (i.e. their p-values are too high). In other words we do not find any evidence that one's performance in an assignment or whether the assignment is done on Aplia or on paper has any effect on how one does in the corresponding section of the exam. We also included a dummy variable for each section to capture common differences across sections. These dummies were all significant. Table 1 contains the detailed econometric results.

1 By large classes we mean classes with at least 150 students. Aplia can be used with classes of any size. Our focus on large classes is driven by the fact that managerial economics is taught to large classes at NUI Galway.

2 In some respects Paul Romer was an unlikely candidate to develop a system of online assignments in economics. He is best known as an economic theorist and his work on what is called new growth theory is widely respected by the profession and will very likely result in him being awarded the Nobel Prize in economics.

3 For a demonstration about how Aplia works, see www.aplia.com. Aplia provides services in disciplines such as statistics, accounting and psychology as well as economics.

4 Aplia offers various pricing options to professors and students. Some institutions have reduced the number of face-to-face recitations after adopting Aplia. Depending on what pricing options are available the total cost of buying the textbook and the Aplia service may be higher or lower for students than just buying the textbook.

Table 1: Fixed effects model on section-specific exam performance with Aplia/Paper dummy

Constant	22.28 (0)
Assignment Mark	.003 (.918)
Aplia/paper dummy	-.55 (.35)
Dummy for Section 2	2.8 (.001)
Dummy for Section 3	-2.0 (.04)
Dummy for Section 4	3.22 (.001)
Dummy for Section 5	-7.25 (0)
Dummy for Section 6	-4.11 (0)
Dummy for Section 7	-5.01 (0)
Dummy for Section 8	-3.1 (.001)
Observations	1,351
Sigma_u	7.61
Sigma_e	8.74
rho	0.43

p-values in parentheses

Note: Dependent variable is the score that a student received in each section of the exam

Note: Aplia/paper dummy is specified with 1 = assignment completed on aplia and 0 = assignment completed on paper.

Our analysis indicated that completion rates on the Aplia assignments were higher than on the paper assignments. In a formal statistical model we found that the Aplia/paper dummy had a positive and significant effect on the likelihood that a student completed an assignment in this model. However we did not find any evidence that merely completing an assignment had a positive effect on one's performance in a particular section of the exam[5].

In the final week of the semester the students were surveyed about their experience with Aplia and the paper assignments. A very substantial majority of students believed that Aplia assignments had a positive effect on their overall understanding of the topics covered in the course and a majority of students believed that they learned more from the Aplia assignments than the paper ones. A majority of students also said that they preferred Aplia to paper assignments. When asked why, only a quarter said they did so because they thought they learned more from Aplia. A much larger percentage said that they preferred Aplia because they found the Aplia assignments easier to complete.

5 Detailed results are available in Kennelly et al (2010) which contains several more tables of results as well as more detail on the implications of our results. This paper is available on request.

Over 85% of the students said that they would like to use Aplia in other courses. When asked why, the students said they liked having a substantial proportion of the courses awarded for continuous assessment. They also liked the practice assignments on Aplia and said that Aplia was of particular benefit with regards to the use of graphs in economics. This agrees well with an earlier survey by Kennelly and Duffy (2007).

We supplemented the survey with two focus group meetings, one held during the semester and the other held a few months after the final exam. One topic we explored in the second meeting was whether the students regarded Aplia as a good tool to prepare them for examination questions. The students regarded Aplia as more of a complement to a traditional tutorial system than a substitute[6].

We learned at the first focus group meeting that some of the students regarded the Aplia assignments as puzzles that could be figured out with the aid of textbook or practice assignments rather than pedagogically useful learning devices.

CONCLUSION

Our statistical analysis revealed little evidence that online assignments were not as good as paper-based assignments in helping students learn key concepts and techniques in a second year economics course. Given that online assignments take up much less of a lecturer's time and given their popularity among students, our evidence indicates that Aplia is a technological improvement that is valuable and one that should be seriously considered by lecturers around the world.

On the other hand, the absence of a positive correlation between performance in assignments and performance in exam section may be regarded as disappointing. One issue that we think needs more consideration is the link between what the students learn in assignments and the kind of questions that students face in exams. This is a key issue for Aplia as the technology restricts the kind of questions that can be asked in the assignments. The Aplia questions tend to be modelled very closely on examples that are worked out in the textbook and students are often able to answer the questions by matching the questions with the corresponding examples in the book.

A unique feature of our paper is that we have up to six observations on exam performance for each student with corresponding data on assignment performance. However this may not have been as important as we thought when we devised the study. It may be the case that students think in a compartmentalised way about assignments and exams (some of the comments in the focus group meetings suggested this). A closer link between assignments and exam performance might be found if there had been one or two midterm examinations in the course with a final exam that focused on the material that had been taught in the final part of the course. Whether that link would be stronger for paper or online assignments remains an open question.

REFERENCES

Kennelly, B., Considine, J. and Flannery, D. (2010). "Online assignments in economics: a test of their effectiveness," Unpublished. Cairnes School of Business and Economics, NUI Galway

Kennelly, B. and Duffy, D. (2007). "Using Aplia software to teach principles of economics," paper presented to *Developments in Economic* Education Conference in Cambridge, UK, 6-7 September.

Lee, W., Courtney, R.H. and Balassi, S.J. (2010). "Do online homework tools improve student results in principles of economics courses?" *American Economic Review* (forthcoming).

Mankiw, N.G. and Taylor, M.P. (2006). *Economics*. London: Thompson Learning.

6 The complete results from the student survey along with a more detailed analysis of the focus group meetings will be discussed in a separate paper.

Nguyen, T.T. and Trimarachi, A. (2010). "Active learning in introductory economics: do MyEconLab and Aplia make any difference?" *International Journal for the Scholarship of Teaching and Learning*, vol. 4, no. 1, pp. 1-18.

O'Dea, W.P. and Ring, D.W. (2008). "The impact of Aplia on student performance in intermediate microeconomics theory," Unpublished. Division of Economics and Business, SUNY-Oneonta.

Turley, G., Moloney, M. and O'Toole, F. (2006). *Principles of Economics: An Irish Textbook*. Dublin: Gill and Macmillan.

FIRST YEAR STUDENTS' MATHEMATICS LEARNING EXPERIENCES AT THE NATIONAL UNIVERSITY OF IRELAND MAYNOOTH

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Biographical Note

Ciarán Mac an Bhaird received his PhD in mathematics from National University of Ireland (NUI) Maynooth. He has been manager of the Mathematics Support Centre and a lecturer in mathematics there since 2007. He is a committee member of the Irish Mathematics Support Network and conducts research in mathematics education and algebraic number theory.

Ann O'Shea holds a PhD in mathematics from the University of Notre Dame, USA. She has been a lecturer in the mathematics department at NUI Maynooth since 1992, and is currently the Director of the Mathematics Support Centre. She conducts research in the area of mathematics education.

ABSTRACT

This paper considers the factors that impact on student success in first year science mathematics courses at the National University of Ireland Maynooth (NUI Maynooth). These factors include previous performance in the subject, attendance at lectures and tutorials, the number of assignments submitted, and attendance at the Mathematics Support Centre (MSC). The results of this initial study will be used to identify behaviour patterns that lead to successful completion of first year courses. The findings will help mathematics departments to target support initiatives in areas which are most likely to improve student learning.

INTRODUCTION AND RATIONALE FOR THE PROJECT

The aim of this research is to determine the factors that impact on assessment grades in a first year mathematics course for science students. The factors that we will consider are: Irish secondary school Leaving Certificate (LC) grades in mathematics; diagnostic test scores; tutorial and lecture attendance; attendance at the Mathematics Support Centre (MSC); and homework submission rates. The motivation for this study is twofold. Firstly we would like to be able to identify students who are at risk of failing, so that we can offer them timely and appropriate support. Secondly, we would like to know whether the supports offered by the mathematics department at NUI Maynooth are successful. The department invests a lot of its resources in providing student support, and many of these resources are targeted at first year students. This is true of most mathematics departments in Ireland, and the last few years have seen an increase in the supports available. It seems sensible therefore to try to determine the most successful types of support.

Many Irish third level institutions have opened mathematics support or learning centres over the last ten years (Gill et al, 2008). The MSC at NUI Maynooth opened in the academic year 2007/08. It operates as a drop-in centre which is open for eighteen hours per week for twenty-four weeks of the year. It is staffed by a manager and a group of experienced tutors. In its first year of operation, there were 2493 visits by 273 students. In its second year, these numbers increased to 4647 visits by 509 students. Research on the centre at NUI Maynooth (Mac an Bhaird et al, 2009) has shown that students who attend have a higher probability of succeeding in mathematics modules than those who do not attend. Similar results have been found in studies of other support centres (Croft, 2008).

Of course, support centres are not the only resource available to students and are not the only factor determining success. In a study of first year engineering students at Loughborough University, Symonds (2008) showed that lecture and tutorial attendance, diagnostic test results, as well as mathematics support centre attendance were significant predictors of success in mathematics modules. At the University of Limerick, Liston and O'Donoghue (2009) found that success was related to affective variables such as attitude to mathematics, enjoyment of mathematics, and mathematics self-concept. Their study also reported that measures of previous mathematical achievement such as Leaving Certificate grades and diagnostic test results were good predictors of final examination scores.

THE STUDY GROUP

This paper investigates the effect of a number of variables on the mathematics grades of the first year science class at NUI Maynooth for the year 2008/09. It considers the 267 students who sat the summer examinations. Of these students, 35% had taken higher level mathematics at Leaving Certificate, 63% had taken ordinary level mathematics and 2% had not taken the Leaving Certificate examination. Mathematics is a compulsory subject for these students and only about 10% wish to study the subject to degree level.

METHODOLOGY

A diagnostic test is administered to all first year mathematics students during their first week in the university. The test assesses basic mathematical skills, and the department uses the results to identify students with weak mathematical backgrounds. These students are offered additional help in the form of an online course and a weekly workshop. In the year 2008/09, 27% of the class were deemed to be at-risk of failing first year mathematics.

Each first year mathematics student is assigned to a small group tutorial. These tutorial groups meet twenty times in the academic year and attendance is recorded by the tutor. Students are required to submit a weekly assignment which is graded by the tutor. These assignments count for 25% of the module marks. Over the course of the year, the students study four mathematics modules. In the year 2008/09, lecture attendance at one of these modules was recorded by the lecturer. This module was on integral calculus and is considered the most difficult of the first year modules.

Students were asked to inform us of their Leaving Certificate results during the first week of term. The final first year subject marks were obtained from the departmental administration. Attendance at the MSC is recorded by a dedicated staff member, and all figures are compiled by the MSC manager.

RESULTS

The median number of tutorials attended by students was fifteen (out of twenty). Approximately 22% of students missed no more than one tutorial. The median number of lectures attended was sixteen (out of twenty-four). The majority of students handed in most of their assignments. The median number of assignments submitted was 17.5 (out of twenty) and 18% submitted all assignments. Almost 61% of the group attended the MSC at least once, and of these 84% returned.

A regression analysis, a common statistical tool, was carried out with the final subject mark (out of 1000) as the dependent variable and with Leaving Certificate mathematics points (LC points), Leaving Certificate mathematics level (LC level), diagnostic test results, lecture attendance, tutorial attendance, number of assignments submitted, and MSC attendance as independent variables. Table 1 shows the Pearson correlations between these variables. (Here * denotes that the correlation is significant at the 0.05 level).

Table 1: Table of Pearson Correlations

	LC Points	Diagnostic Test	Lecture Attendance	Tutorial Attendance	Assignments Submitted	MSC Attendance
Final Mark	0.68*	0.6*	0.4*	0.48*	0.64*	0.26*
LC Points	1	0.73*	0.05	0.14*	0.26*	-0.08
Diagnostic Test		1	-0.003	0.11	0.25*	-0.16*
Lecture Attendance			1	0.55*	0.59*	0.34*
Tutorial Attendance				1	0.74*	0.32*
Assignments Submitted					1	0.28*

All of our independent variables are positively and significantly correlated with the final subject mark. The diagnostic test results and the LC points are highly correlated. This is not surprising since both of these variables measure students' mathematical background. Both of these variables are negatively correlated with attendance at the MSC. It may be that students with a strong mathematical background have fewer problems in first year mathematics modules and therefore visit the MSC less often than those who are struggling.

A stepwise regression was carried out and the predictors in the final model were LC points and level, diagnostic test results, MSC attendance, and number of assignments submitted. The model excluded the number of tutorials and lectures attended. The R-square for this model was 0.772, which suggests that the model variables account for 77% of the variance in the final subject mark. The regression equation is:

Final Mark = -89.79 +3.195 (LC Points) +84.106 (LC Level) +2.51 (Diagnostic test) + 19.108 (Assignments submitted) +6.144 (Attendance at MSC).

Note that LC Level was coded 0 for students who had studied mathematics at ordinary level and 1 for higher level. From this equation, we can see that if all other variables are held constant then a student with higher level mathematics at Leaving Certificate would be expected to score eighty-four marks out of 1000 more than an ordinary level student. It also seems that each visit to the MSC adds six marks out of 1000 to the student's final mark and each assignment adds nineteen marks.

CONCLUSIONS

The mathematics department provides learning support to students both through its tutorial and homework assignment system, and through the Mathematics Support centre (MSC). From our study, we can see that these resources are being used by the first Science group. Indeed attendance at tutorials and lectures is relatively high when compared with other similar studies (for example Kirby and McElroy, 2003). Attendance at the MSC is considered good, with 61% of our group attending at

least once. This figure was dramatically up from 32% the previous year.

Our regression model showed us that the significant predictors of success could be divided into two groups: mathematical background (LC level, LC points and diagnostic test result); and measures of student engagement (number of assignments submitted and number of visits to the MSC). Since attendance at the MSC is purely voluntary, the number of visits can be thought of as a measure of a student's engagement and effort. Unlike studies carried out by Symonds (2008) and Kirby and McElroy (2003), our model did not include lecture and tutorial attendance as significant predictors of final grade. This does not mean that attendance at lectures or tutorials is unimportant. Recall from Table 1 that these variables are highly correlated with the number of assignments submitted and the number of visits to the MSC, and this may be the reason why the final model did not include them. It may be that the experience of attending a lecture or tutorial is a passive one for some students. The lecture group is very large and this makes it difficult for lecturers to foster active learning. On the other hand, working on an assignment or visiting the MSC requires the student to take responsibility for their own learning. This act of taking personal responsibility is vital in our opinion.

Our study leads us to believe that in order to identify at-risk students we need to look not only at the students' past mathematical achievement but also at their level of engagement with the subject. The results also suggest that supports that foster active rather than passive learning are beneficial. We plan to carry out a further analysis of our data to refine our model and we are in the process of interviewing students in an effort to ascertain which supports help them the most.

REFERENCES

Croft, T. (2008) *Measuring the Effectiveness of Support Centres* [online]. Loughborough: Mathcentre. Available from: http://www.mathcentre.ac.uk/courses/mathematics-support-centre/measuring_effectivess/ [accessed 2 July 2010].

Gill, O., O'Donoghue, J., and Johnson P. (2008). *Mathematics Support Provision in Irish Third Level Institutions*. Limerick: Regional Centre for Excellence in Mathematics Teaching and Learning.

Kirby, A. and McElroy, B. (2003). "The effect of attendance on grade for first year economics students in University College Cork", *The Economic and Social Review*, vol. 34, no. 3, pp. 311-326.

Liston, M. and O'Donoghue, J. (2009). "Factors influencing the transition to university service mathematics: part 1 a quantitative study", *Teaching Mathematics and its Applications*, vol. 28, no. 2, pp. 77-87.

Mac an Bhaird, C., Morgan, T., and O'Shea, A. (2009). "The impact of the mathematics support centre on the grades of first year students at the National University of Ireland Maynooth", *Teaching Mathematics and its Applications*, vol. 28, no. 3, pp. 117-122.

Symonds, R. (2008). *Evaluating Students Engagement with Mathematics Support*, PhD Thesis: Loughborough University.

FORGING RESEARCH-TEACHING LINKAGES THROUGH ACTION RESEARCH: AN EXAMPLE OF FACILITATING THE DEVELOPMENT OF COMPETENCY IN CRITICAL REFLECTION

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Biographical Note

Catherine Lowry-O'Neill graduated with a BA and DPhil from the University of Ulster at Coleraine (UUC). She lectured in French in UUC, the University of Limerick, and the University of Leeds before arriving in Waterford Institute of Technology (WIT) in 1997. Catherine was invited to join the team in the School of Education and Professional Development in 2005 and has subsequently graduated with an MA in Management in Education. She currently lectures on the MA in Learning and Teaching and her research interests include emotional intelligence and reflective practice.

KEYWORDS

Reflection; action research; integrative reflection; template.

ABSTRACT

Action research is an approach to enquiry that forges linkages between research and teaching, with each potentially informing the other in a responsive and creative cycle. This paper provides an overview of a pedagogic action research project which was undertaken in order to respond directly to learning needs expressed by a group of second year students on a Masters programme in Learning and Teaching.

An espoused aim of the MA programme is to facilitate the enhancement of the students' competency in reflective practice. This paper outlines the process that took place when learners openly communicated some difficulties they had in this regard, in particular when faced with the challenge of writing their reflections in a manner that consistently demonstrated a capacity to be critical. It adumbrates the two specific actions that were taken within the context of the living theories approach to action research – the use of Socratic questioning and the development of a new approach to reflective writing – with a focus on the latter.

The living theories approach to action research begins with the question, 'How do I improve my practice?' (Whitehead, 1989) and involves the practitioner seeking out ways in which to influence her own learning and that of others. By interacting with the students in a collaborative process, there is a possibility of creating new knowledge individually and collectively (Whitehead and McNiff, 2006). The outcomes of the project, including the effect of the pedagogic initiatives on student learning, and the development of a new framework for reflective writing - the 'Integrative Reflection Template' – are also presented, with the on - going nature of the process of enquiry made explicit.

INTRODUCTION

Reflection is undoubtedly a complex process (Dewey, 1933; Boud, 1985; Cowan, 1998). It requires, for instance, mental effort, critical self-analysis, and openness to the idea that one's perceptions may be flawed or distorted. Nonetheless, its potential benefits in terms of nurturing the development of professionalism and expertise (Schon, 1984) has meant that the competency has become increasingly integrated into curricula in disciplines such as nurse education, business studies, and teacher education. Still, given the complexity of the approach, it is unsurprising that students may experience genuine challenge in developing their competencies in this regard.

This paper outlines an action research project that was undertaken with a group of fourteen students on *The Reflective Practitioner 2* module of the MA in Learning and Teaching (MALT) programme at Waterford Institute of Technology (WIT). These learners explained that they were committed to reflecting on their practice, and were convinced of the value of doing so, but that they had difficulty writing at the critical level as conceptualised by Hatton and Smith (2005). My suggestion to deal with this issue constructively and co-operatively using action research, and thereby forging links between research, teaching and learning was welcomed by the students. Ethical concerns such as open communication around the purpose and form of the research, informed consent, and respect for confidentiality were addressed with the group.

The paper is structured in line with the Living Theories approach to action research (Whitehead, 1989; McNiff, 2007) which involves engagement in a series of five processes.

1. I identify a concern when some of my educational values are denied in my practice

A reflexive approach to learning on the part of both learner and teacher is listed as one of the seven tenets of student-centred learning (Lea *et al*, 2003). Since I espouse a student-centred approach, the lacuna expressed by the students as mentioned above instantly became an issue of concern for me to which I wished to respond. This responsiveness is in line with the concept of critically responsive teaching, "*teaching which is guided by a strongly felt rationale but which in its methods and forms responds creatively to the needs and concerns raised by students*" (Brookfield, 1990, p. 23). The impetus for this study thus emerged organically from the students who, by clearly voicing their concerns and needs, required me to explore the methods and forms I would choose in order to respond effectively. This led me to begin an enquiry around the question: 'How do I improve how I facilitate students as they develop their competence in critical reflection and writing?'

2. I imagine a solution to that concern

The task of imagining a solution to the issue of facilitating students in their competency in critical reflection led to the assessment that there were two core aspects to the issue: that of encouraging a honing of the skills of critical thinking; and that of fostering development of other competencies associated with critical reflection (Hatton and Smith, 1995; Brookfield, 1995). I decided, therefore, to use a two-pronged approach, each of which used questions as the central stimulus: the first involved the integration of Socratic Questioning Prompts (Paul, 1990) into classroom activity; the second envisaged the drawing up of a draft template specifically designed to encourage students to develop the discipline of reflecting on their experience and writing about it in a critical manner.

3. I act in the direction of the imagined solution

The first action - the integration of Socratic Questioning Prompts into the classroom - was carried out by initially providing the students with a list of prompts such as:

- What is your main point?
- What are you assuming?
- What are you implying by that? (Paul, 1990).

An analysis of the questions by the group as a whole was followed by pair work, in which students took turns to pose and respond to questions from the list. This question/answer session took place on two occasions.

The second action - the drawing up of a draft template - involved the introduction of a template which contained a series of questions, such as:

- What assumptions can I identify?
- How does theory inform my view?
- Can I imagine the situation from another perspective?

The template was conceived as a guide for students to use when writing in their journal. Subsequently, they brought their comments back to the group, allowing me to rework the template in light of their feedback and my own reflections. The template was also used as the basis of a classroom activity on one occasion.

I myself engaged in a thorough re-evaluation of the existing models of reflection and committed myself to regular use of the template as it moved through various drafts until it developed into the Integrative Reflection Template (IRT). Also, for the duration of the project, I engaged in discussion and was regularly challenged by a critical friend.

4. I evaluate the outcome of the solution

In evaluating the outcome of the solution, I centred my attention on the response of the student group. Their views in relation to the Socratic Questioning Prompts were sought by verbal exchange, both individually and as a group. The students were particularly enthusiastic, making comments such as: '*I found myself thinking deeper*'; '*It was very effective*'; '*It helped me ask more probing questions*'. All students indicated that they had found the prompts helpful.

The comments on the template were sought in written form through questionnaires which were completed by ten students out of fourteen. Many offered invaluable critical comments as to how the template could be improved in its structure and form and particularly emphasised the need for an accompanying guide. There were significantly more comments on how helpful it was, for example, in providing a structure and facilitating an understanding of the link between theory and practice. One student definitively felt that s/he had developed the capacity to write at the critical level: '*It pushes you to think deeply, critically reflect. You cannot answer the question using a surface approach – you have to delve*'.

I also took notes of my observation of students as they engaged in the activities described, remarking how they developed confidence and competence. My examination of these various sources of information, explored through my own reflections and discussions with my critical friend, led me to conclude that the solution had impacted positively on the group. There were, nonetheless, limitations: other actions may have been chosen that might have had more impact; I had the privileged position of working with a small group of articulate, relatively confident and communicative post-graduate students; and there was no gathering of examples of reflective writing before and after the interventions, constraining me to rely heavily on the students' accounts of their experience. However, there was a 100% pass rate for the module.

5. I modify my practice, plans, and ideas in light of the evaluation

Modification of my practice in terms of my teaching of this module includes:

- Commitment to discussion with students on critical thinking and critical reflection at the beginning of the module;
- Early gathering of an example of students' reflective writing in order to

monitor development;

- Early introduction to Socratic Questioning Prompts;
- Presentation of the Integrative Reflection Template as a possible tool for critical reflection.

Modification of my plans includes:

- The development of the requested accompanying guide to the IRT;
- Seeking out a broader community of practitioners interested in reflective practice and/or action research.

Modification of my ideas in light of the evaluation includes:

- A clearer awareness of how many assumptions I can still hold, and of the vital need for critical reflection on my own part;
- A stronger realisation of the vital need for some form of triangulation in examining phenomena (provided for in this case by student feedback, my own reflections and observations, and the input of my critical friend);
- A deeper appreciation for the non-analytical aspects of reflection.

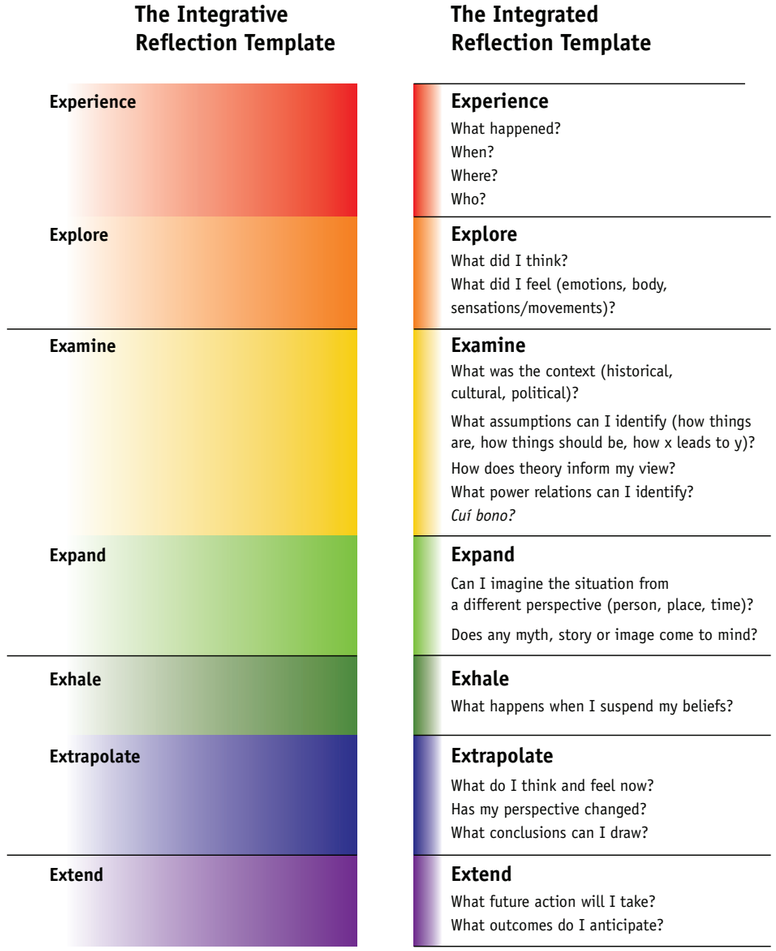
CONCLUSION

This study indicates that the choice to be a critically responsive teacher, and use action research as an approach to address the needs and concerns of students, in this case allowed for their apprehensions in relation to critical reflection to be addressed to their expressed satisfaction; it also allowed them to successfully complete the module. At a more conceptual level, this approach can be seen to forge the links between research, teaching and learning. By closely involving students in the research process, the links between the three activities become clearer, and exciting possibilities for enhanced learning - and even creative output, as exemplified in the Integrative Reflection Template - emerge.

ACKNOWLEDGEMENTS

I would like to extend my sincere thanks to: Dr Clare Gately, School of Business, WIT, for both her gentle and strong challenges in her role as critical friend; to the MA in Teaching and Learning students who participated in the study; to the student who suggested I should create a 'prompt' of the IRT; and to Lorenzo Tonti, School of Art and Design, WIT, for his delightful design of the resultant bookmark (Figure 1).

Figure 1: The Bookmark (front and back)



REFERENCES

Boud, D. (ed.) (1985). *Turning Experience into Learning*. Oxon: RoutledgeFalmer

Brookfield, S. (1990). *The Skillful Teacher*. San Francisco: Jossey Bass.

Brookfield, S. (1995). *Becoming a Critically Reflective Teacher*. San Francisco: Jossey Bass.

Cowan, J. (1998). *On Becoming an Innovative University Teacher*. Buckingham: OUP.

Dewey, J. (1933). *How we Think*. Boston: D.C. Heath.

Hatton, N., and Smith, D. (1995). *Reflection in Teacher Education: Towards Definition and Implementation*. The University of Sydney: School of Teaching and Curriculum Studies.

Lea, S.J., Stephenson, D., and Troy, J. (2003). "Higher Education Students" Attitudes to Student-Centred Learning: Beyond "Educational Bulimia"', *Studies in Higher Education*, vol. 28, no. 3, pp. 321-334.

McNiff, J. (2007). *Action Research; Principles and Practice*. London: RoutledgeFalmer.

Paul, R. (1990). *Critical Thinking*. Sonoma: Center for Critical Thinking and Moral Critique, Sonoma State University.

Schon, D. (1983). *The Reflective Practitioner: How professionals think in action*. London: Temple Smith.

Whitehead, J. (1989) "Creating a living education theory from questions of the kind, 'How do I improve my practice?'", *Cambridge Journal of Education*, vol. 19, no. 1, pp. 137-53.

EXPLORING AN UNDERGRADUATE PUBLIC HEALTH LEARNING ENVIRONMENT THROUGH THE TEACHING FOR UNDERSTANDING (TFU) FRAMEWORK

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Biographical Note

Fiona qualified in medicine at Saint George's Hospital Medical School, London, and completed postgraduate training in hospital medicine and general practice in the United Kingdom. In 1995 she obtained a Master's degree in Health Services Management from the London School of Hygiene and Tropical Medicine. She has worked in developing and transitional countries including Peru, Angola and Macedonia, in her clinical capacity as well as in health service development, health promotion and research. Fiona is currently a lecturer in the Department of Epidemiology and Public Health in University College Cork (UCC), and works in General Practice in Cork City. She is director of the new undergraduate degree in Public Health and Health Promotion in UCC, involved in the programme's development as well as teaching. Her current research interests include population health and undergraduate education and learning in Public Health.

KEYWORDS

TfU; public health; learning.

ABSTRACT

Background: The BSc Public Health and Health Promotion at University College Cork (UCC) aims to produce graduates who are passionate about their discipline. Teachers need to communicate this 'passion' to students, but it can be difficult to know whether this has been achieved. The TFU framework makes such an outcome explicit, through demonstrating student understanding and identifying students' active engagement in learning.

Aim: To examine the learning environment of a first year undergraduate module in public health
Method: The TFU framework provided four dimensions for analysing module EH1005: Population Health:

1. Generative Topic
2. Understanding Goals
3. Performances of Understanding
4. Ongoing Assessment.

Results: The identifiable Generative Topic of EH1005 is "the wider determinants of health". Five Understanding Goals clarify what students need to understand from the module: (1) factors determining health (2) health issues in the public domain (3) poverty as a health determinant (4) major population health issues and (5) the role of health interventions. Although Ongoing Assessment was mainly 'teacher led', it comprised different formats including informal class and group discussion, as well as formal oral and written assignments. Students could therefore Perform their Understanding across different contexts. The results of the Ongoing Assessments showed that most students reached the Understanding Goals for the module.

Conclusion: Applying the TFU framework to articulate the Generative Topic for EH1005, as well as identifying clear Understanding Goals, provides a means of making explicit what students need to understand in order to recognise what factors determine the health of populations. The different formats for Ongoing Assessment and contexts for Performing Understanding, show that EH1005

can accommodate a range of learning styles. The TFU analysis also provides information to improve delivery of the module by identifying less emphasis on 'self' assessment as a means of deepening student understanding.

INTRODUCTION

The aim of this paper is to examine the learning environment of a first year undergraduate module in population health on the BSc Public Health and Health Promotion (BSc PHHP) in University College Cork (UCC), using the Teaching for Understanding Framework (TfU) (Wiske, 1999) to analyse the extent of student engagement and understanding. Public Health is by nature a dynamic discipline, seeking to address new challenges to the public's health as they emerge over time. Practitioners of public health and health promotion require an increasingly broader array of knowledge and skills, cutting across disciplinary boundaries. In recent years an increasing number of institutions internationally have implemented undergraduate programmes in public health and health promotion (Bennett et al, 2010) in what is traditionally a postgraduate pursuit, but there is a paucity of literature comparing postgraduate and undergraduate learning in the field (Fleming et al, 2009). This deficiency also probably reflects a need for research into the learning requirements for undergraduate students in dedicated public health and health promotion programmes, as distinct from such content included in the training for the various health professions.

The BSc PHHP in UCC attempts to address the needs of future public health and health promotion specialists by offering a dedicated programme for third level entry students. The programme offers students an integrated learning experience in an interdisciplinary environment, to produce graduates who are ***passionate*** about public health and health promotion. Teachers need to communicate such 'passion' for their discipline to students, but it can be difficult to know whether this has been achieved. *The* challenge is often not in what factual material to include in the teaching, but in how to capture the imagination of the students so that they become curious to know and understand more. The TfU framework can go some way to making such an outcome explicit by identifying students' active engagement in and passion for learning, and ultimately demonstrating their understanding.

A 'learning environment' in the context of this paper refers to all elements influencing a student's learning. These might include the physical environment of the classroom, the academic content, the methodology of teaching, the quality of interaction with peers and/or teachers, as well as formal and informal feedback. The module EH1005: Population Health (EH1005) comprises a relevant learning environment for the current research for a number of reasons. Firstly, it is one of the underpinning modules in the BSc PHHP and is a compulsory course for first year students in the programme. Secondly, it comprises a significant proportion of the total learning environment in the First Year. Finally, it is the foundation for a 'stream' of learning within the programme which focuses on understanding health issues at a population level.

METHODOLOGY

The TfU framework provides a useful template for analysing the design and development of a learning environment by focusing attention on four distinct elements of the teaching and learning dynamic: the Generative Topic(s), Understanding Goals, Performances of Understanding and Ongoing Assessment. The TfU framework focuses on the active engagement of students, demonstrating their increasing understanding of the course material as they are asked not only to make explicit 'what' they know, but also to apply their knowledge in different contexts – in group work or oral presentations for example. Wiske (1999) proposed four questions which describe the nature of each element and facilitate analysis through the framework, as summarised in Table 1.

Table 1: Summary of Wiske's underlying question areas and the TfU framework

Question areas	TfU elements
What topic(s) are worth understanding?	Identify Generative Topic(s) to organise the curriculum around
What about these topics needs to be understood?	Articulate clear goals of what students need to understand – Understanding Goals
How can we foster understanding?	Engage students in 'performing' their understanding across differing contexts – Performances of Understanding
How can we tell what students understand?	Ongoing Assessment directed towards the *understanding goals* using a variety of measures and inputs

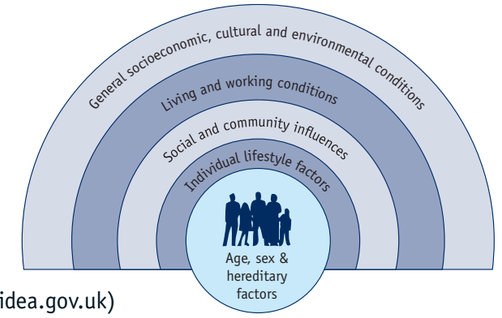
EH1005 was analysed through the TfU framework, using Wiske's four questions to guide analysis across each domain of the framework.

ANALYSIS

Generative Topic

The ***topic worth understanding*** that emerged at the heart of module EH1005 was: 'the wider determinants of health'. The course through line is the return to the question: what factors determine the health of populations? This is demonstrated by the repeated reference to the Dalghren and Whitehead (1991) model of determinants of health as a 'must know' concept (Figure 1).

Figure 1: Dalghren and Whitehead model of the Determinants of Health



(Image source: www.idea.gov.uk)

UNDERSTANDING GOALS

There are five identifiable Understanding Goals (UGs) in EH1005 that make explicit how the learner will progress towards a consolidated understanding of what determines health. The student should:

1. Discuss factors determining population health;
2. Explore the perception of health issues in the public domain;

3. Explain the role of poverty in determining health;
4. Examine major population health issues locally, nationally and globally;
5. Critically appraise the role of health interventions in determining health.

Throughout the module students build and extend their knowledge each week to make increasing connections across the complexity of the subject matter. They are thus facilitated to reach the above Understanding Goals and develop their understanding of a wider concept of health and its determinants.

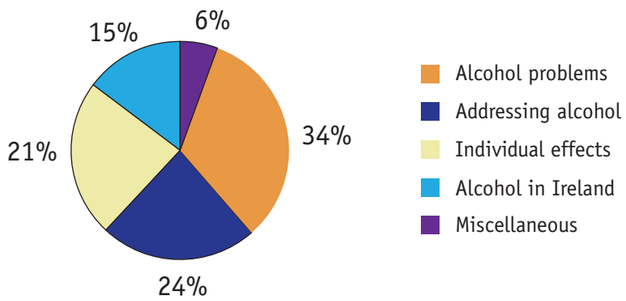
PERFORMANCES OF UNDERSTANDING

The identifiable opportunities for students to ***foster understanding*** during the module are both implicit and explicit. Implicit opportunities arise from the interactive teaching, in-class discussion and group work. There are two explicit opportunities for students to perform their understanding. Firstly, groups of students review and present a book of public health interest to their colleagues. In doing so they demonstrate their understanding of the underlying health issues in the context of that particular book's story. Secondly, the groups present on a specific population health issue, such as alcohol, to demonstrate their understanding of each Understanding Goal within a specific context.

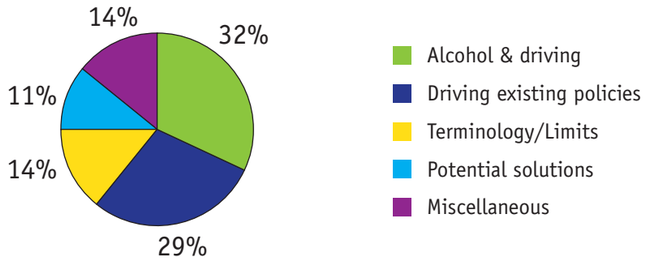
The presenting students explicitly demonstrate their understanding of the issues in question. To assess how much the audience learns from their colleagues' book presentations, the non-presenting students worked in groups after each presentation to discuss the public health implication(s) of the book, and feed back their collective thoughts in a plenary. These 'listening' students did grasp the main points of their colleagues' presentations, and were able to identify the major population health issue(s) and respective determinants of health in a coherent way. A Classroom Assessment Test (CAT), using the Minute Paper method (Angelo and Cross, 1993) examined student understanding of the Topic Presentation on Alcohol. Twenty-eight out of a possible thirty-one students took part. The listening students reported that they understood best the core concepts of the alcohol problem(s), and issues related to addressing alcohol. The main areas that still puzzled them were alcohol and driving, as well as existing policies and interventions to deal with alcohol problems (Figure 2).

Figure 2: Results of Classroom Assessment Test on Alcohol Topic Presentation

What did you understand well from the presentation today?



What aspect is still puzzling you?



ONGOING ASSESSMENT

In EH1005 there are four distinct strategies to ***tell what students understand***. These address different learning styles, at different times throughout the course. The table below summarises the strategies, indicating the type of feedback employed as well as the timing:

Table 2: EH1005 Assessment strategies, type of feedback and timing

Assessment	Type of feedback	Distribution/timing
Class/group discussion	Informal Verbal or written Peer and/or Teacher led self assessment	Throughout the course
Group Presentations	Formal Verbal and written Mainly teacher led, some informal peer input	End 1st Term & Mid 2nd Term
Written book report	Formal Written Teacher led	Beginning 2nd Term
Written examination	Formal Written Teacher led	End of Academic Year

CONCLUSION

The TfU framework provided a means of researching the learning environment of a foundation module for first year undergraduates embarking on a programme in public health and health promotion. Applying the TfU framework to articulate the Generative Topic, as well as identifying clear Understanding Goals, made explicit what students need to understand in order to recognise what factors determine the health of populations. Students performed their understanding of health issues in a variety of contexts, and their understanding could be demonstrated in group work and a CAT. The differing formats for ongoing assessment demonstrate that EH1005 can accommodate a range of

learning styles including verbal, written and group orientated entry points to learning.

The structured analysis of a learning environment as presented in this paper, can clarify the teaching and learning process. In doing so, it can encourage teachers to influence their students to become inquisitive learners. They can transmit a 'passion' for the discipline, and invite their students on a journey thus cultivating a cycle of research, and teaching and learning.

REFERENCES

Angelo, T.A. and Cross, K.P. (1993). *Classroom Assessment Techniques: A Handbook for College Teachers.* USA: Jossey-Bass Higher and Adult Education Series.

Bennett, C.M., Lilley, K., Yeatman, H., Parker, E., Geelhoed, E., Hanna, E.G., and Robinson, P. (2010). "Paving Pathways: shaping the Public Health workforce through tertiary education", *Australia and New Zealand Health Policy*, vol. 7, no. 2 [online]. Available from: http://www.anzhealthpolicy.com/content/7/1/2 [accessed 15 March 2010].

Dalghren, G. and Whitehead, M. (1993). *Levelling up (part 2): A discussion paper on European strategies for tackling social inequities in health* [online]. WHO Regional Office for Europe. Available from: http://www.euro.who.int/document/e89384.pdf [accessed 18 February 2010].

Fleming, M.L., Parker, E., Gould, T., and Service, M. (2009). "Educating the public health workforce: issues and challenges", *Australia and New Zealand Health Policy*, vol. 6, no. 8 [online]. Available from: http://www.anzhealthpolicy.com/content/6/1/8 [accessed 15 March 2010].

Wiske, M.S. (1999). "What is Teaching For Understanding?", in *Learners and Pedagogy,* eds J. Leach and B. Moon. London: P. Chapman Publication in association with the Open University. pp. 230-45.

CERTIFICATION AS A SOTL PROCESS: SOME STEPS ALONG THE WAY

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Biographical Note

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KEYWORDS

Scholarship of teaching and learning (SoTL); teaching for understanding (TfU); research, reflection, certification.

ABSTRACT

Certificated Courses in Teaching and Learning in Higher Education at University College Cork (UCC), Ireland, provide opportunities for faculty to develop a culture of Scholarship of Teaching and Learning (SoTL). The Teaching and Learning Centre runs a Certificate, Diploma and Master's Programme which is grounded in a SoTL philosophy. Central to finding SoTL pathways here is the development of a Teaching for Understanding pedagogy and the use of Course Portfolio models to document, peer-review and assess learning. To date, 200 faculty have successfully completed one or more of these courses. The paper examines the Teaching for Understanding (TfU) framework as a useful pedagogical and disciplinary lens, designed to make teaching and student learning visible. It provides evidence from the Course Portfolio work of UCC faculty, across a range of disciplines, to support the claim that TfU facilitates a SoTL process.

INTRODUCTION:

Much has been written on the meaning and complexities of SoTL since Boyer (1990) first introduced the term. I have also tried to clarify my own understanding of the SoTL concept (McCarthy, 2008a), particularly in the North American context. Here, I adopt the SoTL definition of McKinney and Jarvis (2009), who summarise it as "*the systematic reflection or study of teaching and learning made public*". They suggest that the most important function of SoTL is to "*improve teaching and enhance student learning*". In highlighting the multiple levels and forms of SoTL work, they indicate that one of these relates to transforming teaching and learning at the classroom level, where a SoTL approach "*can be used to help with course design or redesign as well as to develop from the process of course design or redesign*". For my purposes, entering at the course design level is a useful starting point for staff who conduct research on their teaching and student learning for the first time. Most have responsibility for the teaching of at least part of a module; as such, in reflecting on their teaching, they can critique and redesign it at the planning stage and develop their teaching to focus on student learning from the start. Entering at the level of course design resonates with the TfU model (Wiske, 1998; Blythe, 1998, Hetland, 2002), which reviews teaching and learning at the creative level of its

planning, and with the Course Portfolio (Bernstein *et al*, 2006; Hutchings, 1998; Shulman, 1999) process, which also initiates reflection at the design stage of the course selected for reflection. These models also align with and support the professional development foci of SoTL with its orientation to ongoing inquiry and documentation.

INTRODUCING TEACHING FOR UNDERSTANDING (TFU)

The TfU model emanates from the work of the *Project Zero Classroom* at the Harvard Graduate School of Education, directed by Gardner (1999), Perkins (1998) and others during a collaborative project between researchers and teachers in the 1990s.[1] TfU focuses on a performance view of understanding, whereby students come to understanding by doing, by active learning, rather than through the traditional, representational view of the transmission model. TfU is particularly useful in the context of university teaching and learning, since it provides a disciplinary as well as a pedagogic framework, which lecturers can use to critique and develop their teaching and enhance student learning. The Disciplinary Framework, which developed in tandem with the pedagogic one, focuses on four dimensions of understanding, which researchers and teachers at Harvard found were common across all disciplines, namely those of Knowledge, Methods, Purposes and Forms. These dimensions keep university teachers focused on questions that they would ask as experts in the field:

- What questions do experts ask? (***Knowledge***);
- How do experts find out? (***Methods***);
- Why do experts do what they do and how do they use what they know? (***Purposes***);
- How do experts communicate? What are the tools of the discipline? (***Forms***).

I have found that inviting colleagues on the certificated courses to identify first with these disciplinary ways of thinking and researching to be the most productive way of encouraging them to think about their teaching and student learning. It is a constructivist way of engaging them, of starting where they are and with their strengths. The challenge then is to get them to translate the above into what Shulman (1987) calls "*pedagogical content knowledge*" and to move from what Boyer (1990) named "*the scholarship of discovery", (research in the traditional sense) to "the scholarship of teaching and learning*", where lecturers make explicit and public their teaching on all its levels from conception of ideas to transformation of student learning.

The TfU research project also identified four pedagogic elements that define good teaching and promote student learning: namely ***Generative Topics, Understanding Goals, Performances of Understanding and Ongoing Assessment***. The key questions that lecturers might ask themselves in this context are:

- What is to be taught? (Generative Topics: rich themes, topics or burning questions, the big ideas of the field that provide enough depth and variety of perspective to help students develop significant understandings).
- What do I want my students to understand about this generative topic? (Understanding Goals: the explicit statements or questions, the target attainments or outcomes envisaged, that are made public and visible to students and actively used in instruction).
- What might students do to develop and demonstrate their understanding? (Performances of Understanding: activities that demonstrate and advance students' understanding, by requiring them to use what they know in new ways, in the light of the goals defined).
- How will I know what my students understand? (Ongoing Assessment: the process of continuous, cumulative feedback which students receive about their performances, so that they know how they are progressing to the goals).

Ultimately, the dual focus of the TfU process, providing disciplinary and pedagogical lenses, opens a gateway to SoTL, since it scaffolds the teacher's reflection about the discipline and the teaching of it; these are two completely distinct functions, the latter of which is seldom given parity in the research stakes. What is key in embedding SoTL as part of third- level culture is the development of a community of practice among staff. My contention is that TfU facilitates this process, since it provides teachers in further and higher education with a grammar to revisit their disciplines and their teaching of them so that they can share their thinking and begin to speak the language of student learning.

TFU AS A SoTL PROCESS – WHAT'S THE EVIDENCE?

As part of the final reflective entry of their course portfolios, participants are asked to respond to some key questions including the following:

1. What have you learned as a researcher of teaching and learning from documenting this course?
2. How has the TfU framework helped you to critique the course?
3. What picture of student understanding emerges from your course?
4. What have you learned about SoTL and how does that impact on your teaching of this course?

I have conducted a thematic analysis of the responses to these questions over the past three years. The current proceedings permit only a brief overview of emerging themes to elucidate TfU and SoTL perspectives. For this reason, I will let the following excerpts speak for themselves, selecting some to represent each of the four colleges at UCC, and then draw out some key points in a summative commentary on each:

> "*In the TfU framework... the conscious goal of the teacher is to stimulate deep learning and to consider how best to present surface material so as to facilitate that deep learning. This requires us to think about the teaching process in a different way – as a whole, rather than the sum of its parts; and to think not only about the subject as a whole, but also about the subject and the teaching of it as one whole. Rather than 'covering' all the topics in the subject in preparation for the exam, the focus is on integrating the teaching/learning process with 'uncovering' the subject so that the particular is seen as a component of the whole. Since teaching for deep understanding entails the teachers themselves examining their subjects for deep understanding, the teaching process must be one of continual inquiry and revision by the teacher, as well as by students*." (Lecturer A, College of Business and Law).

Several themes emerge above: TfU is seen as a reflective lens, allowing the lecturer to stand back and relate the part to the whole; it is cast as an ongoing process of inquiry and revision that mirrors

1 For a summary see McCarthy 2008b.

the learning of the students and puts the teacher in the role of learner. Another theme points to the dynamic, relational nature of the elements of TfU, which highlight the coherent nature of teaching, of the part in relation to the whole. A third theme portrays TfU as a way of facilitating the movement from surface to deep learning, from 'coverage' to 'integration'. The following quotation reiterates this theme and identifies a fourth: that of teaching students how to learn:

> "*We need to provide our students with a deep foundation in the core topics and methodologies of their engineering field (the "generative topics") so that they can continue to learn and adapt throughout a career span of 40 years or more. On the other hand, we also have to provide enough specific or current knowledge so that our graduates can "hit the ground running" and be of immediate value to their prospective employers. In a world where scientific and engineering knowledge doubles every ten years (National Academy of Engineering, 2005), the TfU framework offers a new methodology for developing understanding-focused courses, in this rapidly changing environment*." (Lecturer B: College of Science and Engineering).

Another theme relates to the disciplinary as well as the pedagogic nature of TfU, and the power of the former to analyse teaching, providing a language with which to examine practice:

> "*I feel that the Dimensions of Understanding were especially helpful in that they allowed me to systematically analyse what I was teaching and why I was teaching it. It also helped me to begin to develop a vocabulary to express what I am doing and this has allowed me to engage in meaningful conversations with colleagues. Upon studying and implementing the Dimensions of Understanding in my course design, I realised I had been paying far too much attention to the Content (Knowledge) Dimension, and had neglected to consider the role of the other dimensions*." (Lecturer C: College of Arts, Celtic Studies and Social Sciences).

A sixth theme relates to the TfU process as a method of inquiry, which gets at the 'gaps' in our teaching:

> "*The application of a framework in analysing the course has brought to light 'gaps' in the delivery of the course. … one of the most striking omissions is that of 'self' assessment. … I have not explicitly focused enough on the students' own abilities to monitor and judge their performance. Clearly some self assessment takes place in group and class discussion, and indeed the students are asked to 'self assess' their own perception at the very outset of the course. However, to explicitly engage students in an ongoing process of reflecting on and monitoring their progress would surely deepen their understanding of the issues and move them closer to the Understanding Goals (UGs) for the course*." (Lecturer D: College of Medicine and Health).

These themes are reiterated throughout the portfolios. The one that makes the direct link to SoTL for most participants is that of TfU as a reflective lens which invites a questioning and accountability about teaching and student learning. This idea is again well captured in the following extract:

> "*The crucial starting point is a reflection on the origins of our own understandings in order to foster a greater awareness of balanced routes to academic understanding for our students. …. the TfU process attempts to instil within educators a commitment to reflective practice; to reveal the need to critically look back before trying to move forward*." (Lecturer E: College of Science and Engineering).

The SoTL message is also identified in the theme of the teacher as learner:

> "*When I began the certificate in teaching and learning, I will be honest and state that I had not thought a great deal about the link between teaching and student learning. I guess the traditional approach often believed is that lecturers teach and that it is up to the students whether or not they want to learn. Little thought is put into the scholarship of teaching and learning, that is approaching teaching and learning from the perspective with which one would approach research or publishing*." (Lecturer F: College of Arts, Celtic Studies and Social Sciences).

This message is reiterated in the following quotation where SoTL is seen as a way of transforming teaching and as a method of ongoing investigation into student learning (with TfU as one way of scaffolding that investigation):

> "*One aspect that I started to see was my teaching from a student's perspective …Being a student (on this course) learning about teaching methods, I had different kinds of experiences… During my lectures, I now involve my students more, before I tell them something, I ask them to think about it, I also give them more formal and informal feedback … by becoming a scholar of teaching … I learned to critique my course, which will certainly help me to improve my teaching in the future*." (Lecturer G: College of Science and Engineering).

Finally, a key theme is the recognition of a SoTL approach as transformational, as turning teaching into learning:

> "*SoTL provides the connection between the academic and the student. It demands the inclusion of research knowledge into teaching, as well as research into practice of that same teaching. It invites teachers to influence their students to become inquisitive and embark on a voyage of discovery, fostering a cycle of research, teaching and learning*." (Lecturer D: College of Medicine and Health).

CONCLUSION

The final speaker above encapsulates the heart of the SoTL message: through documenting our teaching we come upon student learning and become focused on facilitating their journey. My claim at the November 2009 conference was that TfU enables a SoTL process for a number of reasons: In Wiske's words, "*it serves not only to orchestrate teaching subject matter to students in classrooms but to provide a structure for guiding professional development*" (1998, p. 85). It puts the focus squarely on student learning in its endorsement of understanding as creative performance – the latter has to be owned by the learner, based on his/her experience as part of the intellectual work in hand. TfU makes connections with the everyday world of the student, endorsing the scholarship of integration.

It also provides a grammar and language of practice that allows a SoTL community to grow. Finally, TfU is a method of inquiry, facilitating research into teaching and learning; again, Martha Stone Wiske and the research team who worked on this project over a six year period capture this aspect as follows:

> *"The TfU framework that emerged ... is not a set of predetermined scenarios or a recipe for successful practice. It cannot be transmitted and implemented in a direct, linear way. Just as the educators who developed this framework had to create intellectually stimulating and personally engaging dialogue and relationships to foster their own understanding of these ideas, so will others who wish to understand TfU. They will have to conduct open-ended enquiry to construct their own understanding of this framework in relation to their personal practice and context"* (1998, p. 84).

The mission of the certificated programme in Teaching and Learning in Higher Education at UCC, therefore, is to make this journey possible.

REFERENCES

Blythe, T. (1998). *The Teaching for Understanding Guide*. San Francisco: Jossey–Bass.

Boyer, E. (1990). *Scholarship Reconsidered: Priorities of the Professoriate*. The Carnegie Foundation for the Advancement of Teaching, San Francisco: Jossey-Bass.

Bernstein, D., Burnett, A., Goodburn, A., and Savory, P. (2006). *Making Teaching and Learning Visible: Course Portfolios and the Peer Review of Teaching*. Bolton, MA: Anker Publishing.

Gardner, H. (1999). *The Disciplined Mind: What all Students Should Understand*. New York: Basic Books.

Hetland, L. (2002). *Introduction to TfU Video Resources*, Harvard: Project Zero Classroom.

Hutchings, P. (ed) (1998). *The Course Portfolio: How Faculty Can Examine Their Teaching to Advance Practice and Improve Student Learning*. Washington, DC: American Association for Higher Education (AAHE).

McCarthy, M. (2008a). "The scholarship of teaching and learning in higher education: an overview", in *The Scholarship of Teaching and Learning in Higher Education: An Overview,* ed R. Murray. Maidenhead: Open University Press. pp. 6-15.

---. (2008b). "Teaching for Understanding for lecturers: Towards a scholarship of teaching and learning", in *Emerging Issues 11: The Changing Roles and Identities of Teachers and Learners in Higher Education*, eds B. Higgs and M. McCarthy. Cork: NAIRTL/EDIN. pp. 101-115.

McKinney, K., and Jarvis, P. (2009). "Beyond lines on the CV: Faculty applications of their SoTL research", *IJSoTL*, vol.3, no.1 [online]. Available from: http://academics.georgiasouthern.edu/ijsotl/v3n1/articles/PDFs/Article_McKinneyJarvis.pdf [accessed 22 July 2010].

Perkins, D. (1998). "What is understanding?", in *Teaching for Understanding: Linking Research with Practice*, ed M.S. Wiske. San Francisco: Jossey-Bass. pp. 39-58.

Shulman, L. (1987). "Knowledge and teaching: Foundations of the new reform", *Harvard Educational Review*, vol. 36, no. 1, pp. 11-22.

Shulman, L. (1999). "The scholarship of teaching and learning: new elaborations, new developments", *Change*, vol. 31, no. 5, pp. 10-15.

Wiske, M.S. (1998). *Teaching for Understanding: Linking Research with Practice*, San Francisco: Jossey-Bass.

GOOD BEGINNINGS ARE NOT THE MEASURE OF SUCCESS: USING AN OUTCOMES LOGIC MODEL TO TRACK THE PROGRESS OF THE IRISH INTEGRATIVE LEARNING PROJECT

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Biographical Note

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KEYWORDS

Outcomes logic model; integrative learning; Irish; interdisciplinary; Kellogg Foundation

ABSTRACT

Background: The resources, needs and implementation activities of educational projects are often straightforward to document, especially if objectives are clear. However, developing appropriate metrics and indicators of outcomes and performance is not only challenging but is often overlooked in the excitement of project design and implementation. The authors will show how this problem can been addressed using the Irish Integrative Learning Project (IILP) as an example. The goals of this NAIRTL-funded project are to help students become integrative thinkers and learners. Educational capacity is being addressed through fourteen multi-institutional and multi-disciplinary teaching initiatives to act as stimuli for furthering Integrative Learning in Ireland.

Aims: The purpose of this paper is to demonstrate how Outcomes Logic Model (OLM) can help develop clarity of thinking and targets in educational projects.

Method: OLM is a systematic visual way to present a planned programme with its underlying assumptions and theoretical framework. OLM allows us to describe, share, discuss and improve programme theory, in words and pictures. It can be used at any stage, during design, planning, implementation, evaluation and reporting. It can strengthen the case for programme investment (grants). It can also reflect group processes and change over time.

Results: We will present our completed OLM for the IILP using the OLM framework. While outputs are relatively easy to develop, measurable short and long-term outcomes pose significant challenges.

INTRODUCTION

> *"Government likes to begin things — to declare grand new programs and causes. But good beginnings are not the measure of success. What matters in the end is completion. Performance. Results."* (The Kellogg Foundation, 2001).

In this era of 'scientific education' research, funding bodies and employers are demanding evermore transparency and accountability, in addition to evidence of effectiveness, efficiency and good educational practice. For these reasons, educators need a structured, systematic approach to developing, implementing and evaluating educational research projects.

The Irish Integrative Learning Project (IILP) was developed as a NAIRTL-funded, multi-institutional, multi-disciplinary research project to promote small-scale research that sought to foster students' integrative learning in higher education institutions in Ireland. The project planned to develop and sustain a learning community of teachers who investigate and document examples of students' integrative learning, and who produce clear and practical integrative learning resources for all teachers. The project initially involved eighteen academics (sixteen Irish members and two international Associate Members), three collaborating institutions (University College Cork, Waterford Institute of Technology and the Law Society of Ireland) and eleven disciplines (Art History, Arts and Drama, Applied Maths, Economics, Geology, Law, Occupational Therapy, Paediatrics, General Practice, Nursing and Zoology (Appendix 1, Table 2).

The aim of this paper is to introduce the Outcomes Logic Model concept and describe how it was used to envisage, design, develop, implement and evaluate the Irish Integrative Learning Project. The objectives were to provide guidance and support for the project participants as well as coordinate dissemination of their research findings.

THE OUTCOMES LOGIC MODEL (OLM)

The Outcomes Logic Model was developed by the W.K. Kellogg Foundation (2001) to serve as a platform for all its research applications. It is a framework for organising thoughts and for guiding the researcher through the structure and purpose of the project and documenting to what extent important outcomes are achieved. The OLM also helps stakeholders to know what the project is intended to deliver and what impact it is intended to create (Alter and Murty, 1997; Conrad and Randolph, 1999; Hernandez, 2000; Julian, 1997; McLaughlin and Jordan, 1999; Stinchcomb, 2001; Unrau, 2001). The importance of having *a priori* measurable research outcomes in any educational project (i.e. 'designing the project backward') is emphasised in this approach. The OLM that was used from the outset of the Irish Integrative Learning Project is presented in Appendix 1 (Table 1). The template consists of five columns, derived from three broad themes: **Antecedents (**resources, context and stakeholders of the project); **Process** (activities needed to implement the project) and **Evaluation** (outputs, outcomes and impacts of the project).

This OLM approach encouraged us to clarify the objectives of the project, and articulate what exactly we were trying to achieve and how we would measure the impact. We used collaborative workshops to build a shared meaning of integrative learning as a theoretical concept, to list the key attributes of an integrative learner, and to explore the implications for curriculum design. In addition, we re-examined the objectives as set out in the initial project proposal, discussed and collated the disciplinary research initiatives, and re-identified meaningful and measureable outcomes with realistic timelines.

We noted that promoting integrative learning involves an approach to curriculum design and pedagogy that is intended to help learners make connections between their sometimes fragmentary learning experiences. Integrative learning *"comes in many varieties: connecting skills and knowledge from multiple sources and experiences; applying theory to practice in various settings; utilizing diverse and even contradictory points of view; and, understanding issues and positions contextually"* (Huber and Hutchings, 2004, p. 13). As our workshop series progressed, we realised we were beginning to become more integrative in our own thinking, and more intentional in our curriculum planning for integrative learning. These discussions helped develop a language for integrative learning, and opened up more questions for the group such as: How will I assess integrative learning in my discipline?

We agreed that with modularisation and increased mobility students can have fragmentary learning experiences in their third level education. As a result, they may fail to make meaningful connections within and between subjects and disciplines. If knowledge becomes 'troublesome' students may have difficulty grasping the key disciplinary concepts - threshold concepts - that are essential for their development (Meyer and Land, 2003). When learning becomes integrative, threshold concepts can be negotiated by students, allowing them to advance in the construction and application of their knowledge. The whole Irish Integrative Learning Project was underpinned by a concern expressed by Klein (2005, p. 10): *"The answers students seek and the problems they will need to solve as workers, parents and citizens are 'not in the book'.* We wished to build students' capacities to connect-up and integrate their learning by providing opportunities that encouraged all students to carry their disciplinary skills from one learning landscape to another. The recurring question was: How can we help students to think and link - make connections and become integrative learners?

Having identified some of the challenges of the integrative learning concept, the OLM encouraged us to identify our target audience, potential stakeholders and our assets (Appendix 1, Table 1). We began to realise that our audience was in many ways ourselves, the educators. We were largely novice but self-motivated learners of the concept of integrative learning. Potential stakeholders included our institutions, disciplines, departments and colleagues, but our students were deemed our most important stakeholders. We explored questions they might ask and assumptions we might be making about them.

Our most important assets were the broad and diverse experiences of the project participants, and the prospect of multi-institutional and interdisciplinary interactions. It was decided that the work of these participants should include consideration of curriculum-design, pedagogy, assessment, public policy and community involvement. Recognizing the limited protected time available to participants for educational research, we expected the disciplinary initiatives would address questions that could be explored as part of the everyday work, and within the classrooms of the various participants. Thus,

our projects were subject-centred and authentic as advocated by Kreber (2007).

Thinking strategically and systematically, through the OLM approach, we identified a number of influential factors that could determine the success of our project. We noted the resurgent emphasis on the scholarship of teaching and learning in our institutions. This was an influential driver for the project. A competitive NAIRTL grant award (€20,000) was essential in driving the project. At participant level there was a desire to improve the students' experience by helping them overcome the potential fragmentation as a consequence of modularisation and mobility.

In implementing the Irish Integrative Learning Project, we referred to good practices used by other groups (Carnegie Academy for the Scholarship of Teaching and Learning, and the Centres for Integrative Learning in the University of Nottingham and Active Learning in the University of Gloucester in the UK). The project leaders' main functions during the twelve month implementation period, were to maintain the management plan, revise time-lines, and sustain connections with and between the participants through structured meetings, e-mail, web-postings and dialogue on the NAIRTL/IILP website. As an essential driver, the concept of Critical Friends was introduced at an early stage. A critical friend is a trusted person who asks provocative questions, allows research data to be examined through another lens, offers critique of a person's work and is an advocate for the success of that work. (Costa and Kallick, 1993). Participants were matched as potential critical friends, according to practicality, compatibility and availability. Reports and reflections on the contacts between critical friends were posted to a project workspace on the NAIRTL website. Prof. Alan Booth. an international associate, was invited to critique and support the individual project participants through one-to-one meetings.

It was essential, during each project workshop, to familiarise ourselves with the distinctions between outputs, outcomes and impacts as conceived by the OLM. An Output is the number of 'what was created and what was delivered' by the activities of the project. We had no problems in documenting outputs (Apendix 1, Table 1). Relevant outputs include NAIRTL reports and documentation of the disciplinary research initiatives in the form of book chapters, journal articles, and a planned symposium to disseminate the findings and expand the integrative learning network. Newly designed course assessments and rubrics, developed by the project participants are outputs and are being made publicly available.

An Outcome refers to a behavioural change in people (knowledge, attitudes or skills) of an organisation, in this case engendered by the Irish Integrative Learning Project. Staff development, and the impact that has on student learning, were the most important short-term outcomes of this project. The participants have connected with other academics institutionally, nationally and internationally. The research projects, the new knowledge and understandings generated, and the motivation to complete and continue, showed that participants were transformed in small but significant ways by their involvement in the Irish Integrative Learning Project (Appendix 1, Table 3). In their writings, researchers showed a deepening understanding of the nature of integrative learning, and how it can be promoted. They developed a new language with which they can debate, consolidate and disseminate their teaching practice. They have become more intentional in their teaching, and are documenting the elements and activities that nurture students' learning. Pedagogies and teaching strategies known to provide rich opportunities for integrative learning, including problem-based learning, reflective-portfolios and critical friends, are being used (Appendix 1, Table 1). They pursued scholarly approaches to collecting and analysing evidence for 'opportunities to connect' in their research projects. They have shared these insights and ideas as well as strategies to clarify their pedagogical goals and how connections can be strengthened at multiple levels. They have observed important changes in student behaviour as a result of their integrative learning activities (Appendix 1, Table 3).

The most important and the most difficult outcomes to measure for any project are its impacts or seven to ten year outcomes. Our most important outcome was the bringing together of a diverse, multi-institutional, multi-disciplinary group of participants: in other words the development of a learning community of integrative learning teachers and educational researchers. We expect that there will be increasing inter- and intra-faculty discussions that will advance institutional understanding and the value of this integrative learning community. We believe that the understandings gained by teaching staff in this project will continue to enhance student autonomy, allowing them to continue to make valuable connections throughout their lives.

In its essence, the OLM is a tool to promote better thinking and to plan with the end in mind. It has kept the Irish Integrative Learning Project focused and on track. It has reminded the participants to 'Clarify Your Outcomes First', and to strive to maintain alignments between the project's aims, process and outcomes. Finally, as recommended by Huber and Hutchings (2004), the OLM enabled us to catalyse and encourage teachers into the 'big tent' of the Scholarship of Teaching and Learning, by valuing small efforts based on reflection of one's own teaching and sharing what is learned.

REFERENCES

Alter, C. and Murty, S. (1997). "Logic modeling: A tool for teaching practice evaluation", *Journal of Social Work Education*, vol. 33, no. 1, pp. 103-117.

Conrad, K.J. and Randolph, F.L. (1999). "Creating and using logic models: Four perspectives", *Alcoholism Treatment Quarterly*, vol. 17, nos 1-2, pp. 17-32.

Costa, A. and Kallick, B. (1993). "Through the Lens of a Critical Friend", *Educational Leadership*, vol. 51, no. 2, pp. 49-51.

Hernandez, M. (2000). "Using logic models and program theory to build outcome accountability", *Education and Treatment of Children*, vol. 23, no. 1, pp. 24-41.

Huber, M.T. and Hutchings, P. (2004). "Integrative learning: mapping the terrain". Standford, CA, Association of American Colleges and Universities the Carnegie Foundation for the Advancement of Teaching [online]. Available from: http://www.carnegiefoundation.org/publications/integrative-learning-mapping-terrain [accessed 15 June 2009].

Julian, D.A. (1997). "The utilization of the logic model as a system level planning and evaluation device", *Evaluation and Program Planning*, vol. 20, no. 3, pp. 251-257.

Kreber, C. (2007). "What's it really all about? The scholarship of teaching and learning as an authentic practice", *Int J SoLT*, vol. 1, no. 1, pp. 1-4. Available from: http://www.georgiasouthern.edu/ijsotl [accessed 15 June 2009]

McLaughlin, J.A. and Jordan, G.B. (1999). "Logic models: A tool for telling your program's performance story", *Evaluation and Program Planning*, vol. 22, no. 1, pp. 65-72.

Stinchcomb, J.B. (2001). "Using logic modeling to focus evaluation efforts: Translating operational theories into practical measures", *Journal of Offender Rehabilitation*, vol. 33, no. 2, pp. 47-65.

Unrau, Y.A. (2001). "Using client exit interviews to illuminate outcomes in program logic models: A case example", *Evaluation and Program Planning*, vol. 24, no. 4, pp. 353-361.

W.K. Kellogg Foundation (2001). W. K. Kellogg Foundation Logic Model Development Guide. Available

from: http://www.wkkf.org/ [accessed 17 February 2010].

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APPENDIX 1

Table 1: Outcomes Logic Model for the Irish Integrative Learning Project

1. Resources	2. Activities	3. Outputs	4. Outcomes Short-Medium Term	5. Impact Long-Term Outcomes
Definitions of integrative learning Shared Meaning of integrative learning Context of IILP Content of IILP Why integrative learning now? The specific aims and objectives? The Stakeholders? Assumptions about Participants & Students? NAIRTL Grant	Preparatory work 5 one day workshops Invited speakers Discussion in workspace on Web-page E-Learning Critical Friends Planning symposium Writing chapters for book Writing reports Project evaluation	Number of Participants (18) One-day workshops (5) Disciplinary initiatives (14) Students affected 1000 (estimate) National/ international presentations (6) NAILTL reports (2) Book Chapters (12) providing a resource for saff Published papers (3) Hours of teaching New Learning & Assessment Materials Founding of Integrative Learning Community	14 research initiatives showing evidence of: Changes in pedagogical style & content New knowledge & understandings created (teachers and students) • Student centered teaching • Student engagement • Integrative learning capacity building	National & International Multi-disciplinary IL Learning Community Discipline-based programmes with IL as an explicit goal Students carrying and using integrative approaches beyond their formal training

Table 2: List of Participants, Disciplines and Integrative Learning Projects

Participant	Project Title
Daniel Blackshields Economics, UCC	Student Reflective Journals: Scaffolding an Autobiographical Approach to Economics Education
Maura Butler Law Society of Ireland	The Confluence of Professional Legal Training, ICT and Language Learning Towards the Construction of Integrative Teaching and Learning
John Considine Economics, UCC	Integrative Learning Through Student Behaviour on Assessment
James Cronin History of Art, UCC	Investigating patterns of new literacy: The assumptions we make about university entrants into a discipline.
Bettie Higgs Geology, UCC	Using Threshold Concepts to Build Capacity for Integrative Learning in First Year Science (UCC)
Martina Kelly Medical School UCC	Case records as a means of integrated assessment in Medical Students
Tom Kelly & Michael O'Callaghan Zoology, Ecology, and Plant Science, and Applied Math, UCC	The application of applied Mathematics to Biology: an Integrative Learning Project
Shane Kilcommins Law UCC	The Use of Learning Journals in Legal Education
Marian McCarthy Education, UCC	The Arts in Education as an Integrative Learning Approach
Pat Meere Geology UCC	Integrative Learning in Geology
F. Catherine Pettigrew Speech & Language, UCC	Facilitating learning by integrating knowledge and skills from different sources: Speech and Language Therapy students' perceptions
Walter O'Leary & Sinead Cenneelly Law, WIT	Problem Based Learning on a new degree programme
Tony Ryan Medical School, UCC	Drawing on Medical Students drawings to illuminate concepts of Humanism and Professionalism
Nuala Walsh School of Nursing, UCC	Integrative Learning in Nursing Studies

Table 3: Impact of integrative learning experiences on group participants, captured during the fourth Integrative Learning Project workshop.

Teachers no longer afraid of loss of control	You have no idea of where the students are going to go. You realise the importance of letting go of control. I no longer am afraid when I don't know everything. It excites me when students know something I don't know.
Guidance of students	You realise the importance of getting students into the mindset – scaffolded, prompted, guided by us. I have become more facilitative- more aware of my function as a role model.
Self-development as an Integrative Teacher	Now I am more strategic in my preparation. I ask "What do I want them to know, and why?" Achieving higher order thinking is rewarding to the teacher as well as student. I have become more metacognitive in terms of my teaching. As a teacher, I'm not done with learning yet! If we want our students to change, we, as educators, must also change. We can help students to make connections & integration through an intentional, democratic approach to teaching. We need to recognize the importance of context. We need to change our assessment methodologies. We must try to identify discipline specific Threshold Concepts.
Teacher observations on students, following integrative learning experiences	Student attendance has increased; their confidence and interest has increased. Students who were not turning up – are now turning up. I was observing the students more, and how they reacted. We tried it [integrating Maths and Zoology]. We saw an excitement, a buzz. There is a lot of overlap between what we got out of it and what the students got out of it. I would never have done that before [I now explain what I want them to do with their reflective journals]. Student said "It was my first time ever that I had used economics" When you have used it, it is yours forever. Students can be confused by integrative learning if there is a misalignment between theory and practice, if there is a disconnect.

Part 5:
Poster Abstracts
(Posters Available on Attached CD ROM)

PAISAGE – PORTAL AUDIOVISUAL INTERCULTURAL SOBRE EL APRENDIZAJE DE GALICIO Y ESPAÑOL; AIPLIS – AUDIOVISUAL INTERCULTURAL PORTAL FOR LEARNING IRISH AND SPANISH; TCIFGS – TAIRSEACH CLOSAMHAIRC IDIRCHULTÚRTHA UM FHOGHLAIM NA GAEILGE AGUS NA SPÁINNISE

Pilar Alderete-Diéz and Dorothy Ní Uigín, National University of Ireland Galway

This poster illustrates an ongoing collaborative project between Acadamh na hOllscolaíochta Gaeilge and the Spanish Department at National University of Ireland Galway. The project is an investigation of the potential of new media and ubiquitous web technologies to enhance the student learning experience in languages by building learning communities, shared resources and enhanced multilingual perspectives.

Specifically, the project aims to link linguistic and cultural learning in Spanish and Irish. The four basic activities are:

1. The production of authentic and situational videos, voiced-over in both languages.
2. A series of recorded interviews with Irish speakers living in Spain and Spanish speakers living in Ireland.
3. Self-directed learning materials to reinforce key grammatical concepts, focusing on linguistic similarities and leading to contrastive analysis of cognitive competence and performance.
4. A forum for discussion, communication that will support students' development of language portfolios by fostering reflection on the learning process.

In the present academic year we are focusing on a preliminary investigation of the optimal methodologies for developing such reflective, multilingual educational scenarios and the identification of the 'best fit' and most sustainable and scalable technologies.

THE TEACHING FOR UNDERSTANDING (TfU) FRAMEWORK AND THE SHERLOCK HOLMES INVESTIGATIVE MODEL (SHIM) FOR TEACHING UNDERGRADUATE ARTS ECONOMICS STUDENTS: A PEDAGOGICAL CASE

Daniel Blackshields, University College Cork

This research reports on the pedagogical use of the performance component of the Teaching for Understanding Framework (TfU) (Wiske, 1998; Blythe *et al*, 1998) through an economics classroom adaptation of the investigative method of the fictional detective Sherlock Holmes (SHIM). This pedagogical experiment is designed to encourage the embracement of an expert problem-solving mindset and investigative method by undergraduate economics students in a Bachelor of Arts programme when exploring ill-defined economic problems in academic and non-academic contexts. This pedagogical experiment facilitates putting into practice a cognitive apprenticeship programme of instruction by means of a series of inter-related student performances. The sequential development of these performances enables the teacher to 1) expose students to performing as investigators of economic phenomena – introductory performance; 2) develop a meta-level model of problem-solving through an in-depth interactive exploration of the investigative method of Sherlock Holmes derived from Conan Doyle's stories and the Granada TV adaptation of these stories (1984-94) – guided inquiry performance; 3) encourage students to engage in reflection (Moon, 2007, 2001, 1999a) using the meta-level model to review their own performances as investigators of economic phenomena – guided inquiry performance; and 4) require students to demonstrate their understanding of performing as an expert problem-solver in an observable way – culminating performances. It is proposed that this adaptation of the TfU Framework encourages the development of participants' abilities as problem-solvers, facilitates a gradual lessening of teacher guidance for students and encourages the development of an intentional learning mindset and strategy on the part of the learner. This work is conducted in part fulfilment of the author's Masters in Teaching and Learning in Higher Education at University College Cork.

DEVELOPING RESEARCH SKILLS AMONG UNDERGRADUATE STUDENTS: CASE STUDIES FROM THE HUMANITIES AND SCIENCES AT DUBLIN CITY UNIVERSITY

Françoise Blin and Sheelagh Wickham, Dublin City University (DCU)

According to Hakkarainen (2008), the challenge of European education is to devise ways of preparing learners for the knowledge economy and society, which are characterised by a rapid transformation of work practices and a requirement for new professional and personal competencies and skills. Indeed, "productive participation in knowledge-intensive work requires that individual professionals, their communities, and organisations continuously surpass themselves, develop new competencies, advance their knowledge and understanding as well as produce innovation and create new knowledge" (Paavola and Hakkarainen, 2005, p. 535).

Fostering the development of its students' capacity for producing innovation and creating new knowledge is at the core of Dublin City University's strategy for the enhancement of learning. More specifically, and in line with programme learning outcomes as defined by the National Framework of Qualifications, the development of research skills constitutes a critical learning outcome to be attained by all undergraduates.

Following an overview of DCU strategic priorities with respect to the integration of research and teaching, this presentation analyses and compares research-related programme and module learning outcomes from the Faculty of Science and Health (FSH) and the Faculty of Humanities and Social Sciences (FHSS). Teaching and assessment strategies deployed in both faculties are classified according to whether they are research-led, research-oriented or research-based, and their alignment to programme and module learning outcomes is critically examined. Emerging patterns are highlighted and discussed with regards to the university strategic intent. Future directions for enhancing the integration of research and teaching are then proposed.

UNTYING THE ACCOUNTANCY KNOT: THE DESIGN, DEVELOPMENT AND IMPLEMENTATION OF INTERACTIVE ANIMATIONS AND SIMULATIONS TO SUPPORT UNDERPERFORMING 1ST YEAR ACCOUNTANCY STUDENTS, INCLUDING THOSE WITH DYSLEXIA

Frances Boylan, Pauline Rooney, Fionnghuala Kelly, Jennifer McConnell, Alice Luby, Elaine Mooney, Rebecca Maughan, Dan Shanahan, Daniel King and Tony Kiely, Dublin Institute of Technology

Students who perform well in any subject are empowered and motivated while those who consistently under perform are not. Many first-year students at Dublin Institute of Technology (DIT) taking required accountancy modules have no background in the subject area, and as a result they struggle with the content and consistently under perform. Furthermore, a subset of this group is those registered as dyslexic with DIT's Disability Services.

This project is an innovative cross-faculty and cross-function collaboration to design, develop and implement interactive animations and simulations to enhance the learning experience of under performing first-year accountancy students, including those with dyslexia, giving them a real opportunity to apply their existing knowledge in the area, and control the pace of their learning while receiving immediate feedback, ultimately leading to a more enjoyable, motivating, and rewarding learning experience. It has been inspired by lecturers anxious to improve and enhance the learning experience of all first-year accountancy students, particularly those experiencing difficulty

due to dyslexia; defended by the huge body of research available on the constructivist approach to learning and teaching, and the educational value of simulations and games for learning; and finally spurred on by the positive feedback from the students who pilot tested a sample first simulation.

This poster will give a little background to the project before demonstrating the activities created to date and giving details as to how they will be extended, piloted and disseminated amongst any interested parties.

USING PREDICTION MARKETS TO CREATE AN ACTIVE LEARNING ENVIRONMENT IN LARGE GROUPS

John Garvey and Patrick Buckley, University of Limerick

This paper demonstrates how prediction markets can be used to help students develop the full range of information literacy skills. In addition, participation in a prediction market encourages deeper investigation and sensitises participants to information relevant to the topic when they encounter it. By linking the decision scenarios to real world problems, this teaching strategy familiarises students with decision-making scenarios that exist in their professional lives, providing the opportunity to examine/apply the theoretical underpinnings of their discipline. In this way it helps students to understand how academic knowledge will improve their performance in their future career. The approach also benefits the affective domain. The group nature of prediction markets creates an environment that activates peer-to-peer discussion and debate. The real world problems that will be the focus of the decision scenarios will ground the module for students, helping them to see how theory informs practice in the real world, thus increasing engagement in the educational process.

CROSSING BORDERS THROUGH CYBERSPACE: A SOCIAL WORK EDUCATION ELECTRONIC EXCHANGE PROJECT ACROSS THE ATLANTIC

Janet Carter-Anand, Trinity College Dublin and Kris Clarke, California State University

This presentation discusses a trial electronic exchange project developed between social work education departments in the Republic of Ireland and the USA. It outlines the contemporary significance and challenges of integrating global content into national social work curricula, which are often strongly tied to statutory or accreditation requirements. The mechanics of the exchange are explained and critiqued in detail. An illustrative example of how the transnational students discussed two questions is analysed. The projects finds that an international electronic exchange has great potential to make global social work real to students by allowing them to cross borders through cyberspace; however it requires careful planning and attention to cultural and educational system differences.

ENHANCING RURAL DEVELOPMENT CAPACITY THROUGH GRADUATE PROGRAMMES - AN ETHIOPIAN CASE STUDY

Nick Chisholm, Mike Fitzgibbon, Úna Murray, Stephen Thornhill, Tsega Gebrakristos, and Anteneh Belachew, University College Cork

This paper will explore the implementation of an innovative masters' programme in rural development, a partnership between University College Cork and universities in Ethiopia, which is undergoing an expansion process. It will reflect on the experiences, difficulties, opportunities, and occasionally unexpected outcomes that such partnerships and initiatives present.

The programme, begun as a partnership between University College Cork's Department of Food Business and Development and Mekelle University in Ethiopia, is run as a part-time degree, with periods of intensive teaching several times a year, teaching being shared by the two participating universities. It is attractive to both statutory and non-governmental organisations as throughout the programme, participants can continue to work in their own institutions, while much of the course-work involves reflection on the participants' own work. July 2009 saw the graduation of a second cohort of twenty students, and October 2009 will see two new cohorts commence, in Mekelle and Hawassa Universities. Two other universities in Ethiopia have expressed interest in the programme.

The expansion to a second Ethiopian university at Hawassa contributes to a national strategy to enhance the capacities of experienced practitioners in the area of rural development across Ethiopia, a strategy determined by the Ethiopian government, and supported by organisations such as Irish Aid and the World Bank. The enhanced capacities of recent MSc graduates have been well recognised within their organisations, reflected in the continued and increased participation of these organisations in the programme.

A critical component of the programme is the development of academic capacity within each of the partner universities, which has seen a parallel PhD programme emerge to create this capacity.

INTEGRATIVE LEARNING: LEARNERS DESIGN AND REFLECT ON THEIR "ECONOMIC" BEHAVIOUR TO COURSEWORK ASSESSMENT

John Considine, University College Cork

At various times economics has been defined by either its method or its subject matter (Backhouse and Medema, 2009). Those who emphasise the subject matter tend to focus on market exchanges, for example, the purchase and sales of bread. Those who emphasise the method of economics tend to extend the analysis to non-market exchanges, for example, the economics of crime. Economics is traditionally taught in this sequence. Introductory and intermediate level textbooks focus on the economics of market exchange. It is only specialist advanced level undergraduate textbooks that will focus on the application of economics to non-market settings.

Interestingly, if one is to judge by market sales (a standard economics criteria), students who read outside the curriculum's required reading and 'informal' students of the subject tend to read books that use economics as a method of investigating life. Recently there has been a huge growth in popular economics books like Freakonomics, The Undercover Economist, The Economics of Life, and The Economic Naturalist. This would suggest that learners enjoy using economics to investigate non-market activities.

The use of economics as a method to investigate life parallels another development in (economic) education - the use of reflective journals (Brewer and Jozefowicz, 2006). Typically, economics students are asked to reflect on the behaviour in a market setting. The purpose of this poster is to explain how economics as a method might be used in reflective journals to reflect on non-market activities.

SUPPORTING THERAPISTS' ENGAGEMENT IN EVIDENCE-BASED PRACTICE THROUGH AN INTER-PROFESSIONAL POST-QUALIFICATION MASTER'S PROGRAMME

Janice Crausaz, Gill Chard and Clare O'Sullivan, University College Cork

Since the 1990s, engaging in Evidence-Based Practice (EBP) is viewed as an essential element of what is defined as best practice. Knowledge Translation (KT) and Research Utilisation (RU) studies

have identified common barriers, mediators and facilitators to improving the uptake and use of evidence by practicing clinicians. The more traditional, passive methods of disseminating information through large-group educational sessions are generally ineffective in changing practitioner behaviour; whereas approaches that are both interpersonal and grounded in practice have had greater success (Grimshaw *et al*, 2004).

To meet the challenge of educating practitioners to routinely utilise research findings for clinical decision-making, the School of Clinical Therapies, University College Cork, began offering a reconfigured small group seminar programme for occupational therapists, physiotherapists and speech and language therapists in the autumn of 2009. Implementing Evidence in Therapy Practice is one of the first core modules taken by therapists for an MSc in Evidence-Based Therapy Practice. Students develop their skills in integrating current research evidence with their existing clinical expertise and their clients' values. Students also learn to identity key individuals/ groups within their workplace who need to collaborate together as a system for effective implementation of an EBP culture. Skills and knowledge gained from this module enable students to engage further in the KT/ RU process through modules focused on professional reasoning and on developing educational approaches for themselves, their clients and their communities. Finally, students complete a research thesis that usually addresses a current work concern. Thereby, they not only build on their new knowledge, but transform it into evidence to help meet today's practice demands.

A pedagogic research project, supported by a NAIRTL grant, is being conducted to evaluate whether students' learning has an effect on their subsequent clinical behaviour, specifically engagement in EBP, four months after completion of the first module.

PROBLEM BASED LEARNING IN GRADUATE NURSING EDUCATION

Caroline Dalton, Elaine Drummond, Lynne Marsh, and Maria Caples, University College Cork

Signature pedagogies which reflect the approach taken to the education of students as future practitioners in their chosen profession develop over time as a means of ensuring that students think, perform and act with professional integrity. Professional schools develop the most interesting pedagogies as they are challenged to meet not only the requirements of academia, but also those of the professions in producing skilled, responsible practitioners (Shulman, 2005). The development of signature pedagogies is considered a priority in nursing education (National League for Nursing, 2003).

Within the nursing profession, much attention is paid to the issue of the "*theory-practice gap*" which originates from the separation of theoretical knowledge (knowing that) from practical knowledge (knowing how) (Craddock, 1993). This 'gap' can impede the personal and professional development of nurses and has the capacity to negatively impact on the provision of quality services. One suggested approach which has been advocated as a means of bridging the theory-practice gap is a problem based learning (PBL) approach to the education of nurses. PBL is defined as learning that occurs from the process of working through a problem (Barrett, 2005).

The development of the PBL approach to learning is undertaken through a variety of mechanisms that promote reflection on experiences to promote deep learning (Murphy, 2004) and assisting students in learning how to learn, in order to equip them with the skills to adapt to the ever changing dynamics of the nursing profession.

The ongoing development of signature pedagogies in nursing must focus on the development of skilled practitioners who have the ability to stop, think and identify what they know and how this knowledge can be applied across different situations/environments. The aim of this poster is to identify whether PBL has a role to play as a potential future signature pedagogy in the development of skilled nursing practitioners.

FOSTERING INTERPERSONAL SKILL DEVELOPMENT IN ONLINE PROGRAMS

Kay Dennis, School for Education, Park University, USA

This research-informed poster addresses the issue of interpersonal skill development in an increasingly technology-mediated global society. Recognising that employers prefer to hire graduates with customer-friendly demeanour and poise, how can we as educators foster these critical qualities and skills in students who are enrolled in online programs of study? Important attributes include non-verbal and oral communication skills, influence, negotiation, conflict resolution, and collaboration, among others to be identified with participants during the session. The implications for curriculum development in higher education are far-reaching, particularly for institutions that enrol international or cross-cultural students.

At Park University (USA), faculty are discovering ways to incorporate 'soft' skill development in their online courses. Aside from deploying social networking tools, faculty are designing effective face-to-face learning activities for implementation and thoughtful reflection by their students, regardless of their geographic location.

Thoughtfully designed, research-informed online courses can enhance the interpersonal skills that are expected of graduates as they enter the twenty-first century workplace with its unpredictable challenges and variety. Newly employed graduates must plough a maze of assumptions, value-driven behaviours, and gestures. 'Foreign' cultures are found everywhere – at home and in other lands – and within corporations, vocational fields, and geographic regions. Successful interactions require tact, restraint, perceptiveness and adaptability.

We will examine how instructors in one US graduate program are devising ways for online students to engage and demonstrate core interpersonal competencies. You are invited to share your views on desirable student qualities along with creative strategies that have worked for you. Also we will explore possibilities for future inter-institutional collaboration to foster intercultural and interpersonal skills.

A NATIONAL DOCTORAL PROGRAMME FOR STRUCTURED PHD TRAINING

Oonagh Dwane and Martina Prendergast, both of the Environmental Change Institute, National University of Ireland, Galway, on behalf of the Environment and Climate Change: Impacts & Responses Research Consortium

The Environment Graduate Programme (EGP) is a national, inter-institutional, multi-disciplinary structured PhD programme, designed to facilitate the graduation of highly qualified and experienced researchers in the area of environment. An award of €11.5 million through Cycle Four of the Programme for Research in Third Level Institutions funded twenty-one PhD student places and fourteen postdoctoral fellows. Students within the EGP are registered at six of Ireland's third-level Institutions (National University of Ireland Galway; University College Cork; Cork Institute of Technology; University of Limerick; University of Dublin, Trinity College and National University of Ireland Maynooth). Registration began in 2007 and the first students are due to complete their programmes by 2010.

The core component of the programme is the advancement of knowledge through original research. Taught modules are integrated to this programme of activities, and cover both generic and transferable skills development and discipline specific modules. This will foster enhanced intellectual and creative capacities, resulting in internationally competitive doctoral graduates who are adaptable and capable, with a wide range of career options.

Environmental Quality, Climate Change and Ecosystems and Biodiversity are the chosen themes of the EGP, with Environmental Informatics and Modelling, Environmental Risk Assessment, Environmental Engineering and Technologies and Impact and Response Analyses acting as cross-cutting research activities. Graduates shall be from the traditional fields of Natural and Social Sciences as well as Engineering.

This inter-institutional graduate school allows for shared access to world-class infrastructure, and provides a forum for sharing good practice in researcher education and development of research careers. An active network of academics from around Ireland is co-operating in the development of high-level, specialist courses, and, a national committee with input from all project partners manages the teaching and learning aspect. To date, this structured PhD programme has attracted high calibre students from national universities and from overseas.

COGNITIVE LEVEL OF FIRST YEAR UNIVERSITY SCIENCE STUDENTS

Odilla E. Finlayson, Lorraine McCormack and Thomas J.J. McCloughlin, St. Patrick's College, Drumcondra

In order to engage with science and have a deep understanding of the scientific concepts, a high level of thought is necessary. This higher level thinking was deemed by Piaget as formal operational thought and according to his chronological framework of cognitive development, this type of thought begins to develop at approximately eleven years of age and peaks at sixteen years of age[1]. However, extensive studies by Shayer have shown that by the age of 16 years very few in the British population had reached the formal operational stage[2]. This study reports on the profile of Piagetian level's of cognitive development of first year university science students. Students in their first year university are typically eighteen-nineteen years of age and should be capable of formal operational thought. Using the fourth of the series of the Science Reasoning Tasks[3], developed by the Concepts in Science and Mathematics team, the students' cognitive level was determined. The task used was called Equilibrium in the balance and it covered a range of Piagetian levels from late concrete thought to late formal operational thought. The task was not content specific and it assessed student's ability to recognise and use inverse proportions in the context of a simple balance beam. The Piagetian profile of the students determined indicates that 58% of the cohort is in the formal operational level, with 40 per cent of this cohort at the early formal level. However, more alarming is the percentage of the cohort who have not developed formal operational thought, 42%. A greater proportion of the male group were at the formal operational levels, compared with the female group. This difference was significant. The significance of this in terms of the first year curriculum should be noted.

References

Piaget, J. (1972). *The principles of genetic epistemology*, trans. W. Mays. London: Routledge and Kegan Paul.

Shayer, M., and Wylam, H. (1978). "The distribution of Piagetian stages of thinking in British middle and secondary school children ii: 14- to 16-year- olds and sex differentials," *British Journal of Educational Psychology*, vol. 48, pp. 62-70.

Wylam, H., and Shayer, M. (1978). *Science Reasoning Tasks General Guide*. NFER Publishing Company Ltd.

MULTI-DISCIPINARY GRADUATE EDUCATION AT TYNDALL

Jim Greer and Órla Slattery, Tyndall National Institute

Tyndall National Institute is one of Europe's leading research centres, specialising in Information and Communications Technology (ICT) hardware. Tyndall has a critical mass of over 350 researchers, engineers, students and support staff placing a particular emphasis on quality, accomplishment and the delivery of Ireland of value from research.

Graduate education is one of Tyndall's key roles and we currently host over 120 postgraduate students in the research areas of photonics; micro-nano electronics, Microsystems and theory, modelling and design. Tyndall is not itself an academic unit most students are registered with science and engineering departments in University College Cork (UCC) and Cork Institute of Technology (CIT). However, students from other academic institutes frequently undertake part of their research at Tyndall. Students come from multi-disciplinary backgrounds including: physics, chemistry, electrical and electronic engineering, microelectronics and life sciences as well as other numerate disciplines. Students are attracted to Tyndall, by the access to facilities, opportunity to work alongside internationally renowned researchers and by Tyndall's long tradition of a high level of collaboration with industry. The industry advantage includes mentoring and scholarship programmes as well as placement schemes and provides students with a unique opportunity to directly partake in the development of next generation technologies while also giving them the optimum means of gaining relevant transferable skills.

Tyndall is also exploring the development of graduate education programmes within the HEA-funded INSPIRE national nanosciences consortium. A video conference facility dedicated to remote learning had been installed during 2008 and we are currently broadcasting and receiving modules from our academic partners at Irish universities.

The aim of this poster is to present an overview of Tyndall's activities in: supervision and progress monitoring of students from different academic department and institutes; development of structured and multi-disciplinary PhD programmes and mechanisms for student focused industry-academic collaborations.

HOW WE USE VALUES-EXCHANGE IN NUI GALWAY

Barbara Griffin, Martin Power, and Jane Sixsmith, National University of Ireland, Galway

This poster tracks the work in progress introducing the Values Exchange (VX) (www.values-exchange.com) as a research and teaching resource at the National University of Ireland (NUI), Galway. VX is an innovation in teaching and e-learning for social sciences. VX enables student-led interaction and challenges students as they think about authentic case studies that pose ethical dilemmas from different aspects of social care practice. The VX guides students using pre-formed questions that prompt individual responses to case studies. Data are generated both at an individual level and collectively from a group. Responses are collated automatically producing thirty-three research reports for analysis and discussion. VX facilitates research, teaching and learning by providing immediate and extensive discussion material that can form the basis of individual, collaborative and inter-disciplinary research projects.

In September 2009, NUI Galway introduced the VX to students, staff and stakeholders involved in the BA in Social Care programme. The aim of this research project is to explore how the VX can, simultaneously, serve as a teaching tool and open up areas of debate that require further research.

The VX teaching and research team will use the reasoning data from the VX case study identified by stakeholders concerning the issue of 'Do Not Resuscitate' being written on client's notes. The researchers will use data generated by students who are currently working in the area of social care to analyse how carers approach this ethical issue.

A BLENDED LEARNING ENQUIRY BASED MODULE: BEST PRACTICE OF EVALUATION SKILLS IN HEALTH PROMOTION

Barbara L. Griffin, Verna McKenna and Lisa Pursell XE "Pursell, Lisa" , National University of Ireland Galway

The discipline of Health Promotion at National University of Ireland Galway (NUIG) delivers a postgraduate diploma and Master's course in Health Promotion. A core 'Research Methods' module incorporates some teaching of evaluation research in health promotion. This project arose from recognition of the need to further develop the evaluation component into a stand-alone module that would provide students with a greater understanding of the relationship between the evidence-base and research practice of evaluation in health promotion. The aim of this project is to develop and deliver a creative, research-based module on evaluation practice using an enquiry-based approach that incorporates new learning technologies. The aim is to progress from the theoretical aspects of evaluation to incorporate evaluation research practice into delivery of the module.

The specific objectives of the project are to pilot a template for future development of blended learning within modules integrating the use of the online Wiki tool via Blackboard. Workshop and tutorial-based elements will be developed to deliver theoretical basis and models employed in the evaluation of health promotion interventions. Peer assessment of the group work as one element of student assessment will be developed and piloted and a 'tool-kit style' handbook incorporating new e-technologies will be compiled. The Wiki tool will be used to establish how students construct knowledge about real life evaluation issues. This project will assess the process that students are engaging in as an exemplar of integrated learning and evaluation.

FORMAL PHD TRAINING EXPERIENCED BY NATIONAL UNIVERSITY OF IRELAND MAYNOOTH GEOGRAPHY STUDENTS

Adrienne Hobbs, Elaine Burroughs, and Jackie S. McGloughlin, National University of Ireland Maynooth

This research offers a situated snapshot of the contemporary geography PhD experience at National University of Ireland Maynooth (NUIM). The PhD is changing and within those changes are tensions as well as pros and cons. Course descriptors offer the prescribed path to the completion of modules. Although many students are meeting the new requirements, they must also continue to navigate their way to conducting original research within an environment where the formal training process is still contested by some academics.

These points are illuminated through the responses from questionnaire surveys, a focus group carried out during 2009, and the situated experiences of the presenting researchers. These methods capture student and staff opinions. The student opinions about the pros and cons of formal training were very diverse and reveal the complicated nature of generalised programmes being offered to PhD researchers. In particular our analysis identifies a concern in relation to the inter-disciplinary nature of the training model, which is a more complex research framework than the specific focus of a single discipline model.

As postgraduate students currently involved in formal training, we present a wishlist for the way forward. Key research training needs are confirmed and responses to the current prescribed format are included. We conclude that the new training paradigm is an improvement on the Humboltian model and participants derive benefits beyond the purely academic essentials.

THE IMPLEMENTATION AND EVALUATION OF PEER LEARNING PROGRAMMES IN THIRD LEVEL SCIENCE MODULES

Jennifer Johnston and Maeve Liston, University of Limerick

This paper aims to investigate the implementation of a peer learning programme utilising undergraduate peer leaders in first year undergraduate science modules at the University of Limerick and at other science departments involved in the "Shannon Consortium" partnership. Research supports the concept of involvement in college: the greater the student's involvement, the greater the amount of student learning and personal development (Astin, 1999; Bloom, 1974; Whitman 1988). There is strong evidence from research carried out world wide that Peer Learning when implemented effectively is sustainable. In this study peer learning represents a two-way, reciprocal learning experience. Peer learning can be easily incorporated into the present structure of teaching sciences. It is cost effective and provides students especially the peer leaders with the opportunity to take responsibility for their own learning. Peer learning utilising undergraduate science teachers was investigated in a recent PhD study carried out in the physics department at the University of Limerick. This peer learning model involved the students working in cooperative groups with a peer leader as a facilitator of their learning. One of the main findings from this PhD study was that the peer leaders' experience of the programme was very positive, and there were significant improvements to their physics understanding. This project extends and expands the recent PhD study and it aims to increase students learning experiences of science. Weekly science tutorials will be delivered through peer learning, and the programme was conducted during the Autumn and Spring semesters 2009/2010 in first year undergraduate science modules. This project will be evaluated through a mixed methodology. Both quantitative and qualitative data will be obtained on student performance, attitudes and on implementation techniques. This paper presents initial findings of the implementation and set up of the peer learning programme.

FOCUS ON PATIENT SAFETY: HOW LIFELONG LEARNING BEGINS BETWEEN PHARMACY AND MEDICAL STUDENTS AT UCC

Aislinn Joy and Laura Sahm, University College Cork

Introduction

Interprofessional Education (IPE) has been defined as "*occasions where two or more professions learn with, from and about each other to improve collaboration and quality of care*" (Barr *et al*, 2005). Prescribing is the most common intervention made by physicians, but prescriptions can be inaccurately written (Seeley *et al*, 2004; Barber *et al*, 2003). Pharmacists have been shown to reduce the potential for error associated with prescriptions (Murphy *et al*, 1996). A major component of this study will be the facilitation of Interprofessional Learning (IPL) opportunities, in the clinical setting for medical and pharmacy students, in order to address prescription errors.

Aims

To assess the readiness of these students for IPL using a validated tool (Parsell and Bligh, 1999), before and after IPL experience, with control groups;

To proactively address medication prescribing errors in an interactive, interprofessional, small group learning environment of Mercy University Hospital (MUH);

To create an electronic resource of case-based prescription error scenarios for the education of health care staff and students.

Methods

Retrospective collection and classification of baseline data on errors associated with prescriptions in MUH over a six-month period.

Development of prescription case scenarios around these errors which can be assessed at baseline and after a learning component where medical and pharmacy students work together.

Creation and piloting of a scenario based electronic resource, followed by its integration into a virtual learning environment.

Administration of the Readiness for Interprofessional Learning Scale (RIPLS) to all final year medical and 4th year pharmacy students at the beginning and end of the academic year, including students not at MUH.

Discussion

Strategies to improve prescription writing are essential for patient care. Increasingly other health care and allied health care professionals have a prescribing role, hence the importance of linking IPE and IPL with good prescribing practice. The development, piloting and peer review process of prescription case scenarios will ensure that a varied range of skill sets are assessed for competency. This should ideally translate to practice and be relevant for the training of all those involved in patient care.

NURSING STUDENTS DESIGN 'GLOSSY' MAGAZINE

Jacinta Kelly, Trinity College Dublin

Aim: The aim of this initiative is to raise interest and understanding among nursing students in quantitative methods by embedding research instruction in the curriculum using a simplified, fun and research-active approach.

Background: Quantitative research methods are traditionally unpopular and perceived as complex amongst nursing students. This is not helped by the fact that many nursing faculty lean in their own research activities more intuitively towards qualitative methods. However it is important that students gain an appreciation of both methods of research.

Method: In an attempt to address this it is proposed that which is popular amongst students such as 'glossy' magazines could be used as an embedded teaching tool. Therefore, it is proposed that as part of an elective module in journalism students design a survey for a woman or man's 'glossy' magazine.

Analysis: Students are provided with a computer survey package such as Survey Monkey to design, manage and analyse survey results and to create a discussion of these results in a feature style for a chosen popular magazine.

Conclusions: This initiative brings with it the possibility of embedding quantitative research skills in an elective journalism course so that students gain an understanding and an appreciation of feature writing but also of survey design in an active and enjoyable manner. This initiative also provides encouragement for embedding a variety of other research activities and data collection tools successfully across the undergraduate curriculum.

TEACHING HISTORICAL RESEARCH – A THING OF THE PAST

Jacinta Kelly, Trinity College Dublin

Aim: The aim of this initiative is to facilitate students to learn in research mode about health promotion.

Background: Since all research has a historical basis, it is proposed that undergraduate nursing students research a major health promotion problem from a historical perspective. In Ireland one of the fastest growing causes of death is chronic liver disease and cirrhosis, of which alcohol is a major contributory factor. It is reported that sophisticated alcohol advertisement has facilitated the recruitment of children and young people to the ranks of heavier drinkers in Ireland.

Research problem: In Ireland alcohol advertising is regulated by the Drinks Industry; however successive reports recommend that when seeking to protect young people against unhealthy alcohol consumption present regulation of alcohol advertisement needs to be examined.

Method: Using public archives of time-honoured breweries or distilleries, alcohol advertisements together with public and industry alcohol advertisement policy documents are subjected to the rigour of historical research and discourse analysis. Students analyse the content, words and pictures of alcohol advertisements from an identified time frame.

Conclusions: It is anticipated that student interpretations of iconic alcohol advertisements and successive public health policy and documents can facilitate their learning about health promotion by research and aid discovery of areas for further alcohol research, policy and regulation.

DCU BUSINESS SCHOOL NEXT GENERATION MANAGEMENT

Theo Lynn, John Connolly, Gerry Conyngham, Aoife McDermott and Caroline McMullan, Dublin City University Business School

Business schools face many of the same challenges and opportunities as the management they seek to educate. Attracting and retaining talent, attracting customers (students), funding, commoditisation, technology and globalisation are changing the competitive landscape for business schools too. In uncertain economic conditions, Irish graduates cannot be guaranteed the same career opportunities as previous years and will have tough competition for places in the international labour markets. If businesses can no longer rely on old solutions and proven products and services, can business schools? Can our graduates?

Next Generation Management is a new postgraduate initiative by Dublin City University (DCU) Business School which attempts to address the needs of the wider stakeholder community in its preparation of graduate students. At the core of the initiative is student development to be ready for a career in management, to be adaptive and flexible, innovative and both socially responsible and accountable. The Next Generation Manager should be ready to make a significant contribution to crafting and delivering organisational purpose in uncertain times, regardless of geography. They should be prepared for both the routine and the novel. A next generation strategy requires a fundamental rethink of the existing learning experience. This means fundamental change not only to content, delivery and systems but in the way stakeholders interface with these elements and each other.

This research poster outlines the Next Generation Management concept, learning outcomes and

assessment process. It includes the details of the Next Generation Management immersion course and core module.

PREPARING STUDENTS FOR POSTGRADUATE RESEARCH? TECHNIQUES FOR IMPROVING THE QUALITY OF THE UNDERGRADUATE DISSERTATION

Kay McKeogh and Prionnsias Breathnach, Dublin City University

This poster will focus on the role of the dissertation as an essential element in the preparation of undergraduate students for research at postgraduate level. The Bologna framework emphasises the importance of research skills as an outcome of level eight honours degree programmes. Completion of the dissertation is an invaluable preparation for postgraduate research, and is also an indicator of the students' research capacity, yet increasing enrolments present challenges to effective supervision with obvious consequences for quality, leading some departments to dilute or abandon the traditional individual project. This leads to a situation where students enter postgraduate programmes with few or no research skills or experience of carrying out a substantial independent research project. Institutions are then required to provide what might be considered 'remedial' programmes to assist students in acquiring these skills. However, research skills can be developed at undergraduate level through adoption of innovative pedagogical approaches, within the current context of diminishing resources. This paper presents the outcomes of a pilot project in the geography department, National University of Ireland Maynooth, which used the Virtual Learning Environment (VLE) Moodle to support a collaborative and group based approach to teaching research skills and to supervising the final year undergraduate dissertation. The approach combined online exercises, discussion forums, peer reviews and group supervision. The project was informed by student views on the experience of carrying out the research project in previous years, which identified a number of issues of concern, including feelings of isolation and lack of support. Evaluation of the approach indicates high levels of student satisfaction and an improvement in quality of research outputs and performance. It is suggested that the techniques developed can be applied to postgraduate research training and that their wider use at undergraduate level would, in the future, facilitate the development of higher level research skills at postgraduate level.

PROMOTING INTEGRATIVE LEARNING THROUGH STUDENT ASSIGNMENTS

Kevin McCarthy, University College Cork

This poster reports on an investigation with students taking a design course in a final-year Bachelor of Engineering programme to test the hypothesis that *"careful selection of the continuous assessment topic will lead to an integrative learning experience for the students, helping to unify the different strands of the module and developing the students' capabilities to apply their knowledge to new situations beyond the classroom environment".*

The course investigated in this study, *"Radio Frequency Integrated Circuit Design"*, incorporates a continuous assessment element which contributes 20% to the final module grade. In previous years the continuous assessment was based around the use of a Computer Aided Design tool used to perform detailed simulations of a circuit block that had been introduced in class. For the 2008/9 academic year, the continuous assessment was based around a technical research paper which incorporated some elements that had been previously discussed in class but also incorporated some elements not seen previously by the students. In this way, the students were challenged by a new application scenario for their knowledge while at the same time being encouraged to see how the different strands of the module could be combined to form a useful commercial product as outlined in the research paper.

This paper outlines how different elements of integrative learning such as an emphasis on real-world problems, an emphasis on the interconnections between the course topics, the incorporation of a student seminar (student as teacher) and the use of reports and feedback were incorporated into the continuous assessment component of the design module. It presents the results of a questionnaire designed to uncover the students' own opinions about their learning and provides an overall review of the investigation to identify the strategies that helped to promote integrative learning with a view to further developing these for future years.

TEACHING AND LEARNING EDUCATION FOR SUSTAINABLE DEVELOPMENT

Amanda McCloat and Helen Maguire, St Angela's College, Sligo

Education and information have important roles to play in influencing social-ecological change. Teacher education has the potential to shape the knowledge, skills and attitudes of future generations thus creating a more sustainable world. Contemporary focus of education has moved from content acquisition and knowledge about sustainability to an education for change which equips learners with essential skills, attitudes, and motivations for living and thinking sustainably (Sterling, 2001; Huckle and Sterling, 1996). University teachers and researchers must actively and attentively assess knowledge and challenge assumptions, philosophies and frameworks in order to engage in critical discourse on a wide range of sustainable issues.

The holistic and integrative approach of home economics, involving social and ecological dimensions, means that it is ideally placed to contribute a great deal of experience and ideas developing innovative knowledge systems for sustainability. Home economics has a significant role to play in demonstrating the link between responsible caring consumption and the concept of citizenship reflecting the aims of the United Nations Decade of Education for Sustainable Development 2005-2014.

This action research project, funded by the Ubuntu Network and Irish Aid, aims to examine and promote knowledge, attitudes and behaviour of year one pre-service home economics teachers in relation to ethical and ecological consumerism. This presentation focuses on the initial knowledge, attitudes and behaviours of a cohort of incoming pre-service teachers and documents the development of a novel cross-curricular educational intervention utilised to support the inclusion of sustainable education methodologies, content and approaches within specific subject specialisms. Students on the Bachelor of Education (BEd) programme were engaged in critical thinking and dialogue in relation to ethical and ecological consumerism. Subsequently, a comparison is drawn between pre-service teacher's pre and post-intervention knowledge, attitudes and behaviours towards sustainable consumption.

It is hoped that this project will have a positive influence on the intended behaviour and future practice of home economics teachers in relation to sustainability. Such investigations link ESD and research, action and reflection with the ultimate goal of reorienting existing teacher education programmes towards facilitation of higher order thinking and skill development.

RESEARCH AWARENESS AND READINESS EVALUATION (RARE) OF UNDERGRADUATE CHEMISTRY STUDENTS AT DUBLIN INSTITUTE OF TECHNOLOGY (DIT)

Claire McDonnell, Christine O'Connor, Sarah Rawe, Michael Seery and David Kett, Dublin Institute of Technology

Our project aims to evaluate the effectiveness of the research-oriented, research-based and research-led measures introduced to undergraduate teaching in the School of Chemical and Pharmaceutical

Sciences in Dublin Institute of Technology (DIT) over the past four years. These developments include project-based learning practical activities in some modules (spectroscopy and medicinal chemistry) in years two and three. We have already shown in a preliminary study that this research-oriented approach can engage and motivate students and allow them to develop key skills such as teamwork, designing experiments, information literacy, problem-solving and project planning (1). In addition, a series of research-led and research-based preparatory activities and lectures have been introduced to support our undergraduate (level seven and eight) final year projects providing timely and focussed support. Where appropriate, use has been made of educational technology to provide online support, activities and resources that complement the teaching and learning activities (e.g. online video tutorials and wiki development).

The evaluation will be achieved by seeking feedback from undergraduate students as well as first year postgraduates, academic and technical staff. Pre and post questionnaires with open and closed questions are being designed for this purpose. Informal feedback provided during the teaching activities will also be used. Several short semi-structured interviews will be arranged to examine areas of interest arising from these evaluations. In addition, evaluation data available from 2005 on four DIT UREKA (summer research) students will also be reviewed. It is hoped that results from the pre questionnaires will be available to discuss in this presentation. The evaluation questionnaires prepared and details of the learning activities undertaken will be made available electronically once the project is complete.

References

McDonnell, C., O'Connor, C. and Seery, M. (2007). "Developing Practical Chemistry Skills by Means of Student-Driven Problem Based Learning Mini-Projects", Chem. Educ. Res. Pract., vol. 8, no. 2, pp. 130-139.

AN ASSESSMENT OF ULTRASOUND SCANNING COMPETENCIES OF RADIOLOGY RESIDENTS: IS THERE A ROLE FOR IMPROVED SONOGRAPHY TRAINING?

Claire Moran, Patrick C. Brennan, Louise Rainford and D. Malone, University College Dublin

Purpose

The aim of this study was to assess core ultrasound scanning competencies of radiology residents to establish if there is a need for radiology residents to receive hands-on scanning tuition.

Methods and materials

A cross-section of second-year residents was evaluated. Core scanning skills for abdominal, pelvic and doppler venogram examinations were assessed. Resident assessment was performed before and after an eight-week training program. Hands-on scanning tuition was received by each resident and a logbook was completed. All residents completed a self assessment competency document regarding their ability to perform the above examinations before and after the program.

Results

There was a significant difference for before and after scores. When all criteria were input into an overall scoring system it was found that all residents demonstrated an objective improvement ($p<0.02$) following the eight-week program. The self assessment documents reinforced these findings as all residents scored themselves significantly higher in terms of their ability following the programme.

Conclusion

The findings of this study demonstrate the benefit of establishing an effective hands-on practical teaching approach to ultrasound scanning for radiology residents.

Clinical relevance/application

Given the role of sonography in modern radiology practice it is important our residents are trained to a high standard. This study demonstrates the clinical benefit of individualised tuition.

POST GRADUATE STUDENTS' EXPERIENCE THEMATIC REVIEW

Anne Morrissey, Oscail; Joseph Stokes, School of Mechanical and Manufacturing Engineering, Gary Murphy, Office of the Vice President for Research; Dublin City University

A thematic review of the post graduate experience at Dublin City University (DCU) was undertaken between November 2008 and March 2009 as part of the ongoing quality review process within the University. A quality review of this type is unique among Irish universities as the scope of the review was university wide with a focus on students' experience, unlike previous reviews which concentrated on procedures and structures in an individual school or administrative unit. The paper begins by outlining the rationale and scope of this review and is followed by a description of how the review itself was carried out through to the production of a Self Assessment Report (SAR), a Peer Review Group (PRG) assessment and a Quality Improvement Plan. A summary of the main findings are provided, with a separate focus on full time research students and full and part time taught post graduate students. The presentation concludes with a report on the lessons learned from undertaking the thematic review itself and from the findings of the SAR and PRG assessments.

DEVELOPMENT OF A STRUCTURED MD RESEARCH CURRICULUM

Shanti Muttukrishna and Geraldine Boylan, University College Cork, and Ray Noble, University College London

Introduction

The continued emphasis on research in medicine has led to an increase in the number of medical trainees undertaking research degrees. The postgraduate education system has changed within the last decade and academic institutions have adopted structured PhD programs with taught modules and skills training to enable students to progress in their research program effectively. In Ireland, this has also been driven by the remit of the Strategy for Science Technology and Innovation to double the number of PhD by 2013. Historically, professional higher degrees have lacked a clear curriculum and standards have varied between institutions. In medicine, the MD (doctor of medicine) research degree is awarded to graduates with a medical degree after the successful completion of a research thesis.

Aim

To establish MD completion rates at University College London and University College Cork over a five-year period and to obtain qualitative data about the programme through structured interviews with students and supervisors.

Methods

Quantitative data on MD completion rates was obtained from the graduate studies office of both Universities. We also interviewed clinical research fellows registered for MD and their academic supervisors in London.

Results
The completion rates for MDs over a five-year period were approximately 30-50% in both Universities within the recommended completion period. Qualitative data showed that the expectation of students and their supervisors varied widely. Academic supervisors expected their clinical trainees to independently develop critical thinking skills, management skills and in depth knowledge about specialist clinical research and its importance. Eighty percent of students were unaware of the work involved and skills needed to undertake an MD project. The MD students wanted basic skills development with an induction at the beginning of their course and preferred scientist co-supervision of laboratory based projects.

Conclusions
This study suggests the current structure of MD research needs to be improved for an effective student learning experience resulting in successful completion of the course. We have developed a structured program of study for the MD research degree with clear course objectives, skills training and monitoring of progress.

A FOCUS GROUP INVESTIGATION OF THE LEARNING OPPORTUNITIES AVAILABLE IN A 1:1 AND A 2:1 CLINICAL MODEL OF EDUCATION

Aileen O'Brien and Anne O'Connor, University of Limerick

Background: Clinical education is fundamental to physiotherapy curricula according to the World Confederation of Physical Therapists (WCPT 2004). However, the manner in which clinical education is delivered varies. Historically, the 1:1 (1 educator-1 student) model has been predominantly used, but recently the 2:1 (2 students-1 educator) has prevailed. A paucity of evidence exists examining the learning opportunities available within each model (Ladyshewsky et al 1998).

Objectives: The aim was to examine the learning opportunities available in a 1:1 and a 2:1 clinical model of education, in a cohort of physiotherapy students.

Methods: Two focus groups were conducted involving eleven participants with experience of both a 1:1 and a 2:1 model of practice education. Group A comprised Year 4 physiotherapy students and Group B was composed of Year 3 students. These groups were audio recorded, transcribed verbatim and subject to thematic analysis.

Results: The factors that emerged that influenced learning opportunities were directly linked to the individual providers of learning opportunities in the practice setting. Regarding the 1:1 model, the student themselves and the multidisciplinary team influenced the learning opportunities whereas in the 2:1 model, students felt that the peer was an important influence. The Practice Educator and Tutor, patients and peer support were deemed vital for learning opportunities in both models.

Conclusion: Findings may be useful for providers of clinical education and the future provision of learning opportunities for students. The research regarding models of education is scarce and methodologically flawed. Future research is merited in this area.

DEVELOPMENT OF AN ONLINE DATA HANDLING MODULE FOR POSTGRADUATE LIFE SCIENCE STUDENTS

Sandra O'Brien[1], Dr John Kelly[1], Ambrose O'Halloran[1], Dr Fiona Concannon[2]
[1]Pharmacology and Therapeutics, National University of Ireland Galway; [2]Centre for Excellence in Learning and Teaching, National University of Ireland Galway

The acquisition of skills for the collection, analysis and presentation of experimental data is a key ingredient of a life science postgraduate course. In the Department of Pharmacology and Therapeutics, these skills have been developed using workshop sessions, amounting to six hours per week of contact time with a tutor. However, as the students come from a wide variety of undergraduate backgrounds (ranging from chemistry to psychology) it was a challenge to pitch these workshops at the appropriate level. For example, students unfamiliar with the topics felt out of their depth, whilst others found it too pedestrian, particularly in the early stages. As a consequence, an online data handling module was developed on Blackboard encompassing the material covered in the workshops which allowed students to work at their own pace. It consisted of a week-by-week series of data handling activities which also linked to the laboratory work that ran in parallel. Power Point presentations outlined the weekly topics, which were followed by a quiz to allow the students to review what they had learned. For material that required a demonstration, Camtasia™ motion capture software was used and the video files were uploaded onto Blackboard. To ensure that the students did not fall behind, formative MCQ-based assessments were carried out fortnightly. A one-hour tutorial session occurred weekly, to address any questions and to provide feedback on the assessments. At the end of the module, the students sat a data handling exam. A comparison of the results demonstrated an improvement in the average mark (56.5%), compared with a similar assessment in the previous year (45.5%). Also, student feedback rated the approach very positively. Based on these encouraging results, it is intended to implement the online data handling module for the future and identify other student groups that might benefit from such an approach.

ENHANCING STUDENT LEARNING ON PLACEMENT THROUGH THE IMPLEMENTATION OF A CASE-BASED INTERPROFESSIONAL MODEL OF EDUCATION: PERSPECTIVES OF STUDENTS, THERAPISTS AND REGIONAL PLACEMENT FACILITATORS

Marie O'Donnell, Alison Warren, Mairead Cahill, and Olive Gowan, University of Limerick

Purpose
To implement and evaluate an innovative model of interprofessional education. The aim is to improve interprofessional communication and team working skills for the students and therapists.

Relevance
Therapists are working in environments which require interprofessional collaboration therefore it seems imperative that interprofessional working should be mirrored in student education, especially during placements. From reviewing the evidence no evaluation within Ireland has been completed on interprofessional education initiatives linked to the practice education of occupational therapy, physiotherapy and speech and language therapy students.

Description
This research project plans to implement the MAGPIE framework for interprofessional case-based teaching linked to the University of Queensland. Students on the placement site will be involved in case based sessions concerning one of their patients which will be facilitated by the regional placement facilitators. This will be for one half day per week and the sessions will inform the student's interventions with patients. In the final week the students will present their case from an interprofessional perspective to team members.

Evaluation
Three separate focus groups will explore the experiences of the students, therapists and regional placement facilitators following each placement in order to enhance the implementation of this interprofessional education model in further sites.

Implications
The evaluation of this interprofessional model in practice education aims to integrate research into teaching during practice placement in order to ultimately provide best interprofessional clinical practice for patients and communities.
This project was funded by the NAIRTL 2009 Grants Initiative.

STUDENT RESEARCH SKILLS DEVELOPMENT ON A LEVEL NINE TAUGHT PROGRAMME IN ENGINEERING: EXPERIENCES AND REFLECTIONS

Aidan O'Dwyer, Dublin Institute of Technology

This contribution will report, and reflect on, the teaching, learning and assessment of a research methods module on a level 9 taught programme in engineering at Dublin Institute of Technology (DIT). The module was run, in a twelve-week period, for the first time in the 2008-9 academic year. The module is a generic one, the aim of which was to allow students to develop a clear and comprehensive proposal for the engineering research project; the module learning outcomes were designed to that end.

A team-based approach was taken to module instruction. The author was responsible for instruction in the first three weeks of the module, in which a variety of research methodologies were introduced to students, and a student team brainstorming activity to solidify project topics and ideas was organised. This was followed by three weeks of information literacy activity, after which a formative assessment took place, involving students individually giving a reflective Power Point presentation on their chosen research topic. Subsequently, students were introduced to critical thinking, technical writing, and issues such as intellectual property, patenting and the research funding process.

Students were assessed by means of a final presentation and a separate report on the research topic, in which it was expected that the research questions would be identified, the literature review developed, the research methodology made clear and the significance of the study established.

The full poster contribution will reflect on the module experience, focusing on the lessons learned and the further development of the module. This reflection will be informed by a comparison made with a similar module run completely on-line on a separate part-time level nine engineering management programme.

THE TRANSFER OF THE SEVEN PRINCIPLES OF UNIVERSAL DESIGN TO DIVERSE DOMAINS

Ciarán O'Leary, Damian Gordon, and Deirdre Lawless, Dublin Institute of Technology

Universal Design (UD) is a philosophy which guides designers to consider all users when designing products and services, and to provide all users with identical use whenever possible, or at the very least equal use. The philosophy is made concrete through the seven principles of UD, compiled by architectural researchers at North Carolina State University. The porting of the seven principles to domains outside architecture represents a valuable research contribution to those domains. While some principles translate easily others have a less than clear correspondence in the new domain. The seven principles, their application and relevance formed the core theme of a postgraduate design module delivered to students from three separate programmes. Each student was required to identify a specific domain, assess the viability of the principles within that domain, and suggest an appropriate means to port the existing principles to that domain. UD, rather than belonging to one area, transcends all areas and can inform all design processes. The successful porting of the seven principles to diverse domains such as instructional design and product design represents ongoing research with potential to add significantly to those areas. It provides an opportunity to develop a common vocabulary across domains which allows researchers and practitioners to meaningfully discuss UD and learn from each other regardless of domain. Our students have participated significantly in this research. Their work has both benefited from and contributed to the research activity of our group in conjunction with the National Disability Authority's Centre for Excellence in UD. A key underpinning of this research is the approach to developing instructional material guided by the principles of UD for education and learning.

RANKING GRADUATE COMPETENCES: PERSPECTIVES FROM EMPLOYERS AND ACADEMIA

Catherine O'Mahony, NAIRTL

One way in which universities can articulate the outcomes of a university education is by describing the competences developed by a student in the course of the studies. These competences could then be mapped onto employers' expectations for graduates ensuring a more seamless transition into the workplace. A possible barrier to this mapping process is for academics and employers to have different perceptions of the importance of equipping students with various competences. During a two month period, a national survey was conducted in Ireland of Higher Education Institution (HEI) staff and students and public and private sector employers. A total of 2677 responses were collected. 962 (36%) of responses came from HEI staff members, 1402 responses came from students (52%), while 235 responses were from the public and private employer sector (9%). The survey showed general consensus between academic staff and employers as to which competences were perceived as most important. The top competences range from being to apply knowledge practically, having knowledge and understanding of a subject area, being able to interact well with others, having leadership skills, being able to organise oneself and one's time, being adept at communicating, and the ability to work in a team. There was also agreement on the need for academics and employers to share responsibility for the development of student competences and the majority of respondents were supportive of efforts to embed generic competences into the curriculum.

SUPPORTING THE SUPERVISORS OF RESEARCH STUDENTS IN HIGHER EDUCATION

Catherine O'Mahony, NAIRTL; Alan Kelly XE "Kelly, Alan" , University College Cork; Niall Smith, Cork Institute of Technology; Pat Morgan, NUI Galway; Carol O'Sullivan, Trinity College Dublin; and Willie Donnelly, Waterford Institute of Technology

In Irish Higher Education Institutions, there is increasing demand from academic staff for more support in preparing for the task of supervising postgraduate students and sustaining effective practice within changing contexts. In parallel, there is national demand for more structured procedures for supervision and for the development of staff supervisory skills. NAIRTL has funded a major project, collaborative between University College Cork, Trinity College Dublin, Trinity College Dublin, National University of Ireland Galway, Cork Institute of Technology and Waterford Institute of Technology to run pilot initiatives in this area over the next year and to develop strategies for optimised support to supervisors. The first action of the Project Steering Group was to carry out a survey within the partner institutes in Spring 2009 to solicit the views of the academic and research community on this area and perceived key priorities in order to tailor developments accordingly. The survey showed broad agreement with and support for initiatives that provided training or support for supervisors. Drawing on the results of this survey and best practice from international institutions in the US, Europe and Australia, the group designed a training framework for supervisors of research postgraduate students, which will be piloted in the NAIRTL partner institutions in Spring 2010. The pilot training framework consists of four workshops and, following initial delivery, will be evaluated and reviewed prior to national roll out later in 2010.

PROFESSIONAL ATTITUDES AMONG FINAL MEDICAL STUDENTS IN CORK

Eoin O'Sullivan and Anthony Ryan, University College Cork

Background

While physicians are generally well schooled in the sciences, professionalism remains part of the 'hidden curriculum' and is often a neglected area in medical education. The purpose of this study was to assess professional attitudes of emerging doctors (final year medicine, University College Cork) and compare them to physician responses to an identical questionnaire delivered in Japan and the United States.

Method

The internationally validated Barry professionalism questionnaire was circulated, with permission, to 100 final medical students at University College Cork (UCC). This questionnaire detailed six professional dilemma scenarios, containing four possible answers to each dilemma, which students were asked to rank order.

Results

All students completed the questionnaire. Their responses and those of Japanese and US doctors are presented in the table. The best "first response" answered question by UCC students related to prescribing/honesty. The poorest answered questions involved sexual harassment and alcoholism (25% and 14% respectively).

Conclusion

Emerging UCC doctors were similar to their international colleagues in answering professional dilemmas. However, there were sub-optimal responses to sexual harassment and alcoholism issues. These areas could benefit from more focused teaching during medical training

References

Barry, D., Cryan, E. and Anderson, R.J. (2000). "Common Issues in Medical Professionalism: Room to Grow", American Journal of Medicine, vol. 108, no. 2, pp. 136-142.

Tokuda et al (2009). "Questionnaire Survey for Challenging Cases of Medical Professionalism in Japan", Medical Teacher, vol. 31, no. 6, pp. 502-07.

APPLICATION OF THE TEACHING FOR UNDERSTANDING FRAMEWORK IN TOPOGRAPHICAL ANATOMY

Deniz Yilmazer-Hanke, University College Cork

The Teaching for Understanding (TfU) Framework is a pedagogical tool used in designing and developing a course. Here, the TfU is applied to teaching topographical anatomy to first year dental students, and the through line is therefore defined as teaching clinically relevant topographical anatomy in dentistry. Accordingly the generative topic of the course includes 'understanding the structure and function of those parts of the living human body relevant to dental practice: Head, neck, thorax and relevant parts of the upper limb, overview of abdomen and pelvis'. The Understanding Goals can be summarised as: (i) understanding the topographical relationship of anatomical structures on cadavers and in patients and being able to identify them; (ii) demonstrating the ability to relate anatomical structures to their function; (iii) differentiating anatomical variations and comparing them with pathological changes; (iv) applying anatomical knowledge for avoiding damage of structures during clinical practice and in disorders. The Performances of Understanding (PoU) are used as a criterion for fulfilling the points defined above, which are monitored in ongoing assessments. In practical classes the students learn how anatomical knowledge is obtained by viewing prosections and carrying out dissections, which helps them to deepen their understanding of principles of the three dimensional organisation of the human body. The students demonstrate their PoU in their practical skills in informal discussion with their instructors and peers during dissections, as well as in formal spot exams. The understanding of the theoretical basis of topographical anatomy is also assessed informally in lectures and practicals, whereas formal exams include structure-function relationships, normal anatomical variations, relevant links to developmental abnormalities disorders and damage caused by surgical interventions. The present survey shows that the TfU helps to outline the key components of the course and to set goals for its further improvement in the future.

CONFERENCE DELEGATES

Andrew P. Allen	TCD
Nicholas Allen,	TCD
Doman Alomari	TCD
Delphine Ancien	NUIM/NIRSA
Aileen Barrett	RSCI
Caroline Barrett	UCD
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Julie Bernsden	UCD
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John Bowman	RTE
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Andrew Colgan	Forfás
Helen Condon	TCD
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Maeve Conrick	UCC
Margot Conrick	UCC
John Considine	UCC
Paul Conway	UCC
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Emer Cunningham	UCD
Kathleen Curran	UCD
Caroline Dalton	UCC
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Ciaran Dawson	UCC
Kellie Dean	UCC
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Sandra Donohue	NUIG
John Dooley	Forfás
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Eleanor Doyle	UCC
Elaine Drummond	UCC
Eileen Duggan	UCC
Angela Evans	UCD
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Odlia Finlayson	DCU
William Fitzgerald	IT Sligo
Des Fitzgerald	UCD
Mike FitzGibbon	UCC
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Greg Foley	DCU
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Séan Gannon	TCD
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Sinéad Kelly	NUIM
John Kelly	NUIG
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Charles Larkin	TCD
Mark Lawler	TCD
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Eilish McLoughlin	DCU
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Órla Murphy	UCC
Shanthi Muttukrishna	UCC
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Michelle Nelson	UCC
Dermot Nestor	TCD
Grace Neville	UCC
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Trish O'Brien	NQAI
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Marian O'Connor	UCD
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Marie O'Donnell	UL
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Lisa Pursell	NUIG
Aideen Quilty	UCD
Neil Quinlan	WIT
Anne Rath	UCC
Helen Richardson	TCD
Clare Rigg	IT Tralee
Sinéad Riordan	RIA
Cicely Roche	TCD
Silvia Ross	UCC
David Ryan	UCC
Fainche Ryan	Mater Dei Institute
Martin Ryan	UCC
Norma Ryan	UCC
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Benedicte Sage-Fuller	UCC
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Nicky Saunders	NCAD
Meabh Savage	WIT
Michael Seery	DIT

Dan Shanahan	DIT
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Mary Shine Thompson	St Patrick's College Drumcondra
Robert Shorten	NUIM
Amy Smith	UCD
Kathryn Smith	UCD
Niall Smith	CIT
Simon Smith	UCC
Fiona Smyth	HETAC
Anthony Staines	DCU
Michelle Starr	UL
Paul Surgenor	UCD
Catherine Swift	MICL
Justin Synnott	IRCSET
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Stephen Thornhill	UCC
Ben Tonra	UCD
Eugene Toolan	St Angela's College Sligo
Claire Twomey	Molecular Medicine Ireland
Paul van Kampen	DCU
Janet Varley,	St Patrick's College of Education
Cian Walsh	UCC
Alison Warren	UL
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Anthony White	Milltown Institute
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Jude Wilson	Institutes of Technology, Ireland
Brad Wuetherick	Alberta University
Stephen Yearl	UCC
Deniz Yilmazer-Hanke	UCC