CPLA
Centre for Promoting Learner Autonomy
A Centre for Excellence in Teaching and Learning

Enquiry, Autonomy & Graduateness:
Achieving an outstanding student learning experience

Conference Proceedings

Edited By: Chris Corker

Sheffield
Hallam University

SHARPENS YOUR THINKING

Enquiry, Autonomy and Graduateness

Achieving an outstanding student learning experience

15th June and 16th June 2010

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Preface

The Centre for Promoting Learner Autonomy welcomed delegates from across the Higher Education sector in the UK and from further afield, for the Enquiry, Autonomy and Graduateness Conference, hosted by the CPLA CETL at Sheffield Hallam University. The conference was dedicated to enhancing the student learning experience, providing a forum for sharing and discussing practices and theories around the development of the autonomous learner, the role of Enquiry-Based Learning in HE and the changing conceptions of the nature of graduateness.

Through a range of workshops, paper presentations and an extensive poster display, delegates had the opportunity to share and engage with practices, research and ideas that could provide inspiration and influence on their own approaches to teaching and learning. The conference also served as a forum for sharing the learning that had arisen from the work of the Learning Through Enquiry Alliance, and was further enriched by the inclusion of presentations from international delegates.

Over the course of the two days, a total of 45 parallel sessions were run, covering a range of themes as follows:

1. Achieving an outstanding student learning experience through Enquiry Based Learning;
2. Learner autonomy and the student learning experience;
3. Designing learning spaces to support learner autonomy;
4. The role of assessment in achieving learner autonomy;
5. Achieving learner autonomy as a graduate attribute;
6. Transitions and the student learning journey;
7. The use of technology in achieving an outstanding student learning experience;
8. Learning in partnerships;
9. Student voices;
10. Developing communities of practice;
11. Professional, educational and curriculum development.

This broad range of themes allowed delegates to engage with their own personal interests in teaching and learning. Each of the two days of the conference also commenced with plenary sessions on learning spaces, the first day being provided by Ivan Moore, Phil Levy and Paul Taylor, giving a staff view of learning spaces. The second days plenary was run by Louise Goldring, Jamie Wood, Stephen Logan and myself, giving a student perspective of learning spaces, in association with the Student Learning and Teaching Network. The two plenary sessions, and the themes they explored, provided a lively topic for debate. Completing the two day programme, Terri Grant, Head of the Professional Communications Unit at the University of Cape Town provided an engaging and thought provoking keynote address.

Overall the conference was a huge success, with more than 150 delegates attending over the two days. I played a major part in the conference planning and delivery, and am incredibly

proud of the conference which was produced, with feedback from delegates being universally positive. I would like to take the opportunity to thank all of the presenters who took the time and effort to produce the wide range of workshops and paper sessions the conference hosted. I would also like to personally thank Terri Grant and Claudia Kalil for attending the conference, making the trip from South Africa while the world was in the middle of Football World Cup fever, and providing us with our keynote speech and a very well attended workshop.

Presented on the following pages is a small selection of papers and proceedings generated from the Conference, including Terri Grant's keynote address. I hope that they will provide you with ideas for ways in which you can enhance your teaching practice and improve the students' learning experience.

Chris Corker

Acknowledgements

I would also like to acknowledge the hard work of Ivan Moore, CPLA Director at the time of the conference, for being the inspiration and driving force behind the planning and delivery of what would become Enquiry, Autonomy and Graduateness for over a year prior to the conference taking place, and for chairing the conference over the course of the two days.

About the editor

Chris began working with the Centre for Promoting Learner Autonomy in 2008, and has been involved in providing project support, events planning and conference administration for CPLA. He has also co-edited three volumes of case studies relating to promoting Learner Autonomy. Chris is a Sheffield Hallam University graduate, having completed his BA in History in 2008, and his MA in History in 2009. He is currently a PhD research student with an interest in business history, exploring the British armaments industry from 1900 to 1939. One of his interests in teaching and learning is the development of students as collaborators. He is also an Ambassador for the Student Learning and Teaching Network.

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Keynote address (15 June 2010): From the classroom to the boardroom - higher education strategies for enhancing professional communication practice and 'graduateness' for a global workplace

TERRI GRANT

HEAD OF PROFESSIONAL COMMUNICATIONS UNIT, SCHOOL OF MANAGEMENT STUDIES
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Before her recent stint as Managing Director of the World Bank, Dr Mamphela Ramphele was the Vice Chancellor (VC) of the University of Cape Town (UCT) in the mid-90s during Nelson Mandela's presidency. Not only was she the first black VC in post-Apartheid South Africa, she was the first woman - although not the first medical doctor. Interestingly, her predecessor was a medical man and our current VC is another. Perhaps the tertiary 'powers that be' realize just how sickly our educational situation is. Having said that, however, I don't think this malaise is unique to South Africa (SA). Even developed nations have had (and continue to have) their challenges, politically, economically, educationally. Pondering wholeness, health and sustainability seems a most apt preoccupation globally. During her tenure, Ramphele strove to achieve and facilitate 'graduateness', but what does this mean? For me, it's a job literate, technically numerate, professionally skilled, communicatively competent and ethically sound graduate ready for the world of work. In these particularly unsound times, this seems a tall order. When our most revered companies and institutions fail, when our captains of industry and incumbent politicians fall foul of many tenets of corporate and governmental governance and allegations of corruption are rife in the media, then providing feasible codes of conduct and excellent role models may prove difficult.

Is our mission to achieve 'graduateness' idealistic claptrap or is it 'doable', despite financial, ethical and polar cap meltdowns? As educationalists and practitioners, we have a job to do and we must grasp the nettle. So,

- what are our educational systems producing?
- what kind of toxicity exists in our public and private sector institutions? and
- what can we do about it?

In this address I will provide a brief overview of:

- the South African educational arena and language policies,
- assumptions and findings of a Business Communication Needs Analysis, and
- the twin concepts of Scenario Learning and Scenario Pedagogy, terms I coined to describe a situated, enquiry-based approach to teaching and learning which we believe contributes to graduateness. As an example of such an approach, my

colleague, Claudia Kalil, and I will run a Scenario Learning and Pedagogy workshop tomorrow.

Our mission is to constantly assess curriculum relevance, appropriateness and "fit" in order to best align theory and practice for lifelong autonomous learning amidst rapid change. We need to align academic and work-place goals to produce work-ready and work-savvy graduates who are resilient, robust, curious, motivated, autonomous and entrepreneurial in their thinking. But, given the iniquitous legacy of Apartheid and teething problems of a young democracy, this is not easy.

The characteristics of contemporary classrooms worldwide also mean that there is often less time to achieve more. This situation, coupled with growing student numbers, multilingualism and diversity means that "the experience of learning in higher education is, for most students, still very much a *spectator sport*", according to Tinto (2003: 1). More research into imaginative approaches to teaching practice is necessary if the dynamic links among student know-how, vocational preparedness, organisations (such as the university or workplace), global issues like environmental management and digital technology proliferation, and curriculum, are to be better understood (Grant 2004; Grant and Kalil 2008).

The use of a role-play, experiential and multimodal pedagogy such as Scenario Pedagogy seems to have particular relevance in South Africa where English as additional language (EAL) and disadvantage still characterise our educational landscape. The change in government in 1994 brought a new imperative to redress the hegemonies and inequalities of the past (White Papers 1997). Despite urgency and espoused educational prioritisation, progress has been slow and disjointed. Many policymakers, educationalists and students alike continue to express outrage and frustration at the slow pace of educational reform at all levels: primary, secondary and tertiary; media reports on the dire state of education, particularly in previously disadvantaged areas, are almost a daily occurrence. South Africa was and still is one of the most unequal societies in the world and sadly, the gap has widened. The harsh reality is that the poorest of the poor in the most vulnerable and under resourced communities in South Africa continue to experience a dire educational divide. The divide between the 'have's' and the 'have not's' is as wide if not wider than before in many crucial areas, not least of all educational resources, pedagogical availability and expertise, part of a "toxic mix" which negatively impacts efforts at reform and transformation.

As of December 2009, we had 14,382 under-qualified secondary teachers of grades 10 to 12 with very few of these (146/1981) in the Western Cape enrolled to further their education (statssa.gov.za). The annual National Benchmark Tests Project (2009) which measure academic and quantitative literacy and mathematics has confirmed that many students, even those not traditionally classified as disadvantaged, seem under-prepared for the rigours of academic programmes, especially in highly numerate degrees such as information systems or chartered accountancy. Students tested were placed in three categories: proficient (good), intermediate (satisfactory) and basic (poor). Only the top level can practically guarantee student autonomy. Nearly half of all first-time students fall into the

intermediate levels for academic literacy where they would require some degree of academic support to pass and graduate; the levels for mathematics make for depressing reading as nearly 80% would require such assistance (being adjudged at the basic and intermediate levels). As the country cries out for more Mathematics and Science graduates and teachers, this is worrying.

Besides this, although for a time (2002-2007) more learners went to school and passed their National Matriculation examinations, the annual 2009 General Household Survey, released by Statistics SA in May 2010, shows a worrying drop-off in school attendance. Although this may have its roots in the recession with a current unemployment rate of 25.2% (1st quarter 2010), and parental inability to pay school fees,[1] Matriculation results are also weaker, fewer students are entering tertiary education and there is a higher drop-out rate. A third of students entering UCT do not graduate, for instance, a huge personal, institutional and national loss and cost and the average for the country is equally dire.

The dilemma of linguistic hegemony, in particular the use of English as the legitimate language of education, the economy and the state exacerbates the divide still further and continues to oppress. Nearly two decades ago, theorists such as Bourdieu pointed out that the symbolic power afforded by being well versed and practised in the dominant language and at ease within its associated contexts and corridors of power perpetuates an unlevel playing field where the privileged excel across all socio-economic frontiers.

Despite the fact that there are 11 official languages in South Africa and that less than 10% of the population speaks English as a home language, English remains the dominant lingua franca of government, business and education and is the only language of tuition at most of our tertiary institutions.

Besides having to learn the hegemonic rules of institutional academia and academic practices (often tacit and invisible) and having to shoulder the heavy mantel of a new discipline such as accountancy, information systems or marketing with its own *linguistic and cultural capital* (Bourdieu 1991), over 50% of our students have to do so in an additional language, twice, three, often more times removed from their life world and predispositions or *habitus*, a term coined by Bourdieu (1991). If education is critical to social and economic empowerment, then more attention to enquiry-based multimodal pedagogical practices, alternative curricular approaches and diverse learning styles is crucial.

My interest in Scenario Learning and Pedagogy arose out of concerns about relevance and appropriateness, given the enormity of difference and diversity within the system and the country as a whole. Questions that continue to concern us include:

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[1] It is important to note that although a no school fee policy exists in South Africa, these schools are all in disadvantaged communities; poor parents who wish to access better education in wealthier areas are not legally entitled to no or reduced fees.

- are we teaching what our students need to know (capacity-building in terms of knowledge and content),
- are we doing so in a way that mimics workplace practices, and
- how should we be engaging our students i.e. opting for 'standalone' courses or integrating professional communication training across the curriculum?

I'll start with the last point. As a key indicator of professional competence and work-readiness, it is presumed that communication skills are enmeshed within all business and technical curricula and taught by all academic staff, directly or indirectly. The Professional Communication Unit (PCU) at UCT was, however, established in 1975 to provide additional specialised technical and business communication training to students entering professions such as Commerce and Engineering for the very reason that it was felt that professional curricula did not include or emphasise these skills. Standalone courses with their own specialist teachers, course codes (and fees!) do achieve focus and attention but they do need to be realistically situated and aligned within core curricula to get real buy-in from students and other course convenors.

In terms of knowledge and content, it is incumbent on academic departments to remain up to date if they wish to be, let alone preach, sustainability. Although the aim of communication skills training *before* the advent of globalised computer-mediated communication (CMC) was mainly to teach students how to write and speak well - and no apology should be made for teaching these core umbrella linguistic competencies - there is no doubt that changes in the world over the past three decades have expanded the boundaries of business communication programmes to include, among others, topics such as cultural diversity, ethics, technological prowess and sustainable development for a global economy and to do so through a lens of multimodality and multiliteracies. The New London Group (2000) and University of London's Institute of Education seem at the forefront of this shift in thinking and research.

In order to prepare our students for the workplace, I undertook a formal Business Communication Needs Analysis (2000-2003), partly funded by the National Research Foundation and have subsequently re-visited the study with later findings. At the outset, I made a number of key assumptions about the workplace that I hypothesized would be reliably validated such as a shift from:

- a white male dominated to a more gendered and diverse workplace,
- individual to team and collaborative approaches to project work with greater 'co-opetition',
- prepared and individual presentation styles to group presentations and impromptu speaking,
- face-time to cyber time and a preference for electronic and digital communication over traditional modes: the 'Net generation'
- verbal to multimodal and semiotic forms of communication, and
- corporate parenthood and narrow cradle to grave employment to greater SME and entrepreneurial initiatives, outsourced and global. In other words, the demise of the

one stop career shop with the gold watch or carriage clock on retirement day at the hands of vigorous professional globe-trotting, job-hopping and the rise of high-end migrant labour and the 'personal brand'.

Gender and Diversity

Results in a nutshell concluded that, yes, there are more women in the workplace and yes, a few CEO's are women who earn a fortune such as Kraft, Yahoo and in SA – for a brief time - Anglo American, but in the broader workforce (USA), women receive 79% of the salaries earned by men doing the same job, for the same hours and in 2009 female heads of companies of all sizes made about 75% of what men did in a poll of 1.1 million chief executives (US Labor department poll). According to researcher, Robin Ferracone, women suffer greater scrutiny and a narrower band of "acceptable behavior" so double standards abound. Ladies, the glass ceiling is cracked but not broken. If the US results today are similar to my results of 7 years ago, then not much progress has been made and we have not considered countries in the Middle or Far East.

In terms of diversity, almost no one in my original sample included any other aspect of diversity other than race. Yes, we have a rising black middle class, our aspirational "black diamonds", as they are known in South Africa, and some Black Economic Empowerment (BEE) success stories but then again, are we doing as well as we could be? Professor Melissa Steyn, Director of iNcudisa, the Institute of Intercultural Communication and Diversity Studies at UCT, has come up with mixed results and mixed messages in various studies (Steyn 2003; Grant 2007). Her research into Diversity and Equity Interventions in South Africa (DEISA), found a few very good initiatives in certain companies notably those whose livelihoods depended on government contracts. However, commitment to transformation and creating a 'diversity friendly' climate varied greatly with some firms cynically ignoring their BEE obligations altogether, electing to pay fines for non-compliance.

Interestingly enough despite white moans and groans about affirmative action and reverse discrimination, there is still only a scattering of black people in key positions. Although certain black names enjoy economic and consequent media prominence, top positions in South Africa remain very much in pale male hands, who have actually increased their stake at the top in corporate South Africa post 1994 with concomitant huge increases in executive remuneration. Steyn also found that young black graduates still find it far more difficult to find work than their white counterparts, a finding endorsed by Cathy Sims, Deputy Director of the Career Development Programme and Director of the South African Graduate Recruiters Association (SAGRA). Her ongoing research shows that inexperienced black graduates, particularly those with a Humanities/Social Studies background and/or from previously disadvantaged black universities, may find the road to employment particularly bumpy. Once in the job market they have to endure traditional interview and competency assessment techniques. With the awful legacy of *apartheid* and lack of exposure, many black students fail to sell themselves confidently in interviews, usually conducted in English - a second or third language for most of them. Unless interviewers are sensitive to these huge socio-economic, cultural, race, gender and language issues and taboos and try to judge each

applicant accordingly, they may never uncover their full potential. In other words, 'business as usual' in education and recruitment is no longer viable. If we want to effect deep transformation and sustainable business practices that are resilient, ethical and flexible, it has to be 'business as unusual' especially as career paths are so different to those of a generation ago. Again, this is not unique to SA.

Clearly, academic research and industry practitioners need to continue to monitor the situation and identify ways in which curricula, training and interventions can be transformed and strengthened strategically. While even minor progress is better than nothing, the really effective interventions in business and education are those that attempt to change the DNA of organisations as well as attitudes of Afro-pessimism that pervade this continent. (Although at present, we're having ample doses of global pessimism too, the Euro zone in particular!)

Individuals and Teams

The second assumption involving collaborative and collective work processes and multi- and transnational programmes and projects proved more realistic. Problems today from HIV/AIDS to terrorism, from corruption and financial fallout to climate change are globally pervasive and demand global solutions and international stakeholder commitment. We simply can't go it alone. Indigenous African wisdom incorporates a term known as *Ubuntu* which interestingly enough reflects a Maori version called *Fannui*: "I am because we are and we are because we are together." This may make an excellent global clarion call. In my book, *Communicating @ Work* (I'm indulging in a bit of "below the belt advertising", as one of our 2nd language marketing students said), I talk about co-opetition (Grant 2008). Corporates, governments and individuals: You and I – the proverbial Joe Bloggs on his blog, wiki, website or social networking site – can make a difference and exercise leverage and collaborative muscle to get things done. Most of our teaching is now team-based (not because it's more convenient – that too!) but to mimic workplace practices with their ad hoc memberships, flexible agendas, planned and impromptu "what if" scenarios that allow for and encourage team members to be open to change, tolerant of ambiguity, globally compassionate and strategic, autonomous thinkers.

Face-time and Cyberspace

The assumption around face versus cyber time was the most interesting of all the needs analysis results and seemed tinged by nostalgia. Despite the gross inequities within our society with few South Africans, black in particular, being 'connected', our students are no 'digital strangers'. For most UCT students, computers and cellphones are not technology but simply part of the environment! When needs analysis respondents were asked which business channels of communication were most *commonly* used, modes such as PCs and laptops with applications such as email, internet search engines, etc. were mentioned (and more recently PDA's and cell phones) but when asked which channel was *preferred*, face to face communication involving enquiry, discussion, debate and contestation won the day over its online counterparts. Face time was considered key to business success. Traditional

face to face presentations in meetings, seminars and launches were also considered very influential. On the other hand, online communications can provide a rhetorical safehouse. This is far from an either-or scenario but speaks to the necessity of students having a repertoire of available resources to choose from and combine, traditional and digital.

Words and Pictures

The shift from verbal literacy to a multimodal and semiotic landscape is monumental and this assumption was borne out 100%. We live in a screen- and eye-minded society where today's generation is far more at ease with pictures than words, with ubiquitous PowerPoint than blackboard or flipchart. Animation, film clips, music, in fact the blurring of media ensembles – these are now 'everyday'. Adopting a multiliteracy approach presents enormous challenges and opportunities both in the classroom and the boardroom and feeds in to our crucial teaching around page readability and web usability.

Macro and Micro Businesses

The final assumption around the shift from big business to small enterprise management was, alas not born out in South Africa where entrepreneurial activity was, to put it bluntly, abysmal. The Global Entrepreneurial Monitor (GEM), an annual UCT Graduate School of Business measure, has SA at under 5% entrepreneurial activity in 2007 as opposed to a world average of 9% and the rest of Africa at 13%. OK, so the rest of Africa doesn't boast the corporate development that characterizes our business landscape nor the infrastructure that we enjoy – especially with the World Cup building frenzy (Editors note - The keynote speech took place during the 2010 Football World Cup in South Africa) – BUT the lack of innovative entrepreneurial activity, even in the face of high unemployment, is worrying. The fact that a small country like New Zealand beats us in the entrepreneurial stakes is especially galling. Only a small proportion of our graduates in the sample worked for themselves or SME sector and the likes of Mark Shuttleworth, the UCT graduate who sold his small digital security business (THAWTE security certification) for billions, are few and far between. I must say that the last year or so has shown signs of improvement and young entrepreneurs are starting to distinguish themselves from the herd. Entrepreneurial studies is a growing university field – I am involved in two such post-graduate programmes – and bureaucratic red-tape and Government apathy are obstacles which are slowly being overcome. The hard-line Sepp Blatter/FIFA regulations around free enterprise are a disgrace but even here many a wily operator has managed to sidestep their policing and the much loved/hated Vuvuzela is doing particularly well! Students need to learn how to think creatively, develop their personal brand and sell themselves despite obstacles and competition.

Beside the 'what' of curriculum planning and content inclusion, the 'how' of teaching is still an interesting question. The death of the lecture, long predicted, has been grossly exaggerated. In fact, the lecture (and the lecture circuit globally) has enjoyed a resurgence professionally, politically and academically with mass media as well as online and distance education development. Whether a 'click or brick' institution, screen education – podcasts

and webcasts – complements face-time and, as said, a multimodal approach embracing spoken, written and visual messages – whether online or face-to-face – is the way to go. The growth of workshop-driven and participant-centred teaching, both in and out of the classroom, together with exchange programmes, internships, service learning and continuous education with formative and summative assessment has also grown and matured.

Scenario Learning and Pedagogy

My interest in commerce education, pedagogy and graduateness has helped me evolve the scenario-based teaching-learning model mentioned earlier. It aims to address some of the educational challenges outlined. This collaborative approach which embeds all teaching within a context-rich scenario seeks to galvanise student attention and interest. Unlike an existing case or past problem, Scenario Pedagogy involves a Meta scenario which is ongoing and happening in real time. As a class, we 'enter' and 'exit' the scenario which continues independently of our 'participation'. We piggyback all our research, writing and presenting efforts within this context and grapple with the real issues that it throws up.

Over the years, we've realized that the more meaningful and technically challenging the scenario, the more motivated the students seem to become. They enter into the role-play experience with anticipation and curiosity because it is the context that interests them rather than the communicative principles we are trying to facilitate. Instead of simply listening to or reading about the subject matter before doing an assignment, students are creatively 'assaulted' by seeing/listening, thinking/feeling, assessing/doing in a just-in-time, ongoing fashion. Scenario Pedagogy aims to increase the likelihood that these students will improve their overall multimodal communicative practices in a contextually relevant way because the interpersonal, group, oral and written theory and tasks are not taught/learnt for their own sake but as a means to an end.

The choice of scenario is therefore crucial. The scenario should ideally reflect the student's field of study, be topical and provide an intellectually challenging backdrop and content-provider for all communication tasks. Thorough investigation and preparation are necessary so that all stakeholders are on board and willing to co-operate. You can't leave this to chance. One of our most successful applications of Scenario Pedagogy has been with our post-graduate accounting students. The scenario? UCT's Sustainability Programme and "Go Green" campaign which was officially launched by our Vice Chancellor, Dr Max Price in late 2008. This topical scenario, involving corporate and institutional governance, sustainable development and environmental issues appeals to commerce students who grapple with the 'triple bottom line' in their studies. We'll introduce other scenario case studies with other groups of students and departments tomorrow and also take you through a collaborative exercise.

A constructivist approach to pedagogy contributes to this approach where students are actively involved in assessment and are accountable for their own learning in iterative stages. This experiential and portfolio approach to learning is also well aligned to a

convergence model of communication as discussed in my book, where participants are mutually responsible for negotiating meaning and dialogical interaction – more about this tomorrow! This push to autonomy and independence (or interdependence) is particularly true in Scenario Pedagogy as the facilitators are not subject experts per se; on the contrary the students often know far more about the intricacies of the areas they are exploring and are thus encouraged to 'co-teach' within a workshop environment.

Scenario Learning and Pedagogy seems to support the goals of Higher Education by assisting in producing graduates with the skills and competencies of critical and analytical problem-solving, effective communication, working in diverse teams, self-management and organisation, information processing and use of technology within a real-life context. As one of the students said: "It teaches us about the real world and how things work." Their assignment results as well as course assessments over two years, seem to suggest that participants (students and facilitators) together contribute towards achieving that ideal painted at the beginning of this address of a job literate, technically numerate, professionally skilled, communicatively competent and ethically sound 'being' ready for the world of work: someone who feels pride in self and institution and will hopefully sustain this mentality into the workplace.

Judging from observations, reflections and assessments, I also suspect that this enquiry-based method enhances the potential for accelerated intercultural synergy because of its emphasis on joint-venture teamwork and role play. Diversity in the classroom as well as the boardroom is here to stay. The collaborative interplay of various methods and media, a characteristic of Scenario Pedagogy, helps to minimize individual weaknesses – good news for EAL students. As the teams are small and each member has a very distinct role and responsibility, the disadvantages of group work where some members do little and get away with it – especially in large groups – could also be minimized.

Scenario Pedagogy affords a balanced approach that privileges many voices and encourages participants to work together to contribute to achieving an outstanding learning experience. I would like to end with a quotation from President Jacob Zuma, who in his opening address at the National Education Summit held in Cape Town in early May 2010, called for a Code for Quality Education and said: "Education must be elevated from being a departmental issue, or even a government issue, to a societal issue – one that occupies the attention and energy of and for all our people." I believe it is 'doable' and that we can all make a difference in our quest to achieve graduateness. As another of my students said in his job application cover letter: I am "internally grateful" to you for your attention. With his soul and guts, no doubt?!

Thank you.

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Student autonomy and the role of educational guidance and study practice in contributing towards student success

JACKIE CAWKWELL AND PHIL RODDIS

STUDENT AND LEARNING SERVICES
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Abstract

The paper explores the role of Education Guidance and Study Practice services at Sheffield Hallam University in supporting student success, focusing on student transitions and learner autonomy.

We start by describing our Learner Development (LD) work as informed by rich understandings (Tenant, 1997; Laurillard, 2002; Darlaston-Jones, 2003) of the student experience. We relate those understandings to the way issues brought by students - typically to do with assignment briefs and past feedback - are used by us as focal points for developing both skills (academic writing, time management, team work etc.) and a critical/reflective outlook. This is followed by a brief account of the evolution of LD at SHU, in which we identify five distinct models before arguing that our task-focused approach goes some way towards offsetting flaws in 'embedded' approaches on the one hand, generic approaches on the other. We also argue that while models vary in the degree to which dialogue between LD providers and faculty are necessary in principle, all models require (but don't always get) such dialogue in practice. Finally, given the interrelatedness of such key concepts as learner autonomy, student success and employability we find Barrie's (2004) work on graduate attributes equally applicable to challenges confronting us, where we see its potential both in guiding choice of models and supporting meaningful dialogue with faculty.

Learning Development: Theory and Practice

In encouraging the development of active learning our LD provision draws on a range of pedagogies. Ideas originating with cognitive development theorists like Knowles, Marton and Saljo have evolved in the work of more recent authors. Entwistle (1997) draws on Marton & Saljo's description of deep versus surface approaches to learning but notes a third approach: strategic, with successful learners demonstrating persistence, meta-learning, transferable skills development...and accommodation to tutor preferences. Similarly Tenant (1997) expands Knowles' notion of self-directed learning to take in the development of innate qualities as well as learned skills in refining the critical abilities of problem formulation, data needs identification and evaluation, and communication of answers.

We also look to research on student orientation and transition, captured in the work of McInnis and Darlaston-Jones. In a five year study of the first year experience of Australian students, focusing on adjustment to workloads, standards and expectations, McInnis et al (2000: 11) report that students find the "shift to personal responsibility for their learning

very difficult". Also drawing on the Australian experience, Darlaston-Jones' found that students:

> saw themselves as being responsible not only for their own learning but also for the planning of their course, anticipating potential problems, and overcoming difficulties. However, they also spoke about not knowing what to expect from university. (Darlaston-Jones et al, 2003: 12)

Our own experiences bear out these findings, unfamiliarity with the expectations and challenges of autonomous learning being recurring themes of our discussions with students.

Since we seek to impact positively on the first year experience and support successful transitions throughout the learning journey, bridging the gap between expectations and reality is vital. We help students in their personal approaches as part of our one-to-one discussions, and anticipate general issues for larger cohorts through tailored workshop programmes. We have also undertaken detailed programme-specific research into the first year experience (Cawkwell, 2008) and are developing new ways of influencing the wider debate on teaching and learning within the University.

Other practical manifestations of our approach can be seen in the connectivity of our work and that of the Learning and Teaching Institute (charged with developing and implementing LTA strategies at Sheffield Hallam University (SHU), and leading on such key initiatives as the Teaching, Assessment and Learning Initiative - TALI). Assessment is at the heart of our discussions with learners and engagement with TALI clarified our thinking on perspectives offered by authors such as Drew and Nichol.

Drew (2001) discusses the key external factors of assessment, course organisation and curriculum delivery in relation to four internal factors: capacity for self management, motivation, self awareness and active use of support services. While learners see the value of self-management they still need clear deadlines and balanced phasing of assessment. Motivation is undermined, Drew finds, when assessment does not relate clearly and consistently to other curricular activity. By contrast, reflective self awareness is encouraged when students are clear about what is expected. The Re-Engineering Assessment Practices (REAP) project led by Nichol (2006 & 2007) describes the key principles of successful approaches to assessment (and, we think, learning in general) as engagement, empowerment and responsiveness. Our LD work with students typically begins with such key documents as learning outcomes, assignment briefs and marking criteria. By mediating their understanding of such documents we seek transitional strategies that meet immediate needs on the one hand; encourage self-directed approaches to learning on the other. To this end we find the learner-centric work of McNair (1996) useful for its emphasis on seven core attributes: a sense of self, perceptions of competence, meta-cognitive skills, motivation, problem solving, personal management skills, and control over decision making.

Laurillard (2002) who, like Entwistle and Tenant (ibid), builds on work by earlier constructivists, uses the concepts of reflective, active and experiential learning. Her

'conversational framework' offers fresh perspectives on how education advisers modify their approaches in light of student understandings of previous learning situations. From this standpoint LD's role is to support students in 'transforming' existing knowledge and experience by questioning their expectation and previous experience.

We are aware of considerable support for Gibbs' (2009) argument that embedding LD within core curricula is the only approach to LD that truly works. Embedding does have its attractions, the results of decades of 'parachute-in' provision having been less than inspiring[1]. We nevertheless see a continuing role for generic provision if informed by the richer understandings of relationships between LD tutor, subject tutor and learner to have emerged over the past two decades and where general principles, skills and habits are translated into and through core disciplines. This should be borne in mind as we turn now to models of LD provision at Sheffield Hallam University.

Models of Learner Development

In an earlier paper (Cawkwell & Roddis, 2009) we charted the development of LD support at SHU over three decades, identifying four distinct models:

1. 'Parachute-in' - LD specialists are 'brought in at course leader request to teach and assess 'study skills'. This approach is out of favour with some commentators (Wingate, 2006) who argue that critical thinking, academic writing, teamwork etc are best developed 'in-subject'.
2. Linked-modules - 'study skills' taught by LD specialists but connected through assessment to one or more core discipline modules.
3. Themed workshop - LD specialists deliver one-off sessions on some aspect of study, such as essay writing or exam preparation. Historically such sessions, open to all, were necessarily generic. Nowadays, tailored to specific cohorts, they typically explore overarching themes through 'tough' assignments.
4. Individual support - by appointment or drop-in. Students interact one-to-one with LD specialists. Again the focus is typically an assignment.

Over the past year another model has been used.

5. 'Embedded' - LD and subject tutors jointly plan assessment and delivery in, and embed LD principles within, new or redesigned modules.

Additionally, many subject lecturers incorporate general academic skills into their teaching. To what extent and effect we cannot say but on the effectiveness of LD interventions in general we noted:

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[1] Both 'embedded' and 'parachute-in' models of LD provision are described in the next section.

> while...we continue to refine benchmarking and recording mechanisms for quantitative evaluation in the future, we are still...[unable] to produce reliable measures of success. Cawkwell & Roddis (ibid)

We nevertheless offered a rationale for the following as useful criteria when selecting models:

1. Is dialogue enabled between core subject and study tutors?
2. Is LD embedded in subject learning?
3. Does the model challenge or reinforce deficit (remedial) views of LD?
4. Is it student-led?
5. Does it emphasise confidentiality?
6. Does it emphasise impartiality?
7. What are its financial costs?

Applying these criteria to the five models we arrive at the summary in table 1.

	Parachute-in	**Linked Modules**	**Themed Workshops**	**Individual Support**	**Embedded**
Dialogue? (between LD and subject tutors)	Limited	Extensive	From zero to modest	Zero	Extensive
Embedding?	Zero	Extensive at point of assessment	Usually extensive due to focus on assignments	Usually extensive due to focus on assignments	Fully
Deficit View? (implies LD is for 'failing' students)	Neutral unless explicitly remedial	Neutral or better: it normalises LD	Neutral: but deficit views by students may inhibit take-up	Neutral: but deficit views by students, or staff referring 'weak' students, may distort take-up	Neutral or better: it normalises LD
Student-led?	No	No	No	Yes	No
Confidentiality?	No	No	No	Yes	No

Impartiality?	A grey area: LD is assessed, course leader is client	No: LD assessed and LD/ subject tutor alliance	A grey area: recent use makes course leader client	Yes	No
Costs?	Modest set-up, low running costs per student	High set-up, modest costs per student	Low set up; costs per student vary with take-up	Few set up costs; high costs per student	High set-up, modest costs per student

Table 1: Models Compared[1]

If these criteria are valid 'the ideal' model is unattainable. Embedding and dialogue between subject and LD specialists on the one hand, support that is student-led, confidential and impartial on the other, are irreconcilable. In contexts where the latter are crucial, individual support is the model of choice. So costly a model may need to double up, however, as action research whose findings on the learning experiences of the few can inform teaching of the many. This assumes issues brought by a minority have wider import and effective communications exist between LD providers and faculty and findings (properly understood) can be applied at the chalk-face. Only with the first assumption are we comfortable, a point we will return to.

Parachuted LD, by contrast, is cheap but considered by some to be ineffective. The three remaining models do well on embedding and dialogue but one, linked modules, is not easily replicated (Cawkwell & Roddis, ibid). That leaves two, each with pros and cons. Themed workshops for specific cohorts can be well attended and, given a modicum of subject specialisation by providers, easy to deliver. In this model embedding (finding LD opportunities in assignment briefs) is real but so are the dangers. Without clear boundaries, module leaders get nervous!

The case for the fully embedded model is sound but implementation is an uphill task. While lecturers commonly claim lack of time, skills and confidence to "do" LD, this seldom leads to closer links with LD specialists. If the contradiction reflects views of LD as marginal at best, greater HEI focus on employability and learner autonomy may provide a counterweight. As yet though we see no irresistable driver of change. LD providers are too often seen by 'real teachers' as pathologists to whom weak students can be referred, or as outsourced service providers with whom they need not engage. For their part LD providers, their peer dis-courses at times tinged with assumed superiority, can be blind to chalk-face realities. Rust (2009) speaks of a dangerous gulf that in our view will be bridged not by any sudden change of heart on either side but by HEIs finding the right incentives: sticks firm enough to knock heads together; carrots juicy enough to make union fruitful. A prerequisite is recognition in

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[1] The table risks oversimplification and should be regarded as rule-of-thumb guide only.

practice of teaching excellence. CETLs, TLA and other initiatives notwithstanding, faculty promotion has historically favoured research or managerial, not pedagogic, activity. That has to change if Rust is right on narrowing the gap with faculty being a major challenge for LD providers -and we think Rust is right. With all the models we describe (or can conceive of) bridging that gap is essential, be the drivers intrinsic or extrinsic.[1]

But if under-recognition of good teaching is one obstacle to bridge building, another is epistemological divergence. Not only will selection of models be influenced by how we understand LD, so will the quality of dialogue between LD providers and lecturers. Barrie outlines four ways of viewing graduate attributes - as precursory, complementary, translational or enabling - that seem equally useful here. From a precursory perspective LD is a matter of correcting shortfalls in attributes students (should) have on entry. From a complementary understanding separate provision is needed for key attributes not easily accommodated in core curricula. From a translational standpoint LD is a matter of developing "clusters" of attributes in principle separate from, but in practice best acquired by engagement with, core curricula. Finally an enabling perspective sees LD as "not parallel to discipline knowledge but...sitting at the heart of discipline knowledge...not clusters but interwoven networks" (Barrie, 2009: 5).

This matters because even where there is dialogue between LD and subject specialists, the same words may not have the same meanings. It is easy but sterile for the learning specialist, sure of the superiority of complementary or translational perspectives, to see lecturers as 'stuck' in precursory positions indicated by 'deficit' understandings of 'study skills'. Barrie's taxonomy has the potential to foreground such differences and allow both sides to move forward.

In sum, several models for learner development are in use at SHU. All have strengths and weaknesses but effective LD provision, whatever the model, requires good communications with faculty. To date such communications remain patchy; a sector wide problem that in our view will be lessened by HEIs recognising and rewarding good teaching, and by the development and promotion of shared understandings of what LD is for. To the extent Barrie's work on graduate attributes can be applied to the clarification of different perspectives - in situations where divergences of understanding may not always be obvious - we welcome it as part solution to the sector wide challenge referred to by Rust. The same goes for greater recognition, in faculty, of teaching excellence.

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[1] Even one-on-one LD, in principle the least dependent on collaboration, must in practice look to it for justification. High costs notwithstanding, there is a case for retaining individual support at SHU (albeit linked to clearer expectations of the student, and probably not at its currently generous levels) *provided* it serves also as action research whose findings can be communicated back through established channels to inform TLA practice.

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The place of finding: Embedding Enquiry-Based Learning in Archaeology

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Abstract

In archaeology, the act of discovery underpins the excavation of every find – whether it emerges from the soil, is discovered in an archive or recorded through oral history. As Walter Benjamin noted, it it this 'dark joy of the place of finding itself' which offers the 'richest prize' in learning (1979: 314). Yet the classroom and laboratory – and traditional teaching and assessment methods – can deaden even this most exciting of subjects. Since 'Enquiry Based Learning' can be defined as an environment in which the learning process is owned and directed by the student (Kahn and O'Rourke 2004) it can thus be viewed as a form of educational excavation, in which value is created through 'discovery and invention' (Makiguchi 1934: 285). Our project, funded through the CETL Centre for Excellence in Enquiry Based Learning at the University of Manchester, has revitalised the teaching of archaeology through a number of initiatives, using novel interactive technologies.

This paper outlines some of our methods through contrasting case studies with undergraduates, postgraduates and staff: the 'CSI: Otzi – the Ice Man' investigation, a simulation of a Public Enquiry into a quarry development, a residential visit to experience 'Living in the Iron Age' at Castell Henllys, and workshops at the Blackden Trust. We discuss the impact on both staff and students, using qualitative feedback: how it created a more diverse learning experience, enhanced students' appreciation of the relevance of the past, developed their professional expertise and citizenship, and helped reveal the process of discovery as a life-skill inherent to the graduate experience.

Key words: Enquiry Based Learning, Archaeology, Excavation

Introduction – background to the project

Archaeology may appear to be an inherently fascinating topic: investigating past cultures and beliefs. It has a high media profile in the UK, and is increasingly used to engage communities with their historical and environmental heritage (English Heritage 2005), with the result that university degree courses have blossomed over the past decade. Yet new undergraduates with no background in the subject often struggle with its principles and are put-off by the technical and theoretical language which distinguishes the discipline.

At the University of Manchester, we have actively sought to improve the learning experience in archaeology, to address issues of retention, progression and performance. Our project was also stimulated by university-wide policies such as the University's ambitious '2015 Agenda' and a review of undergraduate teaching undertaken by the President. This latter

report highlighted vital developments in educational pedagogy (CEEBL 2008), as well as the potential of new e-technologies to enhance teaching and assessment methods (Laurillard 2001). In our Subject Area, we also needed to respond to the impact of the recession on archaeological career opportunities (Heyworth 2009), as well as major changes in the structure and organisation of archaeological development (particularly the introduction of PPS 5 – Planning for the Historic Environment, IFA 2010). Enhancing professionalism and employability, alongside critical thinking and research skills, lay at the heart of our project's aims (Aitchison and Giles 2006).

At the University of Manchester, we are fortunate to benefit from the presence of the Centre for Excellence in Enquiry Based Learning (CEEBL), one of 74 centres awarded by HEfCE to promote excellence in teaching and learning (CETL) (see http://www.campus.manchester.ac.uk/ceebl/) and their input into teaching practice. We applied successfully to their 2009-2010 annual competition to embed 'Enquiry Based Learning' across a Subject Area and programme, with a project entitled 'The Place of Finding'.

Pedagogy and Practice

'Yet no less dispensable is the cautious probing of the spade in the dark loam, and it is to cheat oneself of the richest prize to preserve as a record merely the inventory of one's discoveries, and not this dark joy of the place of finding itself.' (Benjamin 1979: 314).

Our project took its title from the above passage by Walter Benjamin. In it, he captures the notion that the experience of discovery underpins learning: it is, he argues, its 'richest prize'. Whilst this aptly captures the way in which knowledge about the past is discovered, it is also a convincing metaphor for enquiry-based learning (henceforth, EBL). EBL is distinguished by its student-centred approach, which lies at the heart of this active practice (distinguishing it from more passive, lecturer-led teaching, Hutchings 2007: 12). EBL encourages students to determine goals, identify resources and methods, and carry out independent or group research (Kahn and O'Rourke 2005). The facilitator engineers situations in which students experience things through self-discovery – a heuristic rather didactic method of education (Hutchings 2007: 6). It promotes a much more holistic attitude to learning since students bring what they already know to bear on a novel and ongoing scenario. As in Kolb's circle of learning (1984), the process is closed by reflection on the outcomes of the enquiry and their dissemination in various forms (Hutchings 2007: 21). EBL not only results in a much deeper level of understanding in the student (rather than the simple gaining of knowledge, see Bloom 1956 and Biggs 1999): it equips them to undertake further investigations, reiterating the process. The 'joy of finding' is thus the rewarding experience of learning how to research. EBL can therefore be seen as a kind of educational excavation in which value is created through 'discovery and invention' (Makiguchi 1934: 285).

Of course, students are not left entirely to themselves: the artful mediation of an expert facilitator is key, as is their commitment and enthusiasm (Hutchings 2007: 13, 17). Creating

suitable learning environments which foster such partnerships is also vital. A degree in archaeology inevitably involves diverse forms of instruction: classroom lectures and tutorials are complemented by individual research (reading and writing), hands-on artefact analysis, visual interpretation, and the sensorially diverse, haptic or kinaethetic learning which occurs in the field (Croucher, Cobb and Brennan 2008). Teachers of archaeology have been keen to embrace learning style theories which reinforce what they already feel they know: that students may be culturally and individually disposed to learn in different ways (see for example, Honey and Mumford 1982 or Fleming and Mills 1992). Whilst the complexity of these different learning taxonomies (as well as their pedagogical philosophy and assessment methods) have been critiqued by, for example, Coffield et al (2004), the underlying point – that students are multi-modal in their learning – is still considered valid. However, it is recognised that these learning styles may vary dramatically with context and task. In line with these ideas, as well as outcomes from the President's Review of Teaching, the project was therefore committed to exploring diverse teaching methods in a rich variety of learning environments.

What are the potential benefits of such an approach? EBL is championed as a way of developing the skills of leadership, group-work, initiative and creativity, demanded from the modern workforce (Kahn and O'Rourke 2005). Due to its collaborative and participatory nature, it also fosters important social and communication skills (Goldring and Wood 2010), as well as the ability to manage a project within a specified timetable and set of resources: attributes considered essential in the archaeological workplace (Aitchison and Giles 2006). As a learning experience, it is also more lively, enjoyable and – potentially – inspirational, enhancing student satisfaction. The supportive and discursive environment fosters the development of critical thinking and reflective learning, or even 'radical questioning' through which fundamental shifts in perspective might occur (Hutchings 2007: 32). The opportunity to pursue individual research interests also enables the student to develop a career profile, with outcomes that can be recognised as directly relevant for future employment (for the importance of this, see Holmes 2000). Successful experiences also create a template for lifelong learning (Cobb and Richardson 2009).

'The Place of Finding' – Project Aims and Themes

The project's aims were carefully aligned with the strengths of EBL, alongside the demands of the subject area. We wanted to reveal the process of discovery as a life-skill, facilitated by a more diverse learning environment. Our aim was to encourage engagement, develop comprehension and improve performance and retention. We also wanted to broaden an appreciation of the relevance of the past to the present, with the intention that this would enhance student employability and extend skills in the profession. Finally, we hoped to develop qualities of ethically aware citizenship which lie at the heart of the University's vision for the 'Manchester Graduate'.

These aims were developed through four key themes, cross-cutting the curriculum:

1. Environmental sustainability: learning from the technologies of the past.

2. Identity and belonging: negotiating contentious uses of heritage.
3. Living with dead: appreciating cultural diversity of beliefs, relations with the environment and coping with mortality.
4. Making communities: the archaeology of sociality and violence – how people learned to live well with others in the past.

Methods

An initial Staff Away Day introduced the project's key themes and intended outcomes to all module co-ordinators, briefing them on the pedagogical background to EBL. Staff were then invited to bid for and help design new teaching initiatives across the UG and PG curriculum. These were facilitated by a Research Assistant (Dr Jolene Debert). The timetable, content and implementation of these events were managed through a small steering committee, which met regularly. At the outset, we identified a series of learning scenarios and educational technologies which we intended to promote and utilise:

- Class-based staged problem-solving, using 'clicker' technology (Turning Point©) to encourage interaction, develop peer instruction and enhance debate and discussion.
- Real-world scenario debates and conflict resolution.
- Field-based team-work and public presentation in a student-selected location (urban or rural).
- Hands-on laboratory, museum and experimental centre based workshops, encouraging kinaesthetic skills relating to material culture and technology.

Reviews of these initiatives were undertaken through a variety of qualitative methods: one-to-one reflective interviews, journal entries and group feedback meetings – selective results from which are integrated into the relevant section below. We are currently undertaking additional quantitative analysis, comparing retention and performance across the cohorts with figures from previous years, which will be published elsewhere. The following case studies are selected to illustrate contrasting initiatives, used with different cohorts, group sizes and learning environments.

Case Study 1 – 'CSI Ötzi – the Ice Man'

The first example addressed a large level 1 year group (c.120 students), with little prior experience of archaeology, taught in a raked lecture theatre. The EBL initiative made use of an iconic discovery: Otzi – the Ice Man, dating to the earliest European Copper Age (see South Tyrol Museum: www.iceman.it). We deliberately mimicked the format of 'CSI' style dramas, to grab their attention, presenting them with an initial scenario – a body found frozen in the ice. They then had to debate in small groups what to do next... how the body should be moved, what should be targeted for initial investigation, and which methods could be utilised to ascertain the date, character and history of this man's unfortunate demise. The students had to draw upon their existing knowledge but also improvise given the remarkable nature of preservation, which included not just the skin, hair and musculature of this individual, but tattoos, clothing, weaponry and tools, plant remains and residues found

on the body. As the results of various pieces of analysis were gradually revealed (smelting residues on his hair, body and head injuries, weapons under repair, blood stains on his clothing) the students were asked to interpret who this individual was and what had happened to him. They were made aware that the analysis of this individual had been a long process, with significant discoveries made a decade or more after the initial autopsy. New advances in forensic techniques as well as new research questions resulted in radically different interpretations of the Ice Man.

The initial version of this scenario was conducted verbally but we have since progressed to the use of the 'clicker' technology to stage student responses to questions. This encouraged a broader range of participation, as students enjoyed the anonymity offered by the devices, and felt more confident about making mistakes and changing their opinions. One of the key outcomes was a realistic introduction to the research process, the practice and politics of heritage, and the open-ended nature of archaeological interpretation. Student feedback was extremely positive: one wished that 'all lectures were like that', another praising it as a 'great way to learn' which a further student commented was 'much better than being talked at'. They clearly enjoyed the process of self-discovery, which made another student 'excited for the rest of the course'. The notion that they were empowered to debate and disagree was clear: 'I liked arguing with the lecturer' one noted, suggesting that the tutor had indeed become more of a facilitator, encouraging students to take responsibility for what and how they learned.

Case Study 2 – Public Enquiry Simulation 'The Gravel Quarry Development'

The next example was designed for a much smaller group (c. 40 students), studying aspects of archaeological heritage management. The aim of the course is to prepare students for work in the profession, raising their awareness of policies, practice and ethical issues, as well as diverse perspectives on the value of the past. It was once more delivered in a traditional raked lecture theatre, which had previously inhibited debate and discussion. We designed a real-world based simulation, mimicking a gravel quarry development which posed a major threat to a prehistoric settlement and cemetery. Students were randomly assigned to five working parties, challenging them to think through viewpoints and perspectives they might not normally adopt. These were:

1. The Developer – the Gravel Company
2. The Contact Archaeologists
3. The Local Parish Council
4. An Environmental Pressure Group
5. A Pagan Advocacy Group

An initial project briefing described the nature of the intended development, the character of the archaeological resource, and planning issues. Each group then had 40 minutes to prepare their case: articulating objections and developing appropriate strategies of mitigation, summarised in a PowerPoint Slide. This required them to move around the

lecture theatre, brainstorm with mind-map diagrams, prepare their notes and formulate a presentation. The interactive nature of the task helped students feel more integrated and involved, despite the confines of the classroom (Halstad McGuire 2008: 86).

The final part of the scenario took the form of a Public Enquiry, with each group presenting their case for 10 minutes (taking questions from the floor) with the lecturer acting as Chair. The simulation proved effective because it modelled a real-world situation (see DeNeve and Heppner 1997), which they may have encountered before in the abstract but were now asked to debate 'live'. As a result, the students engaged with their roles wholeheartedly, changing their register, body language and tone, to convey the perspective they had been asked to adopt. Vociferous opinions, intransigent perspectives or more conciliatory suggestions made for a lively debate! Issues such as traffic safety, pollution and risks to biodiversity, encouraged holistic thinking about environmental issues, complementing their familiarity with debates on the planning process and competing claims to ownership of the past. The Chair asked groups to find common ground where possible or plan further strategies, but one of the important outcomes of the process was the realisation that not all of the issues could be resolved. However, individual groups formed alliances and partnerships which helped develop their skills of conflict resolution, as well as a broader appreciation of the contentious nature of their chosen profession, and the relevance of the past to the present.

Case Study 3 – 'Living in the Iron Age', Castell Henllys

The next case study took us away from the classroom and into the field: to Wales, and the hillfort at Castell Henllys. We wanted to use EBL as a strategy to encourage a sense of community across the degree programme, and ran an open competition for Level 1-Level 3 students, to attend a 3-day residential course. Castell Henllys is not just an impressive and well-excavated Iron Age site, but also a centre for experimental archaeology and environmental sustainability (http://www.castellhenllys.com/). Our time there was structured into two different activities. First, in the company of the Phil Bennett (Archaeological Heritage Manager of the Pembrokeshire National Park Authority), we investigated the history of archaeological investigation, the architectural design and conservation plan for the site, and the heritage principles which underlay its management. This was an invaluable opportunity for students to get first-hand insights into the complexities of Phil's role, and to investigate how archaeological evidence had been translated into modern-day reconstructions.

After a detailed site visit, the group then undertook a variety of hands-on experiments: grinding grain in a saddle quern, weaving on a reconstructed loom, making wattle and daub structures. They learned about the self-sustaining efficiency of Iron Age technology: how Iron Age wheat contained three times the protein content of modern bread wheat, how late harvesting cycles maximised crop yields and encouraged biodiversity, and how woollen clothing was not only warmer but effectively water-shedding and thorn-proof (something they were able to observe first-hand from our expert guide)! While we worked, we debated the value of gexperimentation, and how the past had been excavated, analysed, interpreted

and finally, reconstructed for public consumption. One student noted cogently that it had made him realise 'we don't have all the answers... there is a lot of debate about the same bits of evidence'. It encouraged another to think 'I don't agree with that...I know enough to critique it, and not just go 'yeah, yeah, yeah'!' It was evident that the experience had encouraged both critical thinking and confidence in expressing opinions. This is a perfect example of Cobb and Richardson's exhortation to 'think messy' as well as 'get messy' in archaeology (2009): breaking down the boundaries of theory and practice, real-life and teaching or research - acknowledging the value of multiple and contingent interpretations which enrich dialogues about the past (see Thomas 2004, Edgeworth 2006).

Figure 1: Staff and Students at Castell Henllys

Complementing our time at the centre, we visited other archaeological sites along the way, analysing how they were promoted and disseminated to the public. Working, talking, eating together and walking in all weathers, the students not only got a taste of what archaeological fieldwork was like, they formed a close-knit group. They shared knowledge between the years – informal peer-mentoring – and discussed everything from module selection to career opportunities. As one participant put it, 'it made me feel part of an archaeological community instead of being in my own little bubble', providing another student with 'greater confidence, more friends'. This community stretched between students and staff, and has lasted long beyond the three-days of the residential trip.

Case Study – the Blackden Trust Workshops

The final example from the project was a workshop run at the Blackden Trust (www.theblackdentrust.org.uk): an educational charity, hosted in the home of the author Alan Garner. This initiative was targeted at both staff and postgraduates, as a way of building confidence in using EBL techniques and reinvigorating our learning methods. Our 'ice-breaker' was a series of mystery objects found in or around Blackden. Working in pairs, participants had to brainstorm about the possible function and date of each artefact. For example, a set of small shoes were found hidden in the thatch of the house. When were they last worn, and by whom, and what were they doing in the roof? By examining the diminutive size, fashion and condition of these items (worn, with mud and straw still peeking from the soles), the participants concluded they were looking at an example of 'hidden garments': intimate items of clothing concealed as apotropaic objects to protect the house and its inhabitants from harm (see http://www.concealedgarments.org/).

The task reminded us of the basic archaeological skills we expect our students to develop: using logic and lateral thinking, as well as all of our senses: looking at material, texture, wear, even the smell of the object, alongside its depositional context. After this, we broke into smaller groups, investigating different aspects of the building and its associated finds. Participants were asked to formulate a research agenda for the site, and identify strategies through which these might be investigated. The process helped us rethink how we support and develop the independent projects undertaken by students (such as the Long Essay and Dissertation) as well as how we formulate our own research.

Figure 2: Staff and Postgraduates developing learning initiatives using a Ketso

Finally, we addressed a key challenge for the forthcoming year: the re-design of our seminar teaching across Level 1, including graduate teaching assistant supported tutorials. We reflected on our current teaching techniques and outlined new learning methods we intended to implement, based on the experience of the day's workshop. To facilitate discussion, we made use of a Ketso© (Tippett 2009): an interactive felt-based table-top tool, for brainstorming or mind-mapping, with multiple participants. This colourful and flexible method for articulating and organising ideas made the workshop an inclusive and kinaesthetic experience, helping us to visualise our thoughts and stimulate discussion (Tippett 2010). The creative atmosphere and resources of the Blackden Trust also helped remind staff of the 'joy of discovery' which had inspired each of them: re-enthusing teaching practice and helping to ensure the long-term sustainability of EBL in archaeology.

Conclusion

'The exercise of knowledge creates relationships, continuities and emotional attachments…it allows us to live longer, because we don't just remember our own life, but also those of others. It creates an unbroken thread that runs from our adolescence to the present day. And all this is very beautiful.' (Umberto Eco. 2004: 7)

The CEEBL funding allowed us to step back for a moment and think more creatively about how we teach archaeology, using the principles of EBL. It has reinvigorated students and staff, leading to a stronger sense of community in the Subject Area, reminding us – in challenging times – of what we can learn not just from the past, but from each other. And all of this, as Umberto Eco says, is very beautiful.

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Getting dynamic with group dynamics: facilitating collaborative Enquiry-Based Learning in practice

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Abstract

This paper describes our experience in producing a guide to the facilitation of enquiry-based learning (EBL) for graduate teaching assistants and developing a series of workshops to accompany the guide. We focus our attention on the issue of collaborative working and group dynamics in the facilitation of EBL. We begin by discussing the role of collaborative work in EBL and the significance of group dynamics within the collaborative working process, before moving on to outline the process we have been through in producing our guide to EBL over the past few years, ending with a review of a number of pertinent theories of group development. We conclude by discussing the relationship of these theories to our work on collaborative working, group dynamics and EBL.

Keywords: enquiry-based learning (EBL); collaboration; facilitation; group dynamics; student learning experience

Introduction: enquiry-based learning (EBL)

EBL is a student-centred and active form of learning which engages students, individually and collaboratively, in self-directed research into the subject matter and problems of their academic and professional disciplines (Kahn & O'Rourke, 2004). EBL has its roots in social constructivist epistemologies, which emphasise the active and experiential construction of knowledge by the subject and the social nature of this process (Dewey, 1938; Vygotsky, 1962; 1978). EBL is related to problem-based learning (PBL), an approach in which students are presented with a problem, to which there is usually a known solution, and are guided through the process of addressing that problem by a facilitator (Barrett, 2005). Typically, EBL is more open-ended than PBL: students are given greater freedom to define for themselves both the questions they will address and the process by which they will engage with those questions, although this varies according to discipline, level and teaching approach. As with PBL, the enquiry-based process of student learning is often supported by a facilitator. EBL often entails a collaborative element, which means that facilitators have to pay particular attention to how they manage the collaborative working process and to the dynamic functioning of groups. If the collaborative process is not supported effectively or if the student groups do not function well, this can undermine the EBL process and prevent students (and facilitators) from benefitting from this pedagogy.

Facilitating EBL

Given the potential importance of collaborative working and facilitation to EBL, there is surprisingly little literature or support available for postgraduate student facilitators – as opposed to full-time members of academic teaching staff, who are the focus of much developmental activity – to help them to develop their facilitation skills and techniques. This is despite their growing importance in leading and supporting small group teaching in higher education institutions, particularly at earlier undergraduate levels. Over the past three years we have developed a guide to the facilitation of EBL for graduate students who are entrusted with leading small group teaching sessions (Goldring and Wood, 2010). Our aim in writing the guide was to create a user-friendly resource for people who were leading, or were interested in leading, small groups of students. We wanted to introduce EBL to people who were not necessarily familiar with it, to explain its benefits for students and tutors and to suggest how small-group leaders might go about implementing it. Therefore the guide offered definitions, a case study and links to further resources about the EBL process, as well as practical hints and tips about running small-group sessions. We subsequently devised a series of practical workshops which focussed on particular elements of facilitation process and used active and experiential learning to engage graduate student participants in improving their facilitation skills. These workshops included:

- Facilitating Enquiry-Based Learning: Help! I've got a tutorial
- Group Dynamics
- Designing Tutorial Exercises: Triggers
- Facilitating Learning

Methodology

We treated the collaborative development of the guide and the workshops as an EBL exercise. The process was highly interactive and iterative. We conducted a literature review of existing literature on the facilitation process, used a questionnaire to gather the opinions of approximately thirty second year undergraduate students from the University of Manchester, distributed another questionnaire to ten experienced facilitators, and gathered opinions from several postgraduate students who were just starting to facilitate small group classes. Based on feedback gathered from participants at our workshops we developed a second version of the guide, including a broader range of topics associated with facilitating EBL.

Five hundred copies of each version of the guide have been published (1000 in total). There have been a total of 14 postgraduate workshops from September 2008 to April 2010 (8x Facilitation, 3x Triggers, 3x Group Dynamics), in which a total of 315 people have participated. Six postgraduate facilitators went on to present on how participating in the workshops and subsequently incorporating EBL into their teaching had affected their practice at a Postgraduate Symposium in October 2009 (http://www.campus.manchester.ac.uk/ceebl/events/archive/).

In the course of developing the guide and the associated workshops, we found it useful to gradually increase the references which we made to theory. This allowed us to deepen our analysis of the facilitation process and to engage workshop participants who were more theoretically-inclined.

Theories of group development and dynamics

The most useful theoretical approaches for our thinking about facilitation have been those concerning group development and dynamics. Group development refers to how a group develops and operates over time, while group dynamics encompasses how groups operate at a given moment in time, although there is clearly overlap and interaction between the two and we have found that they can sometimes be used interchangeably in theory.

There are a number of theories of group formation which consider group development as occurring in a linear way, through a series of distinct stages. One of the most influential and well-known theories of group development, psychology and behaviour, is that of Bruce Tuckman (1965). Tuckman posited that as a team develops maturity and ability, relationships are established and change under the influence of factors such as trust and interdependence (Kohn and O'Connell, 2007). Tuckman identified the following phases of group development:

- Forming: as the group forms, members are reliant upon the leader for direction, there is little agreement on individual and team roles or goals, processes and systems are unclear and may be tested by team members;
- Storming: the group's goals are clarified, decisions are harder to come by, cliques and factions develop and there may be power struggles, compromise and increasing focus upon goals may be necessary in order to assure progress;
- Norming: there is increased agreement and consensus among the group, especially over roles, responsibilities and goals; commitment and unity is strong; decision-making may be devolved; respect for leader, who may take on more of a facilitative role;
- Performing: the team is more strategically aware about what it is doing, and why; increased autonomy from leader; team members look after each other and handle disagreements; leader takes a more hands-off role, delegating tasks and authority.

Subsequent work has added extra stages to this model, including: when the group takes a break, before moving on to address a new task, possibly with new members ('Adjourning'); and the stage of 'closure' when members know that the task is completed and the group will not be together for much longer ('Mourning') (Tuckman and Jensen 1977).

Fisher (1970) noticed that interaction between members of task groups changed as the collective decisions were formulated and decided. There are four phases in Fisher's theory:

- Orientation: during this phase the group members are getting to know each other; this is accompanied by tension before communication rules and expectations are established; Fisher suggested that groups try to get to know each other in order to become comfortable with communicating around new people;
- Conflict: here there is secondary tension, or tension focussed on the task; group members disagree with each other and debate ideas; conflict is seen positively because it helps the group achieve positive results;
- Emergence: the outcome of the group's task and its social structure are clearer by this phase; members of the group soften their positions and undergo a change in attitude, making them less tenacious in defending their individual views;
- Reinforcement: members reinforce their final decision through supportive verbal and nonverbal communication.

More recently, Tubbs (1995) has developed a 'systems' approach to the study of group interaction. He has created a four-stage model for group formation:

- Orientation: group members are getting to know each other, talking about the problem or question under consideration, and examining the parameters of the project;
- Conflict: importantly, Tubbs noted that conflict is a necessary element in group formation as it allows the group to evaluate ideas and helps the group to avoid conformity too early in the process of addressing the task;
- Consensus: the conflict stage ends when consensus is achieved; at this point the members of the group compromise, choose ideas, and decide on other alternatives;
- Closure: the final result is announced at this point and group members reaffirm their support for the decision.

These linear models of group development were very useful in informing our thinking about facilitation skills and group dynamics. Their emphasis upon the different stages of the process facilitates thinking about when, how and why problems might occur. This means that facilitators can be equipped to predict potential problems before they occur, to troubleshoot issues as they are arising and to understand the possible causes of problems once they have emerged. Tuckman's focus upon the changing role of the leader in the group formation process can be useful for a facilitator to consider the different roles that they may want to take on at different stages in the teaching and learning process (and the roles which the group members may prefer). Finally, reference to the theories of Fisher and Tubbs helps facilitators to recognise that conflict is an integral aspect of the group formation process. By normalising conflict, it becomes less shocking and problematic for group leaders and facilitators and thus easier to deal with in a pedagogic context.

 Although linear theories of group development can be very useful for thinking about how groups function in small group teaching situations, they can seem somewhat simplistic and reductive. From personal experience and observation, we know that group development is rarely linear in real life and may often be iterative. Indeed, Fisher (1970) observed that the collective decision-making process is frequently cyclical, even erratic and this cyclical idea

coincides with our own experience of EBL. Given these potential limitations, we felt that we needed to consider other theories to deepen our understanding of group dynamics in a teaching and learning context.

Poole's (1983) theory of small group development is particularly useful. This theory acknowledges the complexity of group work and there are continuous threads of developing activity in any given group situation, rather than a single strand of 'group development'. Poole suggested that there were four threads of activity, which interact dynamically and developmentally over time:

- Task track: this is the process by which the group accomplishes goals and tasks individually and collectively;
- Topic track: the specific item which the group discusses at any moment in time and the development of this as a series of issues;
- Relation track: this includes the interpersonal relationships within the group; at times this may take predominance over the task or topic track;
- Breakpoints: the point at which the group switches from one track to another.

Rogers (2002) takes a more social and psychological approach to understanding how groups function. He suggests that two features in particular are essential to group members' sense of community. The first element is that the group has a common identity and a common purpose, both of which include all of the members of the group. The second element is that there are sufficient opportunities for interaction between group members, allowing for the development of shared attitudes and feelings, emotional involvement, and a minimum set of agreed values or standards. Rogers suggests that for many groups there is a third factor – a sense of progress – because successful groups often feel they are moving forward in some way.

Successful groups may also wish to remain in contact, beyond the lifespan of a particular project. Following the introduction to the 'Mourning' and 'Adjourning' stages, added in 1977 to Tuckman's model of group development, and due to the changing pace of life and ways of communication that have developed since the 60s and 70s, work has been carried out considering what happens to groups after a project finishes. Lave and Wenger (1989) have suggested a Communities of Practice (CoP) theory, where some groups choose to become an ongoing support and resource network for each other. These networks are often social, as well as professional. CoP theory also suggests an apprenticeship model, where new members are inducted into a specific community, as they begin to understand the language and processes adopted by that community. This corresponds well to a Higher Education context where students are engaging with certain practices appropriate for their discipline. Indeed Lave and Wenger's theory, and subsequent work by Wenger (1998), has explored notions of learning communities specifically, where members are actively engaged in learning from one another. This is particularly relevant within an EBL context, where valuing peer knowledge and experience is an important aspect of successful group dynamics.

While theoretical perspectives can provide a foot hold for group facilitators, specific contexts can generate more complex challenges than those inherent in group work itself. Where group work is used within an EBL framework, students may be required to "self-facilitate" in groups of various sizes. This type of approach can be motivated by staffing limitations or by pedagogical concerns. Anecdotal evidence and our personal experience suggests that groups in this situation are often left to "figure things out for themselves", but also that this approach does not always have a felicitous outcome. In relation to a module at the University of Manchester, Religion, Culture and Gender, Stuerzenhofecker (2008) reports that "awkwardness" created by students' poor understanding of their role as a facilitator "led to low participation in classroom discussion and affected the quality of peer-learning and knowledge that was generated" (2008: 42). Although some training focussed on group work processes was introduced to remedy this situation, it did not fully resolve the issue. Subsequently a "lecturer-student review of the effects of different types of questions on discussion, based on shared experience, seemed to have immediate and lasting effect and raised the quality of responses noticeably" (2008: 43). Stuerzenhofecker's experience suggests that the course leader or tutor can play an important part in helping students to develop the ability to facilitate their own groups, and also acts a reminder that the facilitator must be alert and responsive to problems as they arise.

Online modules offer enhanced educational resources for students. Such 'cyberspace technologies' both enable and require new forms of group communication (Harasim, 1993). They allow wide ranging and often inter-disciplinary groups of students to collaborate. These groups can gain rich experience from a varied cohort without having to confront timetabling issues. The dynamics involved in such groups are often complex and any difficulties experienced in the initial stages of face-to-face group development are heightened with online modules due to distance and non verbal aspects. As with traditional group work, the initial 'group bonding' stages are important because they enable future communication and encourage the discussion of ideas. Facilitation here is important and it has been shown that online facilitators need to use the channels available to them strategically in order to effectively build online relationships between members of online teams (Pauleen and Yoong, 2001). As the modules often aim to provide maximum student experience with minimal academic time commitment, direct facilitation from academics may not be feasible so students are often encouraged to facilitate their own group work, either collectively or by appointing a facilitator. The nature of distance learning allows for varied contributions to a set enquiry or discussion but also enforces the development of further transferable skills in keeping with the nature of traditional EBL modules. Such online group work environments require students to use higher level communication skills because verbal and visual communication lines are blocked, creating potential barriers to online communication. In response to these opportunities and constraints, we have developed online group work guidelines which address online communication issues and provide top tips for the minimisation of potential problems (www.campus.manchester.ac.uk/ceebl/resources/guides/).

Conclusion

This paper has offered an overview of the process of creating and developing a guide to the facilitation of EBL for postgraduate facilitators. We have discussed the importance of collaborative working in EBL. This emphasises the significance of training in preparing new facilitators for leading small groups of students in their learning. The success of our guide and accompanying workshops suggest that graduate teaching assistants, who are entrusted with a large and progressively increasing responsibility for teaching undergraduate students, are often under-prepared for the role and responsibilities they are expected to undertake. Our workshops would not have been so well-attended if suitable training and support were provided in departments and faculties. Finally, our experience suggests that training should take account of theories of group development and dynamics if they are to fully prepare new facilitators for teaching. Reference to theoretical literature can deepen facilitators' understanding of the processes of group work and therefore prepare them for the practical challenges of helping students through the EBL process.

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Scenario Learning (SL): an Enquiry-Based approach to enhancing multimodal professional communication practices at university and in the workplace

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Scenario Learning (SL) has been practised and fine-tuned over many years in the Computer Science department (see case study A below) where it has proved to be an effective and motivating teaching-learning model for teaching business and academic communication practices to senior technical students. This model was applied to Information Systems Honours students in the Commerce faculty for the first time in 2009 (see case study B). In both instances, a situated institutional scenario mainly at the University of Cape Town (UCT) was used to provide the teaching-learning content and context. This has been in collaboration with parts of UCT management, academic staff in the Professional Communication Unit (PCU) and a student-and-staff-based initiative (Student Health and Welfare Organisation) in case study B.

 The two case studies are set out separately below. Theory and research relating to the SL approach to teaching and learning in general are set out initially.

Theoretical framework

Scenario Learning, a term coined by Terri Grant in the early 90s, (Grant 1999) is a situated practice "model of teaching and learning that aims to enhance the learning, interest and motivational aspects for participants of an educational experience; to broaden the educational goals achieved in the classroom; and to create efficiencies in regard to achieving more and wider pedagogical aims beyond skills transmission" (Grant and Kalil 2008: 1). It uses "a pedagogical framework that is grounded in cooperation, collaboration and experience" (Rassool, 1999: 239).

SL draws on a multidisciplinary theoretical framework which intersects across a range of disciplines such as communication, applied linguistics and education, specifically theories of multimodal social semiotics, new literacy studies (NLS), multiliteracies and socio-cultural constructivism (Hymes 1979; Steyn 1997; Kress and van Leeuwen 2001; Kress 2003; Kress, Jewitt, Ogborn and Tsatsarelis 2001; Lemke 2002; the New London Group (NLG) 2000; Archer 2004, 2006; Smagorinsky and Fly, 1993). To be communicatively competent in a global context is long seen as going beyond ability in language, especially writing, to issues of contextual and intercultural sensitivity, ethics and appreciation of diversity (Grant 2008).

Being 'literate' in this sense is ideological and multimodal in the range of semiotic codes that need learning, as well as comprising social and cultural dimensions beyond knowledge of technologies around, for example, language, genre or number use. Lemke (2002: 8) summed

this up well when he said that practices in scientific and business domains have been described as constituted by "complex integrations across language, mathematics, visual representations, and practical actions." Gee in recent work, (2003, 2008), also moves away from a narrow focus on language or literacy to the multiple coded ways of communicating that people use, from number systems to graphics, to body language, to movement.

The aim of SL is that students are encouraged to be actively involved in their own learning and meaning making and contribute towards teaching and assessment. Therefore, it could be said that a constructivist approach largely underpins this type of pedagogy. Although students may not be constructing 'the rules' or conventions of academic and professional practices, they are involved in foregrounding meaning-making through authentic social and cultural interaction with others, creating the necessary multidimensionality which may hasten contextual understanding of these rules and conventions . In other words the development of the mind and thinking are embodied, and not a purely mental process where learning, that is, acquisition of knowledge or rules, happens in the head (Vygotsky 1978; Varela 1999; Hay and Barab 2001). In a situated multimodal approach participative meaning making is regarded as pivotal, with the apprenticeship-type character of embodied learning seen as the way in which design grammars and discourse practices of various affinity groups or communities of practice can develop (and evolve) for use in future learning and action (Gee 2003; Lave and Wenger 1991), allowing participants to transform practice and make it their own.

This experiential approach to learning is also well aligned to a convergence model of communication (Rogers and Kincaid 1981; Grant and Borcherds 2008) where participants are mutually responsible for negotiating meaning. This is particularly true in SL as the facilitators are not subject experts per se; on the contrary the students often know far more about the intricacies of the areas they are exploring and are thus encouraged to 'co-teach' within a workshop environment. According to Arnett (1992), a teaching-learning partnership sets up a dialogical and transactional engagement which creates interplay of both affective and cognitive communication literacy.

Researchers such as McCroskey (1998), Goleman (1995) and Grant (2005b) have argued the importance of deep, participative learning which aims to enhance emotional as well as intellectual development. Instead of only listening to or reading about the subject matter before doing an assignment, students are 'assaulted' – multimodally speaking – by seeing/listening, thinking/feeling, assessing/doing in a just-in-time, ongoing fashion (Lynott 1998; Grant 1999; Gee 2003). Because it involves embodied action, multimodal approaches to pedagogy such as the iterative NLG's multiliteracies approach, could potentially be more transformative and powerful than relying on memory and purely cognitive abstractions or simply being told important generalisations passively; this is especially true of more mature students nearing graduation who have built up relationships (affinity groups) at university and mostly have work experience (Lave and Wenger 1991; Grant 1999; Cope and Kalantzis 2000; NLG 2000; Gee 2003; Kress et al. 2001; Grant and Kalil 2008).

Kress et al., among many other theorists, argue for a framework to examine literacy practices, which decentres language and recognises the multiple modes and practices of communication and meaning-making, including image, sound, diagram, and action, as well as through spoken and written language. The multimodal nature of SL involving process and products, events and practices, aims to mimic workplace practices in business and industry. More success in learning and enhanced meaning making can therefore be gained by using real-world embodied scenarios and allowing students to learn actively as well as critically (Smart and Csapo, 2007; Gee, 2003).

Case study A: Using Scenario Learning to enhance student's communication practice, specifically writing in the Science faculty

Educational Challenge and Context

The aim of introducing a PCU component to this 3rd year Computer Science (CS) course in the mid-nineties was departmental concern at the lack of opportunities these technically talented students had during their degree to develop writing skills and overall communicative cabability. The CS department was increasingly aware of and concerned about growing industry demands for communicatively able graduates. Yet, growing student numbers, coupled with increasing student diversity and concomitant English as Second Language (ESL) concerns resulted in a more serious situation.

When the PCU course convenor started teaching on this course, a more conventional and straightforward teaching approach was adopted. However, there were 3 problems: the course duration was short (2 input lectures and 4 workshops spread over a 4-week period), the class was large (and growing annually) and student interest low. Given a general dislike for the subject matter (especially writing!), these students needed a more innovative approach to shock them out of their complacency. The launch of PRISM at UCT (Project to Revolutionise Information Systems and Management) presented a unique opportunity to situate the teaching within a context-rich scenario that aimed to galvanise their attention and sustain their interest.

Over the years the realisation dawned that the more meaningful and technically challenging the scenario, the more motivated the students seem to become. They enter into the role-play experience with anticipation and curiosity because it is the context that interests them rather than the communicative principles and skills being facilitated. SL increases the likelihood that these students will improve their overall communication skills in a contextually relevant way because the interpersonal, group, oral and written skills are not taught/learnt for their own sake but as a means to an end.

The choice of scenario is therefore crucial as it should reflect the student's field of study and provide the backdrop for all situated communication tasks. It allows students to:

- Participate experientially in a topical and appropriate 'event';

- Conduct primary and secondary research in order to 'solve' a real-life technical problem in real-time;
- Select and practice an array of communication activities and genres, both traditional and electronic, by way of preparation for the major assignment, and finally;
- Produce an article that will meet the standards and editorial policy of a specified academic or professional journal.

Over the years a number of scenarios have emerged that were well aligned with these goals. The PRISM project was ongoing for a number of years and involved the introduction of SAP R/3, (The Systems and Procedures IT package) from Germany. The Y2K or 'Millennium bug' compliance situation was used in a pre- and post-test scenario during 1999 and 2000 and generated furious debate. Since then, UCT has been and is still involved in many IT projects which have provided rich, multi-layered scenarios for use such as ISIS, AIM (Audit of Information and Management Systems Project) and SupaTsela.

Implementation

Whereas Prof. Jim McNamara ("Dr PRISM") was the subject expert during the PRISM project, Richard van Huyssteen took over the ISIS cum SupaTsela 'tour of duty' with Stephen Marquard of the Centre of Educational Technology (CET) joining the panel in 2008. In advance of our first class of the year, we devise a number of focused project areas and draw up parameters for each. With Richard's and later Stephen's advice, we also contact a number of local and international sources who are willing to be interviewed face to face or via email and telephone. For example, PeopleSoft was the student system of choice for both Free State University locally and Cambridge University in the UK and, being ahead of UCT in implementation, could provide invaluable feedback and advice.

The SL course runs in the first term and usually comprises about 90 students. The CS course convenor, and various CS admin personnel help with the timetable, workshop lists and general liaison by providing access via the notice board and VULA (online collaboration and learning environment) so that we can engage with the students regularly. During the first class, Terri Grant introduces the course, hands out notes and exercises and then introduces PCU colleague, Claudia Kalil as well as expert advisors such as Richard and Stephen. They present two PowerPoint assisted lectures on 2 separate days of week 1, giving a breakdown of the projects involved and how they are interrelated. Students are then asked to sign up for a particular workshop which starts in week 2 and to consider their project interests.

Each workshop with a maximum of 30 students is divided into a number of task team investigators (3 per team) and project topics are handed out on a first come, first served basis. The more proactive the teams, the better their project start and time-management in terms of first-choice topic, collaboration with others, and access to resources. Shifting the emphasis from teacher to student underpins this knowledge-discovery environment where the 'teacher' roles aree merely facilitative and organisational and the students are accountable for their own learning (Grant 1999; Gee 2003).

As and when required, communication principles and issues are covered. A task team member is required to present a plan of action during the second workshop in the form of a **mindmap poster** and these are then critically discussed and debated in class. Taking this evaluation into account as well as adding new data gleaned from desk research and interviews with various system users, teams transform their mindmap material into more detailed **topic outlines** of their proposed article for workshop number 3 (presented by a different team member on transparency). The final workshop, attended by Richard and Stephen, comprises the 3rd team member delivering a **PowerPoint presentation** of the entire process as well as a draft plan for the final article and sources of information. Alongside these weekly activities, workshop leaders discuss questions of format, style, readability, use of illustrations and referencing as well as answer queries online or at meetings.

Project 2: using Scenario Learning to enhance academic and socio-cultural practices related to the Information Systems (IS) profession in the Commerce faculty

Educational Challenge and Context

When the professional communication unit was asked to give the students a writing course, improving writing was part of a new drive to transform teaching and learning and to produce UCT graduates who were accomplished writers. In addition the global proliferation of IT, the heterogeneity of development contexts, and distributed nature of IT work and usage are compelling reasons for addressing and developing cross-cultural understanding in IS students and professionals (Trauth 2005). Therefore enquiry-based learning that embedded research and writing in an institutional scenario that was also a development agency was considered an opportunity to improve the quality and character of the honours programme in regard to curriculum transformation goals and academic literacy.

Specifically here we describe the SL enquiry-based approach to developing academic writing practices in IS Honours students in 2009. The course entitled Information Systems (IS) as a Social Space comprised five 90 minute classes over five weeks (Kalil 2009). The students mostly came directly from an undergraduate IS background and were highly motivated. In the past, honours students were required to demonstrate their ability to write an essay with the aim of assessing their academic literacy before they got explicit instruction on writing a literature review and dissertation. This cohort of IS students had, however, only undergone two writing interventions in their undergraduate studies: an essay in Thinking About Business in first year and a course in report writing for business in their 3rd year. A challenge also lay in that the students' knowledge tended to be skewed towards technical practices and less towards the socio-cultural aspects of IS student life and profession. In addition there was a challenge in the heterogeneity of the linguistic backgrounds of students, who were not necessarily mother-tongue English speakers.

In a short course students investigated Business Process Management (BPM) in education projects in SHAWCO and wrote a journal article based on this investigation. SHAWCO is a

dynamic, innovative and passionate student-run health and welfare non-governmental organisation based at UCT, striving to improve the quality of life for individuals in developing communities within the Cape Metropolitan area. SHAWCO was founded in 1943 by Andrew Kinnear, a medical student who was moved to action by the need which he saw in the impoverished communities of Cape Town. A one-man initiative quickly grew into one of the country's largest student volunteer organisations, now boasting over 1200 volunteers running over 15 health and education projects in 5 SHAWCO centres as well as other locations around the Cape Metropolitan area. SHAWCO is divided into 2 main sectors: Education and Health . A third "staff sector" coordinates the SHAWCO community centres, transport, resource development, administrative oversight and project support.

The structure and operations of SHAWCO have been based on various development models, initially a welfare one and more recently one of a development agency. Since 2005 the organization has become less reliant on employed professionals and instead UCT students, a large number of whom are international exchange students, lead and run the various projects with support from key professionals (See http://www.uct.ac.za/students/services/community/SHAWCO/ for more details). The organization's operations are, however, hampered by severe limitations and long-term sustainability problems. The business processes remain largely paper-based; and the separation from the central UCT computer network, for example, impacts on effective communications. The high turnover of students is a social factor which also affects continuity.

It is clear than many of the existing IT systems are inefficient, outdated or non-existent and an effective solution is necessary. For this reason, and because of the great expense involved, teams were asked to investigate and evaluate the situation; in particular, to critically evaluate aspects of business processes and systems currently in place for academic education projects and non-academic sporting projects in terms of how learners and staff are recruited and go through the system; organisation of transport to the projects; marketing, and monitoring and evaluation of the business processes, among others.

Implementation

Having used the Isis/SuperTsela ICT infrastructure renewal projects at UCT as the scenario for computer science students to learn to write journal articles, Professor Derek Smith and Claudia Kalil decided that SHAWCO's projects would be topical and sufficiently complex to use as an institutional scenario to use for a course on article writing.

In conjunction with Jonathan Hoffenburg ,the SHAWCO project coordinator, they devised key project areas for different student teams to focus on, and wrote the terms of reference for an investigation for each, incorporating these into individual letters. Jonathan contacted student leaders in SHAWCO to get their permission to be interviewed by email or face-to-face by students. Jonathan spoke in the first class to provide background on what SHAWCO is doing in different education project areas such as the Saturday school and projects on the

Cape Flats, an area of great social and educational disadvantage in which many of the projects operated, including transport arrangements of volunteers and scholars.

The course ran in the first term and there were 28 mostly post-graduate students. Claudia ran workshops, and two Information Systems lecturers added to the feedback to students. In the first workshop the objectives of the course as well as the use of the scenario were explained, specific task letters and a list of people to contact handed out, and students were encouraged to browse the SHAWCO website. They were also encouraged to start their research and interviews on the scenario immediately, to visit the projects and to keep references.

The main action in the workshops came from the students each week as they presented the stages of their preparation on their aspect of the scenario. These items were critically discussed, and students incorporated improvements and changes after each stage. The students presented the following:

- a mindmap (on poster);
- a topic outline of main headings and sub-headings (on overhead transparency);
- a Power Point presentation, based on the student teams' specific aspect of the SHAWCO scenario, setting out the findings, conclusions and recommendations they could make to members of the university community. (Dr Lisa Seymour from the IS department represented UCT and formed a question panel with Claudia Kalil.);
- a journal article.

The teacher's role was to facilitate the process of investigating and creating the various deliverables and documents relating to the SHAWCO projects. In addition to the students' presentations, class time was taken up with teaching/ learning communication principles and key aspects of form, content and style related to article preparation, planning and style and readability, for example.

The journal article was considered a more real-world target audience than would be the case with an essay which only really has a place in academia. In this way a bridge between university and workplace practices could be built as well as academic practices instilled. The intended audience for the article was a cross-section of university leaders, managers as well as administrative and academic staff and students, who were likely to have only a cursory knowledge of business process issues. The students were therefore to explain all technical concepts where necessary.

Using an institutional scenario brought the broad benefits of SL to bear on this situation. Experience in using the model has demonstrated its effects in terms of providing: interest and motivation to participants (more so than when provided with case studies already researched by staff or simply allowing students to randomly choose a topic and work on it alone); variety of subject matter to suit individual interests; meaningful participation in 'real' issues; and promoting the operations of a development agency to teach socio-cultural literacies in addition to communication practices.

Reflection on use of the SL model for teaching and learning

Course Assessment

Compared to initial course evaluations which were lacklustre, SL feedback has been consistently positive. With each experience, we, as PCU facilitators, have tweaked the process to further enable the student teams to deliver. Thus over the years, in collaboration with experts such as Richard van Huyssteen and Stephen Marquard, we have introduced new topics and discarded others, consolidated our 'expert source' list and added new dimensions (student reflections) which had not been used with earlier scenarios.

Building on the SL success in the Computer Science department, we devised an entire course in commerce. We adapted the task letter for the new scenario and course objectives and followed the same approach with IS and SHAWCO staff members as was followed with CS people in devising topics and finding experts for students to consult.

Students have always filled in a course assessment questionnaire during the final session but these were completely reworked in 2007 to provide both quantitative and qualitative data. (This pilot data is also being used in Terri Grant's PhD work on Scenario Learning and Pedagogy and its contribution to the field of professional learning and development).Together with student reflections handed in after the assignment some 3 weeks later, the Statistical Science department aided our analysis into the collaborative nature of SL and student perceptions on a situated learning model.

Comparative course results

 A very welcome by-product was an improvement in marks in the CS course, which has been sustained over a number of years. Whereas, the former traditional courses provided some very good marks (from students who would probably do well under any circumstances), there were also a number of mediocre marks and failures. The collaborative SL approach resulted in equally excellent marks at the top end with only a few mediocre marks and no failures. The support students receive throughout the process from all stakeholders (including their own team members) creates a confidence and motivation to work which results in a better end product. The weekly process of off-the-page planning, draft writing and final on-the-page delivery results in a professional product of which the students seemed proud. As CS course convenor, Terri Grant, does not mark her own students' work, these results are even more gratifying and the CS department is well pleased with the results. In terms of the commerce application, further adjustments have been made following the first course and this approach in commerce, like CS is bound to strengthen over the years.

Concluding remarks

SL seems to support the goals of HE by assisting in producing graduates with the practices and capabilities of critical and analytical problem-solving, effective communication, working

in diverse teams, self-management and organisation, information processing and use of technology within a real-life context. As one student said: "It teaches us about the real world and how things work." Trauth (2007) stated that an IS degree (and similarly a computer science degree) should expose students to knowledge and contemporary issues around diversity, education, health and energy and the environment. Trauth (2005) also claimed that global proliferation of IT, the heterogeneity of development contexts, and distributed nature of IT work and usage are compelling reasons for addressing and developing cross-cultural understanding in IS students and professionals. SL seems to enhance the potential for accelerated intercultural synergy because of its emphasis on joint-venture teamwork and role play. As students differ in terms of gender, age, background and home language, diversity is assured. According to Davis (2002) and Steyn (2003), diversity in the classroom as well as the boardroom is a characteristic of a global economy and training in this field is a worthy curriculum pursuit. Using enquiry-based learning and embedding learning in institutional scenarios are considered opportunities to improve the quality and character of these technical degree programmes in regard to curriculum transformation goals.

In one perspective multimodal meaning making relates to the ability to make decisions about the uses of technology, and to apply knowledge, tools and competencies for the benefits of society. In this view communicative capability and practice are necessary pre-requisites to participating in the democratic process within the information society. Rassool encourages educators and students "to explore contemporary issues in the world and specifically technological, scientific and ethical knowledge implicated in the concept of sustainable development" (Rassool, 1999: 239). There are also broader benefits of promoting overall communicative practice and societal and cultural awareness through workplace and enquiry- oriented SL. As an open-ended problem-solving framework, collaboration, co-operation and experience are harnessed, allowing students to develop knowledge based on informed reasoning and analysis (Rassool, 1999: 239). Students are involved in interrogation of the socially constructed and thereby involved in "dialogue across difference, seeking out commonalities, experimenting with identities, tracing borders and moving in and out of discourse communities" (Lankshear et al. quoted in Rassool 1999: 239).

The collaborative interplay of various methods, modes and discourses, a characteristic of SL, also helps to minimize individual weaknesses – good news for ESL students. Although the CS course, for example, has nearly 100 students annually, the SL task teams are small. As each member thus has a very distinct role and responsibility, the disadvantages of group work where some members do little and get away with it – especially in large groups – can be minimized.

Welcome by-products of this initiative have been, raised inter-faculty awareness, motivation and interest plus greater collegiality among staff. In terms of the students, a most pleasing result has been the higher grades mentioned as well as highly positive formative and summative course assessments.

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APPENDIX A (Example of letter followed by all the topics which were inserted into each team letter)

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22 February 2009

ISIS / supaTsela Investigative Project Team

University of Cape Town

Dear Task Team Members

IMPACT OF SYSTEM RENEWAL AND DEVELOPMENT AT UCT (SOFTWARE AND INFRASTRUCTURE)

During the early 1990s, the university became aware that its existing IT systems were becoming outdated and that an integrated solution was necessary. The first part of this renewal involved the implementation of SAP's R/3 system to replace the home-built Heritage system's HR and Financials functions. This was done via the PRISM project (Project to Revolutionise Information Systems and Management) from 1995 to 1999. To be blunt, although SAP R/3 was well suited to the financial and human resource needs of the university, it was inadequate for student administration. The Integrated Student Information System (ISIS) project team was formed to tackle these issues and come up with viable and cost-effective solutions. Some years later, supaTsela, the project concerned with the renewal of UCT's ICT infrastructure, also came into being and from August 2004 to April 2006 ISIS and supaTsela ran in parallel. In 2006, the ISIS project team formally handed over responsibility for the continued rollout of the PeopleSoft student system to the Administrative Computing Services (ACS) section of ICTS and the Student Admin Support Team in the Registrar's Office. The supaTsela project was extended into 2008 in order to complete key tasks, and the PeopleSoft system was also upgraded in 2008. Other key developments involved a campus-wide email client (Groupwise) and Learning Management System (Vula).

Because of the great expense involved and central importance to the university of appropriate technology, your team has been asked to investigate and evaluate UCT's situation. In particular, could you please:

- discuss UCT's choice of student administration system, PeopleSoft, in terms of self-service functionality specifically online registration;

- critically evaluate why online applications and registration are so limited at UCT compared to some other institutions);
- examine the possibilities for increased online registration either for all students or for certain categories of students.

You are required to present your findings in the format of a journal article (about 2000 words). As your audience for this document will consist of a cross-section of business leaders, managers as well as administrative and academic staff, who may only have a cursory knowledge of these issues, please explain all technical concepts where necessary. A full and serious understanding is crucial. You will also be given the opportunity to address members of this audience at a meeting. It is recommended that you use graphic/visual aids to illustrate your findings. (See your course material for precise instructions.) As the PCU has been asked to oversee this exercise, please contact me or Claudia Kalil if you have any queries.

Yours sincerely (name of PCU staff course convenor)

LIST OF TOPICS: ICT SOFTWARD AND INFRASTRUCTURE RENEWAL PROJECTS (2008) Names and contact details of various ICT personnel were provided.

Topic 1: discuss the ISIS project's **choice of the PeopleSoft** Student Administration package; critically evaluate the Oracle/PeopleSoft takeover bid; and discuss the impact of the bid globally and on UCT specifically.

Topic 2: discuss UCT's choice of PeopleSoft to replace the Heritage system; compare and evaluate the **implementation approaches of PeopleSoft** at Cambridge University in the UK (CAMSIS Project), and UCT (ISIS Project).

Topic 3: give a brief overview of the different focus areas of ISIS and **supaTsela**; evaluate one or more of the supaTsela project areas that have already been implemented (excluding email); discuss those that are still ongoing or have yet to be implemented; and give an overview of the project and implications for UCT.

Topic 4: discuss the goals of the ICT Infrastructure renewal project at UCT (supaTsela); give an overview of UCT's past email usage; and evaluate UCT's new choice of email **(Groupwise)**

Topic 5: discuss UCT's criteria in selecting the **hardware platform and database** for the PeopleSoft Student system; discuss how the database and operating system influenced UCT's choice of hardware; and how Oracle's takeover of PeopleSoft significantly altered the factors in the original database decision.

Topic 6: compare the self service functionality of UCT's previous administration system with PeopleSoft; critically evaluate and discuss the various **self-service options on**

PeopleSoft (what it offers and what it does not) and discuss their impact of the user (e.g. students).

Topic 7: discuss UCT's use of various **Learning Management systems** (e.g. past use of WebCT, current use of Vula); review these systems and discuss UCT's decision to replace all systems with Vula; and explain how UCT's LM system interacts with both ISIS and supaTsela (although separate from both).

Topic 8: discuss UCT's requirements in terms of a housing system; evaluate UCT's choice of the **RMS housing system;** review the implementation of this system at UCT; and evaluate if from a student perspective.

Topic 9: discuss the fact that UCT has been involved with ICT renewal for over a decade starting with the controversial PRISM project in the early 90's; discuss the concept of **"change fatigue"**; evaluate the change and communication management approaches adopted by the team leaders and their project teams; and discuss the impact on end-users of all these projects and implementation styles.

Topic 10: assess the training required implementing PeopleSoft from both the trainer and trainee's perspectives; discuss the various ongoing **training courses and support** available; and review the huge amount of user support documentation necessary.

Topic 11: discuss the **system interface(s)** between the recently introduced PeopleSoft (part of the ISIS project) and other systems, including UCT's implementation of SAP R-3 (introduced during the PRISM project) and; evaluate what challenges UCT's project teams faced in their goal of creating a seamless 'front-end' in terms of the end-user.

APPENDIX B (Example of a letter followed by all the topics which were inserted into each team letter) Task letter

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4 February 2009

Investigative Project Team 1, Shawco, University of Cape Town

Dear Task Team Members

EVALUATION OF BUSINESS PROCESSES (OPERATIONS AND PROJECTS) AT SHAWCO, UCT

SHAWCO, the Students' Health and Welfare Centres Organisation, is a dynamic, innovative and passionate student-run NGO based at UCT, striving to improve the quality of life for individuals in developing communities within the Cape Metropolitan area. SHAWCO was founded in 1943 by Andrew Kinnear, a medical student who was moved to action by the need which he saw in the impoverished communities of Cape Town. A one-man initiative quickly grew into one of the country's largest student volunteer organisations, now boasting over 1200 volunteers running over 15 health and education projects in 5 SHAWCO centres as well as other locations around the Cape Metropolitan area. SHAWCO is divided into 2 main sectors: Education and Health . A third "staff sector" coordinates the SHAWCO community centres, transport, resource development, administrative oversight and project support.

The structure and operations of SHAWCO have been based on various development models, initially a welfare one and more recently one of a development agency. Since 2005 the organization has become less reliant on employed professionals and instead UCT students, a large number of whom are international exchange students, lead and run the various projects with support from key professionals. The organization's operations however are hampered by severe limitations and long-term sustainability problems. The business processes remain largely paper-based; and the separation from the central UCT network for example impacts on effective communications. The high turnover of students is a social factor which affects continuity. It is clear than many of the existing IT systems are inefficient, outdated or non-existent and an effective solution is necessary. For this reason, and because of the great expense involved, your team has been asked to investigate and evaluate the situation. In particular, could you please:

Topic 1: critically evaluate the business processes and systems currently in place for the academic education project KenSMART and the non-academic Sports project in terms of how **learners** are recruited and go through the system.

You are required to present your findings in the format of a referenced article. As your audience for this document will consist of a cross-section of university leaders, managers as well as administrative and academic staff and students, who may only have a cursory knowledge of these issues, please explain all technical concepts where necessary. A full and serious understanding is crucial. You will also be given the opportunity to address members of this audience at a meeting. It is recommended that you use graphic/visual aids to illustrate your findings. (See your course material for precise instructions.) As the PCU has been asked to oversee this exercise, please contact me if you have any queries.

Yours sincerely [Names and contact details of PCU staff convenor and IS contact person]

LIST OF TOPICS: EVALUATION OF BUSINESS PROCESSES (OPERATIONS AND PROJECTS) AT SHAWCO, UCT

SHAWCO Education Sector Coordinator: (contact details provided)

Topic 1: critically evaluate the business processes and systems currently in place for the academic education project KenSMART and the non-academic Sports project in terms of how **learners** are recruited and go through the system. Kensington project co-ordinator (name and contact details provided)

Topic 2: critically evaluate the business processes and systems currently in place for the academic education project KenSMART and the non-academic Sports project in terms of how **volunteers** are recruited and go through the system. Kensington project co-ordinator (name and contact details provided)

Topic 3: critically evaluate the business processes and systems currently in place for the **UCT based Saturday School.** Saturday School co-ordinator (name and contact details provided)

Topic 4 & 5: critically evaluate the business processes and systems currently in place for the **Masizikhulise Centre project (**Topics were divided up into areas). MC project co-ordinator (name and contact details provided)

Topic 6: critically evaluate the business processes and systems currently in place for **transport** related to SHAWCO health and education projects. Transport and student office management contact person (name and contact details provided); Transport contact person (name and contact details provided)

Topic 7: critically evaluate the business processes and systems currently in place for **marketing** of Education projects. Marketing co-ordinator (name and contact details provided)

Topic 8: critically evaluate the business processes and systems currently in place for the **business centres for ICT education project.** ICT project co-ordinator (name and contact details provided)

Topic 9: critically evaluate the business processes and systems currently in place for the **evaluation** of all SHAWCO projects. Evaluation contact person (name and contact details provided)

Activity-Led Learning approach for network planning and management

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Abstract

We have investigated and deployed an approach which we have termed Activity-led Learning (ALL) to promote better engagement and an enhanced experience amongst our students. Group work is an important part of ALL where the focus is on students learning through self-directed investigation, discovery and doing, rather than through the traditional approach of listening to lectures followed by associated supported tutorials or laboratories. Web 2.0 technology (e.g., discussion forums and wikis) provides important support mechanisms for our new approach as well as constituting an important skill development area for our Computing students. In this paper we discuss ALL that has been applied to a master-level module: Network Planning and Management.

Key words: Activity-led learning, problem based learning, Case study, Group work.

1. Introduction

Over recent years there has been an increased interest in engaging students more directly in their learning. Early innovations were delivered under the name of 'active learning' and were a response to recognising that students often learnt more if they were physically involved in their learning: practical activity to support material delivered in class. Such delivery mechanisms have been developed and have evolved, with a spectrum of different approaches emerging. There are many variant approaches, with names which are interpreted flexibly, including problem-based learning, enquiry-based learning and activity-led learning.

The approaches differ in a number of dimensions. The student activities and learning maybe tightly controlled or may be open-ended; the students' role may range from being an autonomous learner to being more directed as a member of a project team; the tutor's role can be that of a task setter and guide ranging through to a facilitator; and the learning activity can range from being very prescriptive (finding a specific solution to a given problem) to students working towards achieving their own individual goals (Savin-Baden 2004). The role of the activity in the learning can vary from being supportive (practice) to being exploratory (application of theory) to being the core driver of the learning. Linked to that is the role and nature of tutor input. This can vary from a formal, pre-planned, tutor-delivered series of lectures (or similar) to ad hoc, on-demand input to informal advice and guidance only. In regimes termed as being 'led', such as 'activity-led', then the activity is

usually the driving force and provides the motivational impetus for students' work and learning.

The Faculty of Engineering and Computing at Coventry University has embarked on introducing some activity-led learning into all its courses (Wilson-Medhurst 2008). In line with very many UK universities, retention rates and student satisfaction of students in these disciplines are not as good as would be desired. The activity-led learning initiative is designed to enhance the student experience and address these twin challenges.

One of the key factors in improving retention is believed to be enhancing student engagement. By adopting ALL it is recognised that the roles of both staff and students will change. Students will need to become more in control of their learning activities. By basing their work around the requirements of a given activity students will need to decide what they need to find out about . By providing students with projects and tasks which they are likely to find interesting they ought to be motivated to undertake the investigative and research work necessary to find out how to solve it. Wenger (1988) describes that if learners' participation is too limited then they do not engage in a deep way but that their engagement remains superficial, literal and procedural.

2. Network Planning and Management

The aim of this module is to introduce students with all the activities that have to be performed to create a successful network plan as well as a sound coverage of techniques and tools of network management. This module is delivered using a 'two strand approach' i.e. the two overlapping threads, one based on lectures and the second one based on activity-led learning (Linge and Parsons 2006). Through this approach students do not only gain a set of technical skills but also gain some business knowledge and practice some of their soft skills in simulated real life situations.

Finally aspects of network management are covered. Problems of security, network failure and its impact as well as network management equipment, software and protocols are discussed.

3. Pedagogical Approach

In this module, we adopt an Activity-led learning approach. Through this approach students not only gain a set of technical skills but also business knowledge and practice some of their soft skills on real life situations. Instead of a set of lectures where students are passively presented knowledge, the knowledge is developed by them during the process of solving case studies. Case studies and their deliverables are designed in such a way to make sure that all the outcomes of the modules are achieved through the case studies. Such an approach is proven to increase the engagement level of students, increasing the level of retention and because of the fact that the knowledge gained during the case studies is not limited by the choice the tutor made in selecting material for lectures and lecturing time, the amount of knowledge the students gain is significant. This approach has additional

advantages as it stimulates students' critical and analytical thinking skills as well as study and group work skills.

The process is not straightforward, and students are not being left without help and control. To enhance their efficiency and guide them in the process, the concept of the cycle is introduced. The cycle applied to the 5 case studies (topic areas) involves the following steps:

The case studies along with lectures and lecturers' guidance guide students through the content of the module. It involves the following steps: An introductory lecture, an assessment briefing, group based research and discussion phase, support sessions with online resources and a final assessed seminar or discussion session. Moreover, the last case study allows individual students to be assessed through online interaction. The following five case studies meet the intended learning outcome of the module.

Case Study 1: Requirements Analysis and success criteria: The goal of students is to create a plan that in a real life situation would help them to understand the technical and non technical requirements of their customer. Secondly based on the discussion with simulated players (customers, customer employees) they create a requirements specification supporting them in the further work.

Case Study 2: Analysis of existing networks and security: In real life situations the existing networks can dramatically simplify the redesign process. Thanks to the information gathered from the existing networks potential problems of the network can be predicted and avoided in the new design. The observation of the existing network also helps to understand the need of the customer better. As a deliverable, students are asked to design a plan of approaching the existing network and highlight the tools and procedures that will help them analyse the existing network. Finally students are asked to create a flow analysis of the network that will help them to understand the design requirements in the later stage of the project.

Case Study 3: Logical structure of the network and planning: At this stage the students' goal is to create a logical diagram of the new network supporting the design decisions with customer requirements and flow analysis done in the previous part. They present the logical layout plan but also the addressing and naming conventions as well as the means to introduce redundancy and elements of guaranteed service into the network.

Case Study 4: Physical structure of the network and implementation: At this stage based on the logical plans done in the previous case study students are supposed to choose the equipment and create the implementation plan that would not only minimise the budget but also offer scalability proportional to the customer requirements.

Case Study 5: Network Management: This case study focuses on the problem of network management directly. In this case study students are asked to choose the appropriate tools and procedures that will make sure that the future network will work correctly and the

administration team will be able to respond to the changes in the network as well as the emerging threats.

4. Technology used

For the delivery of this module, we use the University's virtual learning environment (VLE). A VLE provides a range of tools as well as facilities to make material available to students. The VLEs provide discussion forum and email facilities. The lecture slides, handouts and assignments are available on VLE for students to download. Additionally, we also encourage student to use wikis.

Students are given five case studies, as discussed above, simulating the real life scenarios. For the first four case studies students were supposed to have co-located discussion which is also informally monitored and facilitated by a tutor while for the fifth case study students were asked to use private discussion forum to provide the solution to the problem. Each and every member was encouraged to contribute to their assigned private discussion forum. The contribution was assessed quantitatively as well as qualitatively. The public discussion forum was used by all students to discuss general issues which were not directly related to the case study. We used discussion forum both on the VLE as well as Google discussion forum. The discussion forums were monitored by a tutor. An example of discussion forum took place on the VLE is shown in Figure 1.

Figure 1: A sample of private discussion forum showing the number of tasks posted by the group leader for further discussion.

Figure 1 illustrates an example of discussion that was part of case study 5. Case study 5 consists of 10 sub tasks which were given and explained to the students. Students were asked to discuss the given task one by one, opening a new question only when the previous

one is closed. A group leader was responsible for management of the tasks, posting and making sure that they are closed. A question was considered as closed when a summary post was placed on the discussion forum and all the participants approve the summary post. The summary post became a base for the group mark whereas the discussion itself was used to mark the individual contribution. The group summary requirement was introduced mainly to encourage cooperation between the students and to encourage discussion rather than a long monologue.

5. Student Support

Developing learning communities: Through the activity-led learning approach in the Network Planning and Management module, students are encouraged to investigate the case study problem, in groups of 4-6, thoroughly and thus gain the subject knowledge about the domain. Their ongoing progress indicates to them the level of knowledge and competence they are gaining.

The problem-solving students investigate relevant resources and critically evaluate them. Each student spends about 40 hours on each task. The simulated environment encourages the students to work and practice in order to increase their knowledge and improve their problem solving skills.

The problem-solving students and teachers become a community of learners; they share ideas and discuss different aspects of the problem. They communicate synchronously as well as asynchronously using different collaborative tools including discussion forum.

6. Group formation

Group formation is an essential component of the activity lead learning. Failure in creating balanced groups will lead to problems in cooperation and decrease the quality of the provided solutions. Therefore for the Network Planning and Management module we have created the groups based on the initial survey handed to the students in the first meeting. The survey has given us enough knowledge about the academic background of the students and the networking experience they have.

For Network Planning and Management, at the start of the course students were divided into groups of four or five each. These groups did not change throughout the semester. Students were briefed about the roles and rules of the method used. Groups were provided with private discussion forums on the university's virtual learning environment where they could communicate, store work, record decisions and arrange meetings. Google discussion forums are also used for this purpose. Students were encouraged to work cooperatively in their groups to discuss and 'solve' the case study.

7. Feedback given to students

Throughout the module, the amount and nature of feedback given to the students changes as along with the role that the staff plays in the project. At the end of every case study there was a session devoted to providing extensive feedback to the students. During the session a member of staff simulated multiple roles (such as client, member of management staff or technical advisor) as described above, talked to every group separately, discussed the work produced to date, pointing out its weakness as far as technological solutions and business requirements are concerned, better solutions, compromises and technological choices.

Informal feedback is given throughout the semester on each and every case study. Informal feedback is not only given in the sessions but also sometimes through emails, chatting and discussion forum and quite frequently informal chatting on the corridors of the university.

8. Assessment

The Network Planning and Management module places an emphasis on team working skills therefore every student group elects a team leader who is responsible for managing the group work documentation. The rules of group work are described in the introductory lecturer and a document containing such rules and procedures is given to students for their reference. This document also covers rules of peer assessment, mark allocation and grievance procedures.

The module is developed to be assessed based on groupwork. However, in order to ensure that all students equally contribute to the solution and most importantly they develop enough technical as well as soft skills, we assess the students based on their group solution as well as their individual contribution offered to the group. During each of 5 case studies 20% of the final mark is given. For each case study 10% of the mark is given for the case study report. Group marks are adjusted based on peer assessment. For each case study 5% of the mark is given for the critical assessment of the presented work. The critical assessment describes flaws and limitations of the chosen approach. Alternative approaches are also included in this section. During each case study 5% of the final mark is given for presentation or discussion. In order to get 5% mark each group member must contribute to the presentation proving his engagement to the case study. The group marks were linearly peer assessed basing on the marks all participants gave to each other evaluating their contribution.

9. Student Feedback

At the end of the module students were asked to participate in a detailed questionnaire assessing various aspects of the module such as their opinion about the quality of teaching, Problem Based Learning (PBL) versus traditional learning approach, group formulation strategies as well as the quality of case studies. In response to a question "Did you like the Problem Based Learning approach or would you prefer a lectured module finished with the exam?" more than 85% of students commented that they have liked the Problem Based

Learning approach. They have commented that the PBL approach "Makes you focus for more than just couple of days before the exam", "allows wider research" and that thanks to this approach "you will learn more, your are restricted in the group".

More than 75% of the students liked our idea of mixing the groups, so that they contain members with varying background, as commented by students: "it brought together individuals of different levels of network knowledge and experience", "gain more knowledge from different people". Further more students think that mixed group gave them a "chance to meet different people and welcome different ideas; brain storming". Most of the responses to this question were positive but we have received several comments complaining about the "free rider" problems and problems with group communication and why to support weaker students.

The graph presented below shows the average students comments across all five case studies. Although in general students appreciate and give high marks to the amount of knowledge they have gained, overall quality of the material presented, overall quality of the case studies, availability of the resources and the overall quality of the consultations (discussion sessions) but according to our observation students like the Case Study 5 due to the fact that technology was extensively used and the whole case study was based on VLE or Google based discussion forums which were monitored by tutors. Students liked the approach also because of the fact that it gave them a chance to work together over the Christmas and New Year period, something that wouldn't be possible otherwise due to the big nationality mixture of the students.
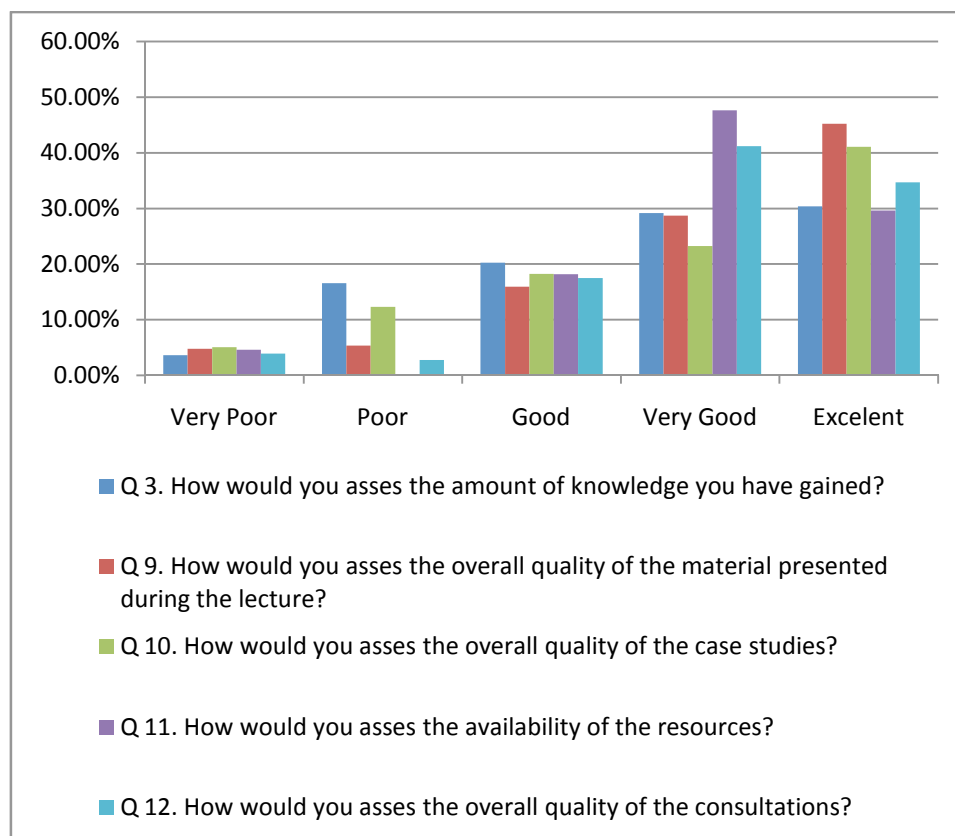

Q 3. How would you asses the amount of knowledge you have gained?

Q 9. How would you asses the overall quality of the material presented during the lecture?

Q 10. How would you asses the overall quality of the case studies?

Q 11. How would you asses the availability of the resources?

Q 12. How would you asses the overall quality of the consultations?

Figure 2: Student Feedback

10. Conclusion

In this paper we have discussed the ALL approach that has been applied to a master-level Network Planning and Management module. ALL is designed to enhance the student learning experience and address the challenges of student retention and satisfaction. Group work is an important part of ALL where the focus is on students learning through self-directed investigation, discovery and doing, rather than through the traditional approach of listening to lectures followed by associated supported tutorials or laboratories. Our experience as well as student feedback shows that they liked the ALL approach. In future, we intend to apply the same approach to other modules.

Acknowledgments

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Case studies as simulation of industrial practice

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Abstract

Case studies can be used as a simulation of industrial practice in order to capture and model the semantics in business transactions in an Enterprise Architecture (EA). Students assigned themselves into EA design teams on the Architectures for Enterprise Applications (AEA) module, which is a final year undergraduate (Level 6) module on the BSc Computing route as well as a post graduate (Level 7) module on the MSc Advanced Computing programme. In their teams the students apply a requirement elicitation framework for agent-oriented software engineering referred to as Transaction Agent Modelling (TrAM) (Hill 2006).

TrAM provides a theoretical framework to capture the semantics in business transactions for EA and then to model those semantics through the use of a transaction pattern. Applying TrAM to case studies exposes the students as it would industrial practitioners (e.g. Enterprise Architects) to the complexities of enterprise applications. This approach is innovative in that it reveals to students (and industrial practitioners) how to capture meaning within data in business transactions. The qualitative data collected from student design teams provides the evidence to test the theory that suggests a transaction pattern could be used to assist in the early requirements capture stage. Data collected also provided the evidence to examine the usefulness of semantic models for EA.

To assess the validity of this approach, we have conducted qualitative data analysis using the NVivo software (Bazeley 2007). NVivo reflects, codes links and visualises the results of the students work on applying TrAM to the case studies. Results showed that through the case studies and TrAM, student design groups were actively engaged in applying reasoning through this theoretical framework. This analysis also informs the enterprise architect of the steps to take when applying the transaction pattern in an EA.

Background

Modelling notations and representations play important roles with the system analysis, design and development processes. Developers who have to work with such notations can be seen as users of the facilities offered by the notation. Hence, there are likely to be features of a notation that support its intended use and uptake, and conversely some other features that may prevent or limit its effective use. In this paper we consider not so much the "ease of use" of TrAM, but rather the "influence of its use" when solving a number of design case studies for Enterprise Applications. The exploration is based upon qualitative examination of the use of the TrAM in the context of specific case studies. This report outlines the approach and method taken to qualitative data analysis using NVivo. NVivo (Bazeley 2007)

provides a software tool for working with and analysing qualitative data, reflecting, coding, linking and visualising with the results of case studies.

Ten student design groups were formed from the course "Architectures for Enterprise Applications" (AEA) at Sheffield-Hallam University. Each student design group consisted of up to four individual designers. The first collective task for the design teams was to select from one of the following six case studies to model, outlining their reasoning for choosing a particular case study:

- Sheffield Hallam Mortgage & Investment Company;
- Mobile NHS;
- The XLSIOR Reinsurance Company;
- Synergy Finance Solutions Ltd;
- Deontic Logic Providers;
- Scrupulous Chemicals Company.

Each case study provided business transactions within different business settings. One of the goals of analysing design data from multiple case studies (or cross case) is to examine if the events and process in one well described setting can occur in a different setting, the aim being to see processes and outcomes across several cases, to understand how they are qualified by business conditions and therefore develop a deeper understanding (Miles and Huberman 1994). Analysis will examine the same case studies designed by separate groups as well as multiple case studies across multiple groups. Figure 1 illustrates the approach of applying multiple case studies after Yin's (2003) multiple case study method. Figure 1 also illustrates the link in terms of data captured over a three year period with 'Constructive Alignment' after (Biggs 1999). Biggs (1999) provides an explanation of why 'Constructive Alignment' is important to the learning process.
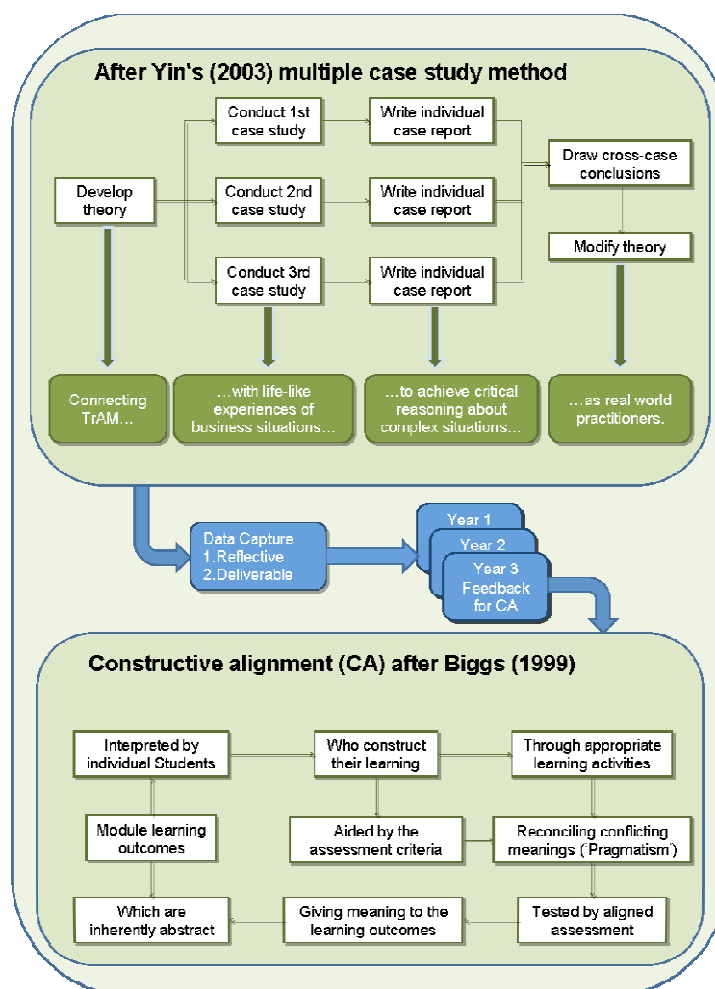
Figure 1. Multiple case study method after Yin (2003) linking with Constructive Alignment, Biggs(1999).

A case study constitutes a narrative account of situations focusing on the business transactions and the exchange of resources for events. The mobile NHS case study is a direct capture of an industrial experience. Case studies provide accounts of complex practical situations which embody elements of theoretical and process knowledge, for example in the case of mobile health a GP could reduce the risk of prescription error though mobile access to patient records allowing greater knowledge and alerts of drug-drug and drug-condition interactions at the point of treatment.

Case studies provide life like experiences of situations and events by describing them in all their complexity and uniqueness (Elliot 2009). Engaging with case studies and reasoning about a complex business situation allows theoretical and practical skills to be practised and developed. Student design groups approached the case studies through a number of steps for the analysis. Firstly, addressing TrAM model fundamentals, drawing Transactional Use Case Diagrams and CG that capture the concepts and relations of the case study enterprise, including transaction models, and the type hierarchy. Secondly, applying model automation using Amine (http://amine-platform.sourceforge.net/), which demonstrates the integration

of a Conceptual Catalogue (CC) into the enterprise design, showing how the Transaction Model develops through the various stages of the TrAM framework allowing the modelling of business rules in CG.

Figure 2 illustrates TrAM as an enterprise system model showing the transactions between multi-agent systems as conceptual graphs. The main purpose of TrAM is to capture semantics and model concepts with multi agent system transactions.
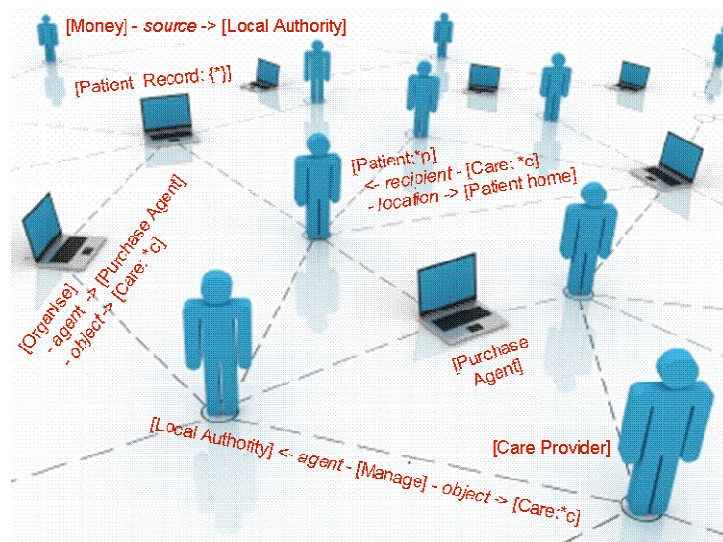

Figure 2. A Theoretical Framework Called Transaction Agent Modelling (TrAM)

Figure 3 illustrates the idea that a model is an approximation of a real world scenario. Enterprise system models derived from business case studies can be assessed as being good, fair, or poor models. An awareness of the limitations of a model is essential to the use of theory derived from that model.
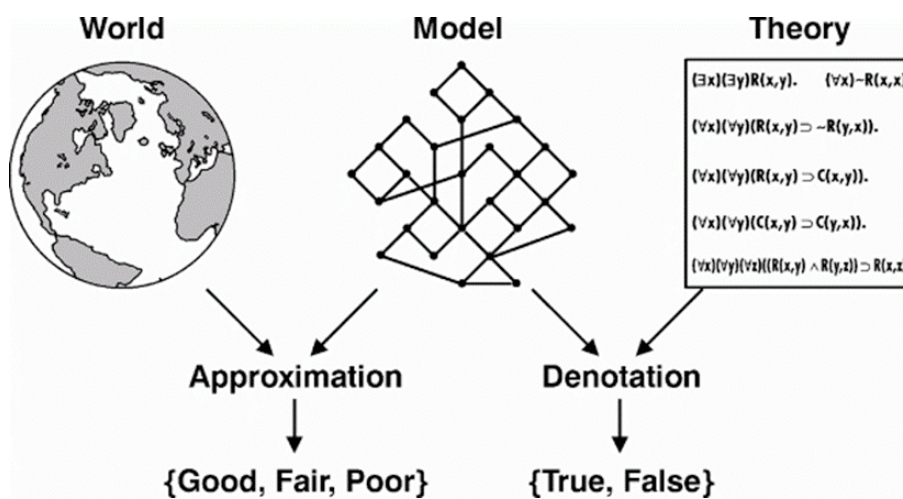
Figure 3. Box (Box, 1979; Sowa, 2000) "All models are wrong, but some are useful"

Rationale and approach to qualitative data analysis

From the user perspective, it is important to distinguish when and where a model is useful. We need to see if our activities lead us to findings that otherwise could have been missed from a good design. This would be a measure for the usefulness of our modelling technique. To do that we need to employ a rigorous approach to qualitative data analysis.

Qualitative data analysis benefits from an organised approach and methodology to ensure rigour (Richard and Morse, 2007). NVivo provides five principle ways supporting analysis of qualitative data, these include the following:

- *Managed data*: To organise and order records including data files, student case study design presentations, observations, and conceptual maps (not to be confused with conceptual graphs) of what is happening in the data.

- *Manage Ideas*: provide access to conceptual and theoretical knowledge with supporting data.

- *Query data*: to ask simple or complex questions of the data and to retrieve from a database the information relevant to the answer. Results of queries are saved allowing further searches to build during the enquiry process.

- *Graphically Model*: to show cases, ideas or concepts being built from the data, and the relationship between them and to present ideas and conclusions using models and matrices.

- *Report from the data*: using the content of the qualitative database using information from the original data sources.

Prior to using NVivo, design data collected from AEA case studies had not been managed in order to make theoretical links between design results. The query process of examining design results had been a manual process by inspection. NVivo allowed for further interrogation, building up queries as part of an ongoing process of analysis. NVivo also allows for ideas to be represented graphically showing how ideas and concepts relate.

Model design activities (embedded in the TrAM framework approach) allow students who are new to the subject of enterprise architecture to explore the underlying complexities of enterprise applications in a rigorous way through the use of a model as experienced industrial practitioners. Practitioners would draw on a similar stock of knowledge derived from previous examples of cases congruent with a reflective practitioner (Schon 1983).

Methodologists lead researches to assess the fit between purpose and method (Maxwell, 2005). Qualitative methods are used in situations where a detailed understanding of a process (TrAM) or experience (case studies as a simulation for industrial practice) is

wanted and where more information is needed to determine the nature of the issues being investigated and where information is textual or visual (Bazely 2007).

Qualitative research begins with a vaguely defined question or goal (Bazely 2007). Informal visualisation techniques such as concept maps are used to help clarify research questions and ideas. The data explorations serve to refine the question so that more focused data collection can occur. The approach adopted starts with a theory whilst remaining open to new ideas from student design groups. TrAM theory defines that enterprise system designs will include the following:

- *Model fundamentals*: providing a compete Transactional Use Case Diagram (TUCD) capturing the transactional behaviour of the initial use case. A close mapping between TUCD and Conceptual Graph (CG) transforming that transactional behaviour and adding semantics through comprehensive analysis with CG, including co-referent passing and few syntactic and or semantic errors in CG. Transforming into a Transaction Model (TM) derived from the generic (TM) including a supporting type Hierarchy.

- *Model Automation*: good use of Amine transferring the initial transaction model analysis into an Amine ontology (a specification of the concepts and relationships using the Amine software environment) with accurate type hierarchy and TM. Integration of the model with a conceptual catalogue (CC) showing how form can be applied to words and concepts in the transaction model. Use of the ontology to achieve a successful projection with the inclusion of the business rules in the ontology.

- *Model Visualisation*: visualisation of business rules, using pierce logic. Proof of the case study business rules, specialisation and projection within the proof of the rules. Refining the TM.

Model fundamentals, model automation and model visualisation are recorded in NVivio as classifications. Each classification is a work area for setting up attributes and their values, and types of relationships.

Figure 4 illustrates a matrix categorising the usefulness of the case study enterprise model in terms of TrAM model fundamentals, automation and visualisation. The matrix categorises likely outcomes are based on common scenarios.

in industry. For instance modelling and simulation is commonly used for sizing a solution to collect evidence that the performance of a production solution will scale up to meet future enterprise requirements.

AEA data is captured in an NVivo workspace project. Sources (case studies) are identified with details such as ideas, and case study assessments linked to their sources; descriptive material and evidence for emerging understanding and ideas are captured in nodes. Nodes are organised to facilitate querying the data so that research questions might be clarified, developed and answered. Emerging insights can be explored in models.

Figure 5a and 5b illustrate the workspace area in NVivo. Student design groups provide case study designs as a sequence of power point slides which are organised in NVivo. A workspace provides a data collection area for evidence which can then be analysed and used to explore possible theoretical links in AEA designs.
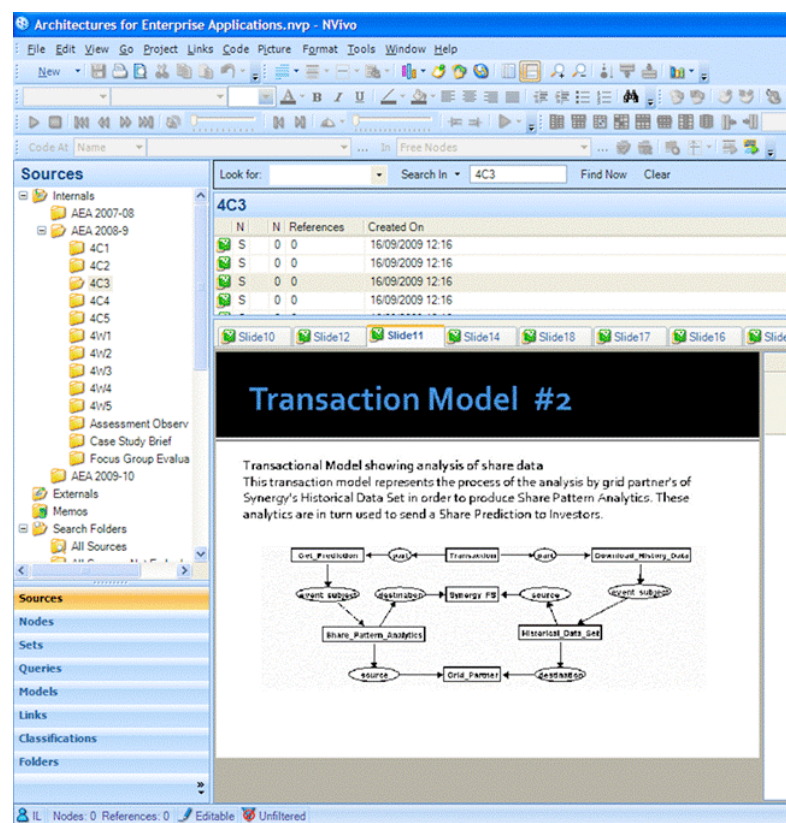
Figure 5a. Workspace area in NVivo showing a generic Transaction Model (TM)
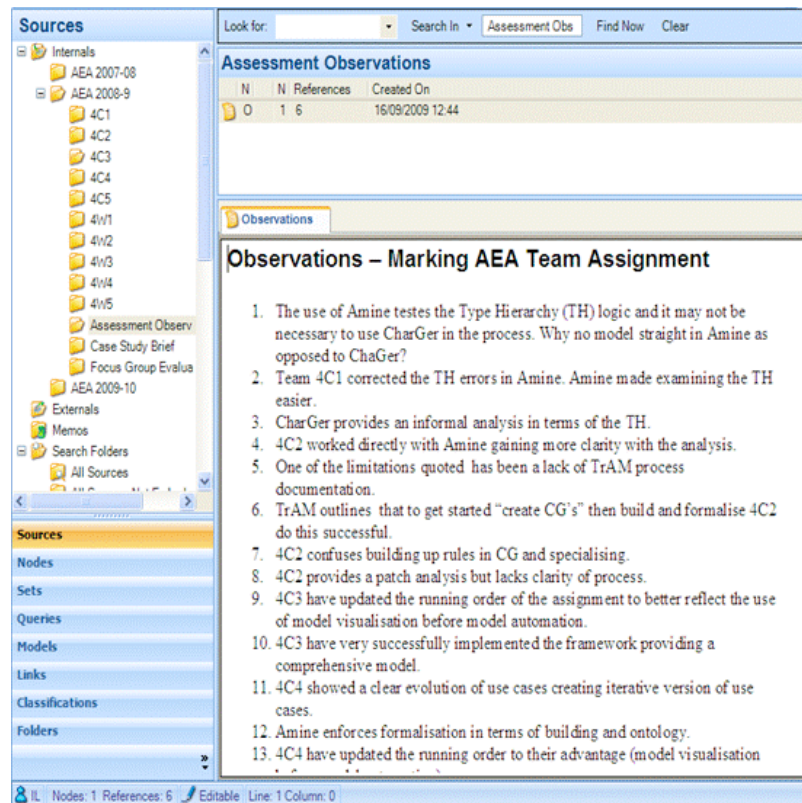
Figure 5b. Workspace are in NVivo linking in Observations

Classification

Figure 6 illustrates classification in NVivo showing how attributes are set up so that values can be assigned to cases and how relationship types are defined. Each step in the TrAM framework is classified allowing comparisons to be made between designs at corresponding steps in the framework. Correlations can then be made between design steps across multiple case studies.
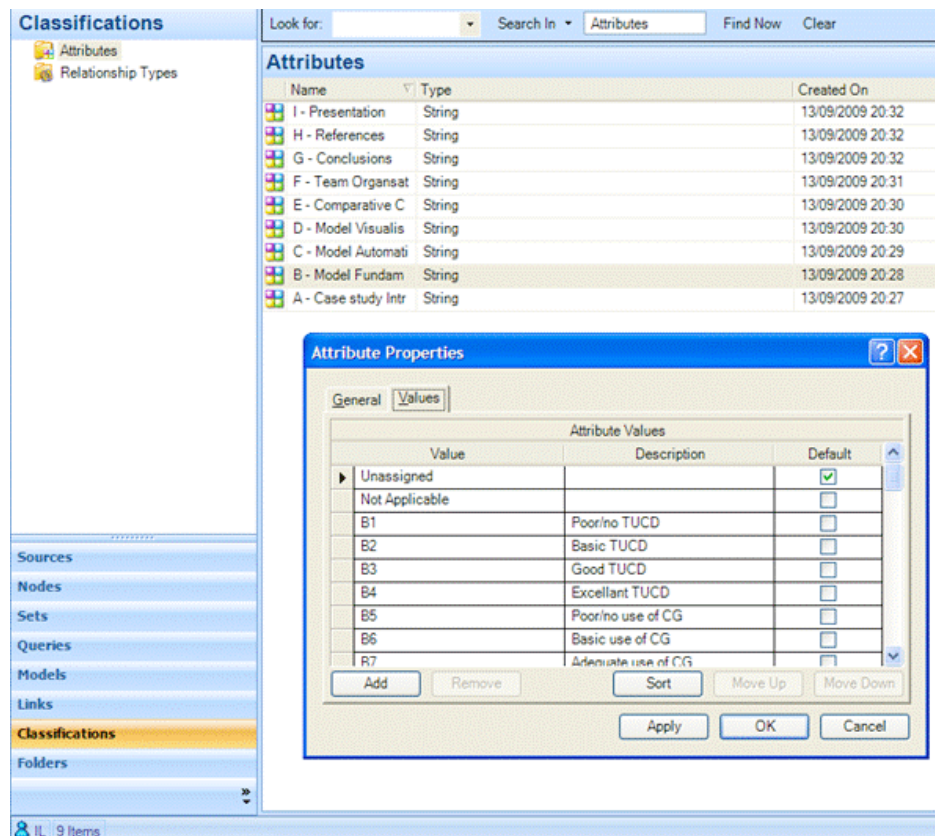
Figure 6. Classification assigning values for Model Fundamentals

Modelling Relationships

Creating a model about ideas about projects is a way of journaling thinking (Bazeley 2007). In NVivo, concept maps, flow charts, or project diagrams are referred to generically as models. NVivo is not prescriptive about nodes or concepts in a model; it treats capturing models as a means of exploring possible theoretical links. The research model serves multiple purposes during qualitative analysis recording where the research started from and what assumptions have been brought into the project. Models also support the clarification of research questions and the planning of data collection. With this in mind NVivo is used to make AEA model diagrams of patterns the research expects to find. For example Figure 7 illustrates the outline steps for a TrAM Framework in NVivo which can be shown to link to the case study design data as those steps taken across each of the case studies.
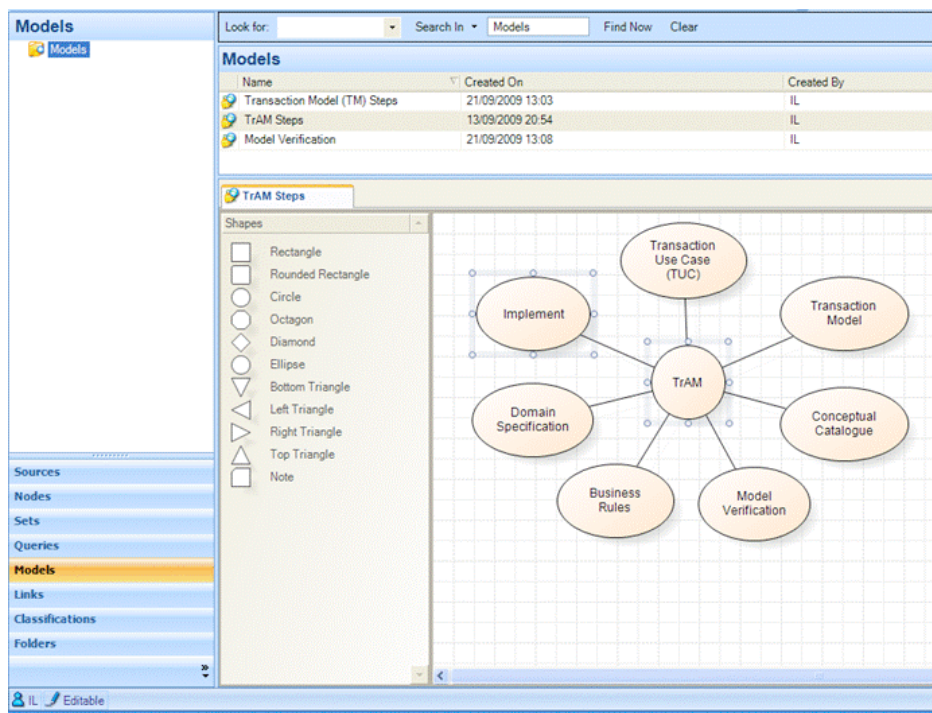
Figure 7. Outline Steps for a TrAM Framework in NVivo

Casebook with Attribute Data

Figure 8 illustrates a casebook which is a table in NVivo in which there is a row for each case and a column for each attribute, where values are entered in the cells. The example case book below shows AEA assessment data for each student design group case study, according to classification values. The assessment data indicates a measure of how complete the enterprise model is in terms of satisfying model fundamentals, model automation and model visualisation.

Figure 8. Casebook with Attribute Data for AEA

Data Queries

Having built up a project of AEA case study data in NVivo the next step in the qualitative analysis process is to build up data queries allowing further searches into the enquiry. Searching and asking questions of data in NVivo is managed primarily through the query tool. Strategies for analysing data and generating results provide greater insight into enterprise models produced from the TrAM framework.

Identifying and Coding Relationships between Items

Identification and coding enables an analysis of data patterns across TrAM case studies to be explored. It is important to identify the use of the generic transaction model as a pattern between design groups working on the same case studies, as well as the linkages (or relationships) between multiple case studies. Hierarchical ordering of concepts in tree-structured coding systems provides categorisation within sub-categories, or concepts with their unique dimensions (Bazeley, 2007).

Focus Group Evaluation

To capture student feedback, AEA with the support and guidance of CPLA carefully designed a questionnaire and presented these questions to a focus group using a "CPLA Guide to Practice" (Elfving-Hwang and Garnett 2009). The questionnaire was carefully designed in that its purpose was to encourage discussion and honest feedback in terms of the learning experience. An analysis and discussion of student feedback demonstrated how engagement with the TrAM framework impacted on the learning experience. The deeper insight into the design teams experiences (particularly comments on challenges, successes, and improvements) are of particular interest to consider in the development of the framework. The main purpose of the focus group was to investigate the extent to which the use of Amine software has enhanced the students' autonomy as learners of TrAM using CG designed to deepen their understanding of the advantages and limitations of enterprise application models. Specific objectives included assessing how students identified their:

- *learning goals (what they need to learn)*: question 1 and 2
- *learning processes (how they will learn it)*: question 3 and 4
- *evaluation of goals / process (how they will evaluate and use their learning)*: question 5 to 7

The focus group questions with a sample of student feedback comments corresponding to the learning goals are as follows:

Question 1: What we found most helpful about using the TrAM Framework …

  *Student feedback: "*The iterative nature of TrAM means that the model can change and be added / removed from, during the process."

Question 2: The most useful thing/skill we learned from applying the TrAM framework …

*Student feedback: "*How to pull important information from a case study to create a use case to allow us to see how a system works."

Question 3i: The aspect of the TrAM framework that most changed the way we learned was …

Student feedback: "There is no wrong answer as you always learn from what may not be right so you can approach from a different angle."

Question 3ii: In what ways has it changed the way we learn?

Student feedback: "The iterative process of the model embeds the method because the model is repetitive."

Question 4: The thing we found most challenging about the TrAM framework was…

Student feedback: "Transaction model (is difficult in balancing)"

Question 5: In the context of using TrAM framework, in order to improve as learners (students), the thing we need to work on most is …

Student feedback: *"*Grasp model fundamentals early on."

Question 6: In the context of using the TrAM framework, in order to improve as learners (students), the thing we need to stop doing …

Student feedback: "Jumping ahead and attempting things before we fully understand them."

Question 7i: What we enjoyed the most about using the TrAM framework was …

   Student feedback: "Learning new modelling concepts."

Question 7ii: The reason we enjoyed using the TrAM framework were …

Student Feedback: "Its visualising aspect (allowed us to visualise prospective of a system / company)."

Question 8: On understanding the TrAM framework and, to help us to improve as learners, we would like our tutor to…(stop, start, continue)

Student Feedback:

Stop, "Group assignment / long time assignments."

Start, "Drip feeding information, give more of an overview of the whole process"

Continue, "Having drop in and optional hand-ins."

The session comprised of 9 groups of between 2-6 student participants, moderated by four members of staff from the Learning and Teaching Institute (LTI) at Sheffield Hallam University. The focus group resulted in free-flowing discussion and debate based on the experience of applying TrAM to their case studies. The discussion produced data and insight that was honest and insightful in terms of gaining a deeper understanding of the design team's experiences of applying TrAM. This data may not have been accessible without interaction allowed in the group setting.

Observational Summary

Case studies are effective in providing focused narrative accounts of life-like business transactions allowing student design groups to engage in applying reasoning and TrAM as a theoretical framework. An initial analysis of designs showed them to fit into the matrix categorisations of an enterprise models usefulness illustrated in Figure 4.

These categorisations were likely outcomes based on common scenarios. Deeper qualitative analysis with the support of NVivo provided clarity in terms of which parts of a design performed well as opposed to which parts performed poorly in terms of model fundamentals, model automation and model visualisation.

Classifying case study design data and assigning values to framework design steps such as B1 = Poor/no TUCD, B2 = Basic TUCD, and B3 = Good TUCD as illustrated in figures 6 and 8 provided a means of measuring how accurate an enterprise design is in terms of architecture. Collecting design data after Yin's (2003) multiple case study method in an NVivo workspace project provided organisation for working with and analysing design case study data, reflecting, coding, linking and visualising with the results. NVivo is effective and beneficial for organising data and not missing evidence; however it has its limitations and cannot be used for analysing data content (database query) in design diagrams, in our case CG.

Key findings include establishing that there was a lack of clarity in some design teams in producing the initial 'transaction use case diagrams' (TUCD). Focusing on the use case as a transactional use case provided clarity in terms of agent roles in the enterprise transaction. Evidence showed that initial TUCD designs tended to be over complex and attempted to capture transactions at a very low level. Capturing the correct level of detail in the business transaction is key to the subsequent steps of producing CG and then refining those CG into

the generic transaction model. TrAM assumes a good working knowledge of UML which in some design teams proved not to be the case. Good UML practice would assume capturing the high level components (typically no more than six components in a use case diagram) of the business transaction. Another very key observation is that model automation using Amine enforces formalisation in terms of building an enterprise ontology, removing semantic and syntactic errors and building CG up through join operations, providing validation checks. Amine also tends to provide a more formal analysis than CharGer in terms of the Type Hierarchy (TH). The use of Amine in the automation also tests the TH logic, it may not be necessary to use CharGer in the process of creating the TH.

Qualitative data analysis across the same case studies within a given year proved to be more accurate and informative. Examining multiple case studies within a given year and over several years proved to be less accurate due to the introduction of more variables such as the introduction of Amine for model automation and small changes in the teaching emphasis year on year as a result of previous AEA student feedback.

Further Development

We feel we need to narrow our qualitative analysis to 'better' solutions from design groups. We also feel that looking across the same case study before looking at 'generic' issues amongst all 'better' groups and all case studies would be more fruitful.

Further development would include refining the use of Yin's (2003) multiple case study method in NVivo (Bazeley 2007), for example enforcing discipline across multiple case studies would ensure accurate coding and linking. NVivo is not prescriptive, it was developed primarily to meet the requirement of organising qualitative data for analysis. As Bazeley (2007) explores, this needed to be able to classify data in order to explore possible theoretical links. Yin (2003) outlined a method for multiple case study analysis which results in cross-case conclusions. Combining these two areas of work and developing a more prescriptive approach to using NVivo for cross-case qualitative analysis would enhance the professional practice of qualitative data analysis in the AEA area.

Acknowledgements

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Student audio notes evolution

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Abstract

The Student Audio Notes Project at Sheffield Hallam University encouraged students to act autonomously by using audio recorders to capture conversations relating to their learning. This approach was conducted in order to address the transient nature of significant conversations (Waterfield 2006). Digital audio is an accessible media that enables the learner to identify and record otherwise ephemeral experiences, so that they can re-engage later when they are ready to reflect and act upon the learning (Nortcliffe and Middleton 2009a). Student audio notes, whilst having a similar potential to written notes in aiding recall (Intons-Peterson and Fournier 1986), may be better suited to many situations.

This paper highlights the evolutionary development of techniques used by students during the project. Fifty-two students were given MP3 recorders to capture experiences that they identified as being useful, whether these were from the formal, semi-formal or informal curriculum (Middleton and Nortcliffe 2009a). Many began by recording their lectures, broadening out to capture significant conversations of a formal nature including peer feedback and project supervision (Rossiter et al. 2009). Later less formal conversations and personal ideas were gathered. The paper discusses the approaches adopted by students, drawing upon an analysis of interviews and surveys. The audio methods will be reviewed according to their capacity to enhance learner autonomy. In conclusion, the paper highlights the evolutionary nature of finding technology-supported learner autonomy, as the students became more attuned to the opportunities around them, and raises further questions for institutions seeking to encourage wider student participation in becoming responsible producers of audio learning notes.

Introduction

There were two key drivers that informed the design and ethos of the Student Audio Notes Project. The first being findings from the successful development of audio feedback and audio lecture note making techniques at Sheffield Hallam. The second being awareness relating to the empowering of disabled and non-disabled students in becoming more autonomous learners.

The recording and redistribution of student-tutor feedback conversations by the tutor has been shown to be an effective and attractive method of encouraging greater student control and formative engagement with learning. However, this model is difficult to scale (Nortcliffe and Middleton, 2009). Re-distribution of personal audio feedback files can be a tricky and time consuming task (Trimingham and Pete Simmons, 2010). Although it took longer,

another found it more preferable and a more relaxing method of giving feedback (Stockwell, 2010). Therefore audio recording can have significant impact on academic workloads both in terms of the generation and distribution of the audio recordings, raising the question of who actually should take responsibility for recording; the academic or the learner? Academic recording can be narrow in focus as the method is determined by the academic's perspective opposed to the learners.

Further research into the strategic and selective audio recording of lectures and other learning events has been shown to be beneficial for disabled students (Nortcliffe and Middleton, 2006). The formative impact of learning conversations decreases if they are not recorded in some-way, as become a vague memory (Waterfield et al., 2006). This is true for all students, whether they are disabled or not. Audio provides the opportunity, therefore, to capture these transient conversations and make them re-accessible for further learning experiences by the learner. Learners have reported and demonstrated this to be true for the audio recording of formative feedback conversations (Nortcliffe and Middleton, 2007).

The project aimed to provide the opportunity for students to take responsibility and develop a student-centric approach to audio recording learning conversations that would be beneficial to their studies and learning reflections. This is as audio notes could have the same potential for student learning as note-taking, as previous research has shown note taking increases memory encoding for later recall (Intons-Peterson and Fournier, 1986). Therefore the act of audio recording has the potential to make the same learning impact on their studies, and future employment.

Methodology

The project was opened to all student volunteers across Sheffield Hallam University, disabled and non-disabled. Each student was supplied with a 4 Gb Creative Zen, a simple to use MP3 recording device with a built in microphone. A total of 52 students voluntarily agreed and signed up for the project. The student volunteers were enrolled on a diverse range of courses ranging from physiotherapy to fine art. The students were initially debriefed on how to use the device, the project aims and protocols, including the recommended guidelines on seeking permission before recording an individual, and not to share beyond the University. However, students were encouraged to share their recordings with their peers in order to develop further learning opportunities through peer conversation. Previous research had indicated that the sharing of audio recordings amongst peers was valuable (Middleton and Nortcliffe, 2009a). Each student signed a project protocol agreement that defined their role in the project and the project terms and conditions.

Also at the debrief the students were actively encouraged to act autonomously by taking responsibility for making, generating and listening to their own personalised learning recordings. The students were encouraged to record any autonomously audio learning interventions, i.e. any learning interactions with their peers, tutors, and placement supervisors, as well as personal audio notes.

The students were further supported throughout the project via email and the Virtual Learning Environment (VLE), where a project organisation online site was set up that included podcasts and discussion boards. These were intended to enable all project staff and student members to support one another.

The research methodology adopted was a mix of quantitative and qualitative research. As a part of the research some students were interviewed about their project expectations at the induction; online surveys were conducted after the first semester of the project and again at the end of the project, finally followed by a survey in the following year. Also, many students took part in a mid-project review and at the end of the first year of the project.

Initial Student Perceptions

A sample interview of student volunteers indicated that their initial rationale was varied as to why they were personally attracted to take part in the Student Audio Notes project, ranging from a deaf student struggling in lectures to capture all the audio learning, to film production students conducting interviews. However, their responses indicated that their initial perceptions of the project were that it would aid their involvement in an original event, and their listening and concentration, as shown by the following student comments;

> Student A, "I actually wear a hearing aid and when I attend the lectures, as everyone's aware, they're not the quietest place to be. And I find I am sometimes missing half the lectures or sections of the lectures which are quite important to me."

> Student B, "I have quite a trouble taking notes, writing down what people are saying and concentrating because I'm usually writing really slowly to make it as neat as possible. But I also make loads of spelling mistakes, I can't read what I've wrote, so then I forget what's actually been said. I can't write and learn at the same time..."

> Student C, "I think it would be a lot easier for me because I'd be able to hear what they're saying exactly how they said it, rather than just my interpretation of it at the time in writing, which is bad enough anyway."

> Student D, "I ask quite a lot of questions in lectures if I don't understand something. The answers they give me I jot down. But I can't jot down word for word because sometimes they're quite lengthy answers. Being able to listen to them being played back, I think it would be a great help. "

> Student E, "I do take notes and the notes are fine, but then I'm looking at the notes and I think "OK, so I understand that in theory, but it would be really helpful if I could remember exactly what the lecturer said at the time, rather than taking down the notes that are on, say, the PowerPoint slides."

It was noted that students initial perceptions were on the prospects of recording lectures opposes to other learning conversations.

Initial Survey

As reported by Nortcliffe et al (2009), 31 out of 50 students enrolled on the Blackboard project support site and completed the initial online questionnaire three months after the project's launch. The results indicated that the majority of the students intended to use the device for one purpose, lectures. However as commented by Nortcliffe et al. (2009), half the students reported using the recorder to make personal audio notes, despite this approach not featuring in the student's own initial perceptions of the project. Typically personal audio notes involved the use of the device as an external memory aid to note personal actions and thoughts, ideas for assessment, and observations to support their reflections on learning.

The survey results further indicate that over half the students followed up listening back to the recordings typically within a few days of making the audio interventions. Respondents believed that listening back enabled them to cognitively reconnect with the material. As reported by Rossiter et al. (2009), the majority of the students agreed or strongly agreed that they found the recordings useful and had helped to improve their learning, as shown by the following student's comments into listening habits in the survey;

> Student F "I've mainly been using it to record my lectures, which I can then listen to later, whilst reading through, and adding to my existing notes or the lecture slides, which has helped quite a lot."

Importantly over half the students agreed that the Student Audio Notes project had helped them to become more autonomous as learners. This is demonstrated by the following students' comments in the survey,

> Student G "I listen to my recordings on my home PC if I need to refer to a certain part of a lecture that I am struggling to understand."

> Student H "Normally at home, at my desk. I'll listen to lectures now and again through my computer whilst I have my all my notes from the same lecture in front of me, ready to add anything to them that I missed out."

Though student's initial focus is still using the audio recording to support learning in lectures, some students are anticipating the potential audio recording for other learning opportunities, as shown by the following student's free comments in response to the question on where they listen to audio recordings;

> Student I "At home after transferring them to my PC, however the option to use the headphones is there to listen to them while I am out, something I'm assuming will be

immensely useful when the exam period comes around, such as memorising my notes on the way to Uni' through listening to them."

Mid-project focus group

The first focus groups, at the beginning of semester 2, took the form of semi-structured conversations (Cohen et al., 2000) involving nine students from the project who were interviewed in pairs or on their own. The interviews indicated that the students were deploying the devices in a variety of ways and had a variety of methods for managing and using the audio recordings. In particular, the focus groups revealed that the initial student ideas for how the devices could be used had changed and multiplied. They were more creative and constructive than just recording lectures; however, this approach is still the most common application. A number of students commented on how they were broadening out their applicational use of the device to gather feedback and personal notes;

> Student J "I've started having it next to my bed because it's a quick flick on, if I do wake up and I've got a thought, I've recorded it on the device. I've used those ideas."

> Student K "I have recorded a couple of feedback sessions that we had and a couple of seminars where we've been getting friends to feedback on our own work. Just so that I can remember that a bit easier."

> Student L "Feedback from lecturers, sometimes it's hard to take it all in and remember it all."

Also, some students reported using the device to record personal events and reflections as means to support autonomous learning through self reflective feedback and to support feed forward learning;

> Student M "When I've got role play meetings for course work, then you can listen to yourself and get feedback rather than just the tutor giving you feedback. You can listen to yourself and see where you think you've gone wrong."

> Student N "It's not thoughts that I'm collecting. It's purely for feedback - listening to myself...listening to them afterwards so you can listen to yourself so you can understand where you went wrong. We had an assignment a short while afterwards which I got better marks."

Second Survey

As reported by Nortcliffe et al (2010), only 16 out of 50 students enrolled on the Student Audio Notes Project Blackboard site responded in completing the second survey at the end of the academic year. Three of the students which responded declared a disability (2 dyslexic and 1 deaf). The survey highlights that the majority perceive that the audio device

has been beneficial to their learning, 56% of the students had found the audio recording helpful in their studies, learning, and in improving their learning. The majority of the students, 75%, would recommend its use to other students as a way to enhance their learning. However as to whether it has helped them become more autonomous is debatable as the response was mixed; 37.5 % neither agreed nor disagreed that it has aided them to become more independent in their learning. The survey also highlighted that the students are persistently still using and find it beneficial to support their learning in teaching activities, as shown by the following student quotes;

> Student L "Recording the lectures/tutorials gives you more than the PowerPoint presentations"

> Student P "I can keep more personalised lecture notes without needing to write a lot down."

> Student Q "It's helped me to add a lot to my notes from previous lectures since I'm able to run through them again and see what I'd missed originally.

However audio recording of lectures had an impact on student perceptions as to who is responsible for their learning, i.e. they are, as shown by the following responses on whether it had encouraged them to become more independent in their learning;

> Student P "It opened my eyes a little to taking control of my learning rather than just turning up to a lecture because I'm supposed to."

> Student Q "If there was something I'd missed out when writing lecture notes, I'd normally have to go to friends to get that information from them (and visa versa), though with the audio device I've been able to seek out that information for myself through listening to the audio from those lectures."

44% students reported that audio recordings had aided in deepening their understanding, further supported by the following student's responses on this subject;

> Student R "No need to go over and over again in your notes to understand the basics all the time. Once you've recorded it you could always listen to it before you study next time. Allows you more time and understanding to go deeper in to the topic."

> Student S "Knowing that the lecture is being recorded allowed me to concentrate more fully on what the lecturer was saying rather than rushing to get it all written down."

> Student T "It has enabled me to retain information in a different format than the traditional pen and paper which was useful, and is easily accessible so one could listen to recordings whilst going for a run in the morning and give my brain and

subconscious mind to work on things whilst doing something else - hence saving time!"

Also the survey result, as reported by Nortcliffe et al (2010), has continued to highlight how audio recording has continued to help the students change their approach to their studies and learning, as shown by the widening context the audio recording was being applied, as less than a third reported using device in class activities, whereas 50% reported using the device for feedback; quite a contrast to the initial survey. In terms of learning, feedback is critical in the learning cycle in developing student on-going learning (Gibbs and Simpson, 2004), therefore any device that encourages students change and increases student engagement is welcomed. Some students were very positive of the approach using the audio recording for learning and recommended the following to other students;

> Student U "It is worth people trying the activities to see if it benefits their own style of learning."

> Student V "It can be very useful if, like me, you study a subject where lots of technical data has to be remembered all the time."

> Student W "Use it for interviews, meetings with project supervisor, lecturers. The feedback is really important. Use it when you have group discussions. It will assure you that you won't miss anything important."

> Student X "To record lectures, seminars and meetings. To record quick notes and ideas. To record revision notes for playback when doing other tasks such as walking or food shopping."

Final Focus Group

A focus group approach was again used at the end of semester 2 with three students from the project. The discussion between students highlighted that student audio recording supports student's personal development in autonomous learning through the increased engagement in learning from lectures;

> Student Y "So if I've written something down [in lecturer] I might not understand it straight away, whereas if I'm listening to it you can hear the whole thing so understand what's going on from start to finish rather than taking little bits and pieces.

> Student Z" I'm still writing notes [in Lectures], but what it is, the first time you hear something you don't know what the important bits are. But when you go back you know to listen out for the important bits. I still listen live. I don't turn off my mind. But to listen again is useful because you know what's coming up too.

> Student AA "I've gone back and listened to things [lecture recording] and it's made more sense because I understand things better. Maybe I've got a bit more experience."

Re-listening is clearly aiding the students to apply reflective practice and encouraging students to re-engage with learning opportunity and increasing learning autonomy, as highlighted by the following student comments;

> Student Y "I'm a lot more like reflective with it. I start to think about other issues that are related to it."

> Student AA "It was useful for reflective practice because you can record stuff and then go back... later in the day and see what happened. And that's what you need to do for your Continued Professional Development."

The latter comment demonstrates that audio recording has the potential to make an impact beyond a course of study, that it has role in professional development and practice. The student's willingness to broaden the deployment of the devices has provided the opportunity to increase their autonomous learning, for example in supporting examination preparation, to project dissertations, demonstrating the student willingness to engage in their learning and their learner autonomy, as shown by following student comments;

> Student Y "I find it really useful for revising. I record my [written] notes and then listen back to it again and again and again."

> Student AA "I've used it to write my dissertation when I've had ideas and put it beside my bed and when I've woken up and I've had an idea 'and I must do that... write this like this or.'"

One Year On Survey

Only 18 students of the 52 original student members of the project are still studying at Sheffield Hallam University, and only 18% responded to the one year on survey. The survey results show that only two students have continued to use the audio device for their studies and learning. The main reason cited by the students for no-longer making student audio notes, is that they were out of the habit, hence explaining the low student engagement in responding to the survey. Therefore, to ensure continuing successful deployment of audio to support student learning and understanding, students need to be reminded and encouraged to develop the habit of audio recording, to enable the habit to become as second nature as writing written notes. However, a student on placement indicated that they perceived whilst on placement there was a less of a need to record as when studying, but had found it beneficial to continue with audio recording meetings with their work supervisor whilst on placement.

Two further students reported that recording audio notes had assisted them to become more independent in their learning and to gain a deeper understanding of their studies, as shown by their free comments in the survey on this subject;

> Student BB "When studying for my January exams I used my recordings pretty often to add notes to lecture slides which I didn't get chance to add during the actual lecture."

> Student CC "When certain subjects are difficult, reflecting on audio notes can help to make things clearer."

> Student BB "It's helped a lot with clearing up some more complex areas of some modules which I didn't understand the first time I heard them."

> Student CC "I now think about what I am doing rather than learning blindly."

The focus of the student audio notes project was on developing student learner autonomy through the use of audio recording; however, student engagement in the project has resulted in the students reflecting on their current practices and engagement in their learning in general. As shown by the previous student comments, which highlighted that audio recording had enabled them to take charge of their learning and become autonomous in their learning. Another student responded that the project had promoted the benefits of reflective practice to further develop their learner autonomy;

> Student DD "Although I do not keep audio journals, the audio recordings project has opened my eyes to keeping a journal on certain things, I now keep a diary up to date day by day of what I have done. And being on placement this year I have also kept notes on every task I have done and what problems I encountered and how I got around them so that if I encounter parts of that task again I have a reference to it and a better understanding of it making me more efficient in my second encounter with it."

Another student reported that they had personally not found audio to be beneficial to their style of learning; however the project had enabled them to reflect and develop different methods of learning to support learner autonomy;

> Student EE "I found that using them last year was counterproductive. I made audio notes, stored them and forgot about them. Taking notes on paper helps me focus and select the material I needed."

Conclusion

The evidence generated during the project indicates that students are capable of capturing learning conversations and utilising the scenarios as learning opportunities. Student

involvement in such project encourages students to reflect on their learning approaches, and further develop their learning practices to become autonomous.

In terms of audio recording the approach needs to become habitual. The habit is easily lost in the study gap between the end of semester 2 and start of semester 1. The students themselves recommend regularly using the audio device, so it becomes a habit and carrying it at all times, with the majority interviewed saying they would replace it if they lost it;

> Student Y "Yes, I'll definitely keep recording stuff... I definitely would do it. If I had to start my undergrad again I definitely would start recording from the beginning. I wish I'd used it earlier."

> Student AA "I wish I'd used mine earlier as well."

Therefore the students need gentle reminders of the learning potential through the use of and engagement in audio recording. The devices are valuable in consistently supporting learning opportunities from any formal, semi-formal and informal dialog scenarios (Middleton and Nortcliffe, 2009b). It is also important to ensure that academic staff, systems administrators and managers appreciate the value of this technology-enhanced method of autonomous learning so that systems, policies and protocols do not conflict with the practice.

Students found significant benefits in deploying devices to support their learning in a variety learning opportunities beyond the lecture. However the latter was consistently the most popular method of deployment; in reality in HE, lectures are the main mode of formal delivery of learning by an institution. The re-listening enabled the students to re-connect and to rectify any misconceptions or mishearing; to reconsider learning opportunities. Therefore encouraging the students to become reflective learners, providing them the opportunity to deepen their understanding and learning from the conversation/lecture, promoting learner autonomy.

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The use of unit evaluation survey data in the evaluation of small Enquiry-Based Learning development projects

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Abstract

Enquiry-Based Learning (EBL) is a student-led form of learning that enables students to develop their personal, professional and transferable skills whilst deepening their engagement with their discipline knowledge through open research-like processes.

CEEBL (Centre for Excellence in Enquiry-Based Learning) is one of 74 HEFCE (Higher Education Funding Council for England) funded CETLs (Centres for Excellence in Teaching and Learning), whose purpose is to promote EBL. One of the methods that it has done this is through supporting an average of 12 small development projects a year.

This paper explores the possibility of using unit evaluation data to investigate the effect of EBL. Specifically, it examines whether EBL has a positive impact on the student learning experience.

Unit evaluation data was analysed for units involved in all four years of CEEBL's small projects. Two types of comparison were made:

- Longitudinal: comparing the scores from the unit before and after the project.
- Contextual: comparing the unit with other units delivered in the same semester to the same cohort.

Overall, EBL has a small but positive (0.10), highly significant (p=0.01) effect in the longitudinal comparisons and a larger (0.27) and very highly significant (p<0.001) effect in the contextual comparisons for the projects reported.

Projects with a substantive longitudinal improvement are identified and discussed.

Key Words: Enquiry-Based Learning, Small Development Projects, Unit Evaluation Survey

Introduction

EBL is a student-led form of learning that enables students to develop their personal, professional and transferable skills whilst deepening their engagement with their discipline knowledge through open research-like processes (Kahn and O'Rourke 2005).

CEEBL is one of 74 HEFCE funded CETLs, whose purpose is to promote EBL (CEEBL 2008). One of the methods that it has done this is through supporting an average of 12 small development projects a year, many reported as case-studies.

CEEBL's approach to developing EBL has been to introduce the principles of EBL to academics, providing examples of its realisation in different contexts. Academics then engage in their own enquiry of how EBL can be developed within their discipline and teaching contexts. This is an open and facilitated approach that models the process of EBL. Evaluation of their project forms an important part of that enquiry. CEEBL has adopted an open, devolved and fractal-like model of supported self-evaluation (Powell 2007), in which the priorities and methodologies that the project-holders bring to the evaluation process are valued.

This paper focuses on an alternative source of data that may by used to complement these local evaluations, the unit evaluation survey.

Methodology

The Unit Evaluation Survey

The unit evaluation survey captures students' reaction to the delivery of each unit. As centrally administered evaluation data, it is valued by management as an objective source of data to monitor the quality of the units delivered across the University. It has the advantage of being independent of the academic delivering the unit and is collected across the majority of units making it available for comparison.

As an example of the importance placed on the unit evaluation survey, in the preparation of the Final Self Evaluation Report for CEEBL (Powell 2010), senior management perceived the inclusion of unit evaluation data as 'essential'.

The survey consists of eight positive statements about the teaching and learning environment with a five-point Likert-scale, indicating level of agreement.

No	Question
1	The teaching I received was excellent
2	The material I studied was intellectually stimulating
3	The material available on-line significantly enhanced my learning
4	The skills I developed will be valuable
5	The feedback I received on my work was helpful
6	The teaching staff and support staff were readily approachable
7	The facilities I needed for my work were available
8	The information I was given about my studies was reliable

Table 1: Unit Evaluation Survey

Considering the face validity of each question in the context of EBL:

1. This question assumes a teacher-centred model of teaching and learning (Kember 1997). In an EBL environment, a more appropriate question would be: 'the quality of learning I engaged in was excellent', indicating a shared responsibility for the teaching environment.
2. In an EBL environment the materials will be discovered by the students.
3. For EBL, the on-line materials would include those discovered by the students.
4. This question is appropriate for EBL, since EBL promotes the development of skills through engagement in authentic tasks.

The remaining questions, about feedback, approachability of staff, facilities and course information, are relevant for EBL.

Unit evaluation data has the following disadvantages:

• The questions are not designed for EBL and consequently not sensitive to its benefits.
• The survey is not valued by all members of staff and students. This is reflected in the low response rates in some areas, and impact reliability.
• It is 'thin' data: it does not provide information on which aspects of the unit are working or provide diagnostic information for improvement.

- The survey is anonymous; consequently, it is impossible to link responses from the same student or other student information, for example, demographics, performance or approaches to learning.
- It focuses on the reaction of students to the unit, which is the lowest level of evaluation (Kirkpatrick 1996). Higher levels of evaluation: learning; behaviour; and outcomes, are harder to obtain, but important measures of an educational intervention.

Unit Comparisons

Two comparisons are made:

- Longitudinal: comparing the scores from the unit before and after the project. Comparison over a number of years allows some of the variation between years and cohorts to be controlled.
- Contextual: comparing the unit with other units delivered in the same semester to the same cohort. To avoid over-counting the number of responses in the comparison units, the weight reflecting the number of responses is divided by the number of units, effectively averaging the contribution from the comparison units.

Both comparisons are made using t-tests.

Meta-analysis

The above analysis provides a large number of comparisons. It is desirable to summarise these comparisons to make a general statement about the projects.

Statistical meta-analysis pools the results of many independent trials. This can be facilitated using specialist software, such as Review Manager (RevMan 2008), used by the Chochrane Collaboration for medical trials. This has the advantage of preserving the context specific comparisons of the project's unit data with its own historical data or contextual data and weighting the contribution of each trial by their associated statistical certainty, generating an overall measure of effect.

Identification of Outstanding Projects

An alternative approach to the meta-analysis is to use the data to highlight outstanding projects and reflect on what features may distinguish them. Projects that demonstrate a substantive longitudinal comparison are considered.

Results

Unit Comparisons

From the 54 small projects supported by CEEBL data was available for 16 longitudinal and 25 contextual comparisons. Two projects had two units associated with them, providing 17 longitudinal and 27 contextual comparisons. Data for comparisons was not available because:

- some were extracurricular or outside the unit structure;
- some projects were for school pupils engaged in widening participation activities;
- the aggregation of some unit codes was too large to distinguish the project from other forms of delivery;
- missing data;
- predecessor units were not identified;
- 2005-06 data was missing and only partially recovered.

Consequently, this analysis only covers CEEBL projects that are strongly associated to a discrete unit where data is available. Even for these projects, the proportion of the unit that is associated with EBL or the project varies, and it is impossible to untangle the influence of the EBL with other components on the unit evaluation scores.

Figures 1 and 2 show the results of the longitudinal and contextual comparisons, respectively, in the form of forest plots, sorted by effect size. The x-axis represents the individual project and the y-axis the difference in unit evaluation. The central mark indicates the mean change in score and the bar its 95% confidence interval. Where the bar does not cross zero there is a statistically significant difference ($p < 0.05$).

A level of substantive difference, that is a difference below which even significant results are unlikely to be of interest, was set to be 0.2, 5% of the full-scale of unit evaluation scores.

The longitudinal comparisons show 13 of the 17 units, that data is available for comparison, have a positive effect, 6 of which are substantive. However, only Project 3.12 has borderline significance ($p = 0.051$). The contextual comparisons show that 18 of the 27 units, that have data available for comparison, have a positive effect, 14 of which are substantive and 9 are significant (5 very highly significant $p < 0.001$, 3 highly significant $p < 0.01$ and 1 significant $p < 0.05$). There is therefore evidence of the EBL having a positive effect on the unit evaluation scores.
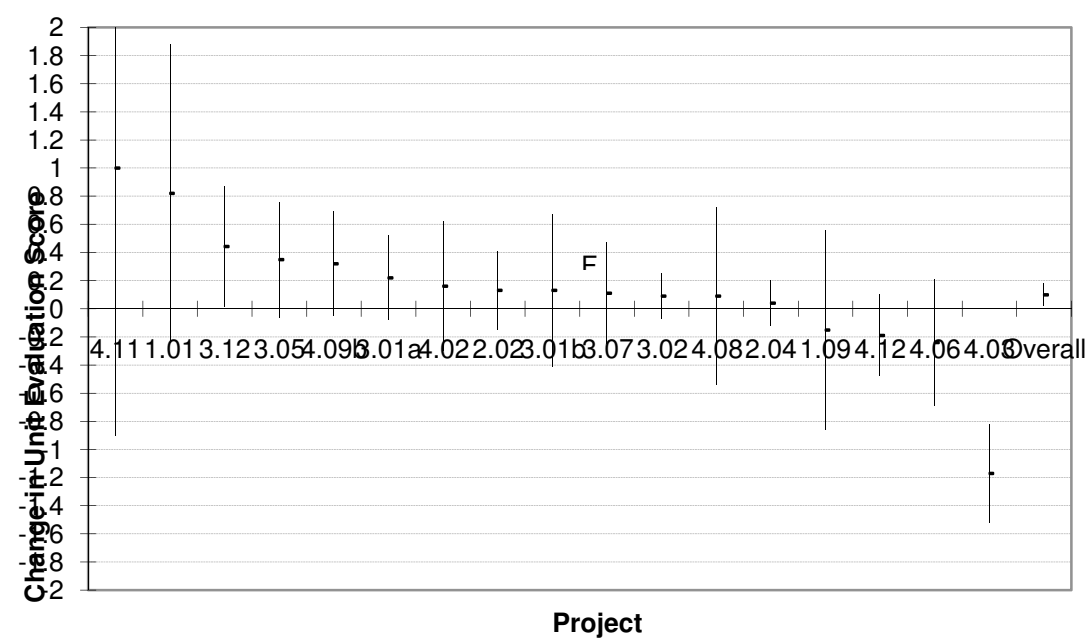
Figure 1: Longitudinal Comparisons
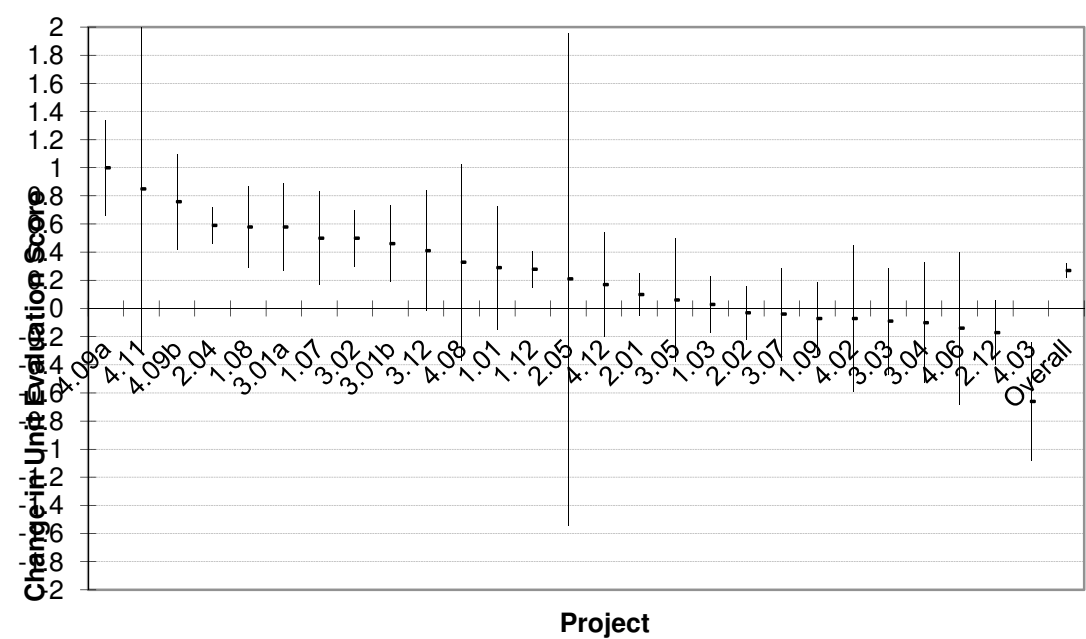
Figure 2: Contextual Comparisons

Meta-analysis

Project 4.03 was excluded from the meta-analysis. It involved the development of retail decision-making skills through an on-line team-game. This project had distinct logistical and technological issues not characteristic of EBL causing the negative comparisons.

The meta-analysis shows an insubstantial (0.1) but significant (p=0.01) effect in the longitudinal comparisons and a larger (0.27) and very highly significant (p<0.001) effect in the contextual comparisons for the projects reported (last column of figures 1 and 2). This provides evidence that CEEBL projects are having a positive impact on student satisfaction.

Considering the interpretation of these comparisons:

- Longitudinally: not all the projects are new EBL; some are enhancements of existing EBL.
- Contextually: some of the surrounding units may already be EBL.

Taken together, a more realistic interpretation of these comparisons is the impact of not EBL but CEEBL projects on unit evaluation scores.

There is a larger and more significant difference for the contextual comparisons than the longitudinal comparisons. It is conceivable that the inclusion of units in the contextual comparisons where no longitudinal comparison were available is having an influence. However, repeating the analysis with these unit excluded produces a larger (0.33) very highly significant difference (p<0.001). This suggests that there is a real difference between these comparisons.

The longitudinal comparisons are more directly attributable to the project than the contextual comparisons, which may be influenced by the contents of the unit. It is unlikely that there is any commonality in contents across the projects, being drawn from a wide range of disciplines. One thing that may distinguish the units from those around them is the nature of the academics delivering them. They are motivated enough about teaching to engage in a CEEBL project. It is likely that they were also concerned about the previous form of delivery of that unit. The units may already have been well-received. Consequently, longitudinal changes from an already well delivered and received unit are going to be harder to distinguish than comparisons with units that are not delivered by the same academics.

Identification of Outstanding Projects

The projects that had positive substantive longitudinal changes in unit evaluation score are:

- Project 4.11: Reading entire books is important in the development of a coherent understanding of a body of knowledge and appreciation of quality in written

communication. Recognising that this approach to reading is often lacking in engineers, this project provided the opportunity for students to choose a discipline-related book to read and an academic to assess their understanding (Campbell, Blunden-Ellis and Manista 2010).

- Project 1.01: This is an enhancement of an existing EBL project in an engineering mathematics unit. The three groups of students, who already develop teaching materials and examples for the rest of the class on how to solve a set of equations, also set an exam question on the area that they have researched and taught (Ventura-Medina et al. 2006).
- Project 3.12: Students select and research an issue from religions, culture and gender to investigate, forming groups around these issues. They introduce this issue to the rest of the class then lead and scribe a classroom debate. All the students reflect on the debate and the learning gained from it (Stuerzenhofecker 2008).
- Project 3.05: Student teams translate a text that they have selected, allocating and performing specific technical and coordinating roles within the team.
- Project 4.09: Student mental health nurses bring to the group professional and ethical issues that they encounter whilst on their placements. The group then selects which of these issues they will investigate through a Problem-Based Learning (PBL) process, supported through blended face-to-face and on-line discussions. This process provides the students with experience of clinical mentorship (Rigby et al. 2010).
- Project 3.01: Students groups are allocated different companies, drawing from the research of the project-holder, and work through a staged project investigating the drivers for change in that sector and reporting on the implications of adopting a specific, student-selected technology (Dewick 2008).

These projects represent an equal number of new EBL projects and developments from existing EBL projects. They are from all but the second year of projects, cover years of study from second year to taught masters, and represent three of the four faculties at the University of Manchester, the exception being Life Sciences. The spread and variety of the projects seem to be more evident than any common factor. The absence of projects from the second year of the projects, including the first year of study or from the Life Sciences, seems to be an artefact of the projects where longitudinal data were available.

The most telling feature of these projects is their variety. This reinforces the idea that EBL is widely transferable and adaptable. One of the principles of EBL is that it is not the rolling out of a particular approach to teaching and learning. It is the re-expression of the underlying principles of EBL that address the challenges and opportunities that a discipline or learning environment affords. Each project-holder is engaged in the reinvention of EBL in their own practice, hence the uniqueness and variety of the projects identified.

In each case, EBL has promoted the autonomy of the learners. This is expressed in different ways: choosing and reading a book; setting an exam question; triggering and facilitating a student-led discussion; choosing and translating text; selecting problems from their professional practice placements; and researching their selected technologies.

A common feature of the project-holders is their continued commitment to EBL through continued refinement of their projects, or by extending EBL into other parts of their teaching.

Conclusions

The unit evaluation survey can be used to supplement local evaluations of educational interventions that are on the scale of a unit. It is a blunt instrument that may not be sensitive to the benefits intended by the intervention, so should not be used as the only evaluation measure. Its focus is the reaction of the students to the unit and does not address higher levels of evaluation (Kirkpatrick 1996) nor contain any diagnostic or explanatory information. It does have the advantages of being routinely collected for many units, providing a ready comparison valued by University management. Individual project holders can and do use this data to supplement their local evaluations. However, at the level of individual projects the statistical power of these comparisons is limited, due to the number and the variability of responses.

Of the longitudinal comparisons reported, 6 out of 17 units show substantive increases, one marginally significant (p=0.051). Of the contextual comparisons, 14 out of 27 units show a substantive preference, 9 were significant. Meta-analysis shows an insubstantial (0.1) but significant (p=0.01) effect in the longitudinal comparisons and a larger (0.27) and very highly significant (p<0.001) effect in the contextual comparisons for the projects reported. This provides evidence that EBL and CEEBL projects are having a beneficial effect on unit evaluation scores.

The importance of the commitment of the academics to teaching is borne out by both the strength of the contextual compared with the longitudinal comparisons, and the examination of projects that demonstrated substantive longitudinal changes. Each project represented a reinvention of EBL into a new context, bringing innovations from the project-holders. This has been coupled with a continued commitment to refining their project and other areas of their teaching, and in dissemination of their projects internally and externally. Increasing learner autonomy through EBL is also a key feature of these projects.

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Unleashing Web 2.0 for autonomous learners

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Abstract

Whilst the single most important development for maximising learner autonomy has been the advent of the internet, this potential has only begun to be realised with the introduction of Web 2.0 technologies. This paper highlights the rise of the information 'prosumer' and applies it to an education context. The modern, digital learner has come to expect much more control over the course and content of their own learning. New automated tools enable and empower more people than ever to share and discuss content with one another online.

In an era of increasing competition, educational establishments must adapt to these changes or wither with irrelevance. The age of primarily centralised, one-directional learning is over. Institutions that are able to move ahead of this curve will have a significant competitive advantage. As part of this paper we include the results of a brief survey covering the external web facilities offered by Russell Group Universities, used as a crude proxy for each institution's overall adaption to new Web 2.0 technologies and practices.

What is Web 2.0 and why should educators care?

Web 2.0 was a term originally attributed to Tim O'Reilly of O'Reilly Publishing (who specialise in highly technical ICT literature). There is no "agreed" definition for Web 2.0 and it should be understood rather, as a collection of concepts or practices and technologies for deploying said concepts that have become increasingly ubiquitous since the 'dot-com' crash. If you are not familiar with Web 2.0 itself, you will likely be familiar with many of the technologies nevertheless. Blogging, Twitter, Facebook, RSS all fall within the Web 2.0 fold. Moreover, these are technologies with which each new intake of students is becoming increasingly au fait prior to starting their education.

Discussion of the typical Web 2.0 features could easily take up many discussion papers, so we will limit ourselves here to mentioning three of the key concepts and move on to considering how they are applied. For a thorough introduction to the 'new paradigm' presented by these technologies, Rheingold(2003) provides a comprehensive, if now somewhat dated introduction.

The 'perpetual beta'

If a piece of software is said to be in a 'beta' state, it usually means that it is at a testing stage that is functional enough to be used, tested and subsequently improved through user feedback. The idea behind the 'perpetual beta' is that the software never completely leaves

the drawing board. Users constantly interact with and developers continually improve the software. This phenomenon is also regularly referred to as the era of 'good enough'. Previously many businesses and other enterprises have focused on creating perfectible products. The emphasis for web related products now however, (which includes anything encompassing digital products) is on producing something that is just 'good enough', and can be deployed quickly, cheaply and is intuitive to use. Often the two groups – 'users' and 'developers / producers' are in fact the same people. They also often fall into the category of 'prosumers':

'Prosumers'

Prosumers are both authors and consumers of content, generally referring to online content. Websites are becoming increasingly 'socially' focused, from gaming platforms such as 'Steam' to large Corporate business portals. The paradigm is rapidly shifting to greater user or customer interaction. Many websites rely on enormous contributions from their user base in order to function at all. That same user base is attracted to the site for the amount of content produced by users (the classic example of this is Wikipedia). This invokes the power of crowds to come together to produce sometimes astonishing results:

'Crowdsourcing'

One of the newer words in the Web 2.0 lexicon, this indicates the latent power of enormous groups of people to come together, even for very brief periods, and from diverse locations and time-zones, to collaborate on work that would otherwise be too difficult for a small group of individuals, however dedicated, to complete. Such 'swarming' activities (exhibited in the real world in the form of activities such as 'flash mobs') have been made possible by modern communications and Web 2.0 technologies.

Why are these important?

We find ourselves, effectively in a 'post-scarcity' age for anything that can be created, transmitted or reproduced digitally. Unfortunately, we are still bound by legislation focused on print-media, and similar physical artefacts. This includes thinking about the material aspects of these 'real world' media that simply don't apply to digital media, and make discussions of Intellectual Property rights in this area so contentious.

The technological realities, particularly in communication and associated social activity have changed, ironically, too fast for our educational institutions to catch up. New students are generally raised in environments where every new technological leap is taken for granted. The effect is that gaps between students and the people who educate them in understanding these technologies are often widening too rapidly for individual staff to keep up. This applies similarly to behavioural norms, with many university lecturers for example, having the discomfiting experience of seeing many of their students checking facebook on their iphones when they are supposed to be paying attention. These changes should not be fought, they should be embraced, though this requires a culture change in education itself.

Whilst many exam papers now have to specify clearly that 'txt spk' is not acceptable for writing answers, and many (rightfully) decry what seem to be falling standards in English language skills amongst native speaking students, what is often missed is that as a result of these communication technologies, students are probably writing more now than they ever were, even if each individual point or thought has to be contained within 140 typed characters.

The 'New Media' verses 'The Media'

The power of the early adopters of these technologies is incredibly clear in the area of politics, especially in the U.K. and U.S.A. with clear implications for education. We are witnessing a new phenomenon appearing in politics thanks to the 'new media' and in particular, the blogosphere (and to a lesser, though increasingly important, extent - the Twitter cloud). Political figures are being held to account by ordinary citizens in a way that is unprecedented. Laypeople are also finding it incredibly easy to educate themselves on many topics armed with only a broadband internet connection and some determination. Similarly the mainstream media is being fundamentally challenged by these new "upstarts" in the blogosphere. The landscape of both politics and media is changing - and so far in favour of the decentralisation of power and accountability.

These practices are increasing the effective 'scooping' of stories by Web 2.0 empowered 'citizen journalists' - bringing both new stories and information to the fore and providing almost real time debunking, sometimes within seconds, of 'mainstream' stories and viewpoints being published.

Already, this technology and the community built around it is able to challenge the government and traditional media institutions, not just in terms of readership (some of the more prominent blogs have a readership comparable with that of several mainstream newspapers or journals), but also in terms of the very fast ability to self-correct and stay with a story as it develops.

The British blogosphere has already achieved some spectacular victories - most recently in the case of the attempt by legal firm Carter-Ruck to silence a major newspaper, and indirectly the U.K. Parliament (the 'Trafigura scandal'); their efforts were halted, resulting in their abandoning their legal action in less than twenty-four hours by the British blogosphere and Twitter Cloud disseminating the censored information.

What is significant here is the feedback loop (combined with the simple shirking of restrictions). The stakes are raised considerably by institutions such as Massachusetts Institute of Technology placing many of their lectures online, for public consumption. Students are catching on, yet it seems many educational institutions are not. Not only does 'information want to be free', but students want – and are able, at least technologically – to take part in its production as part of the 'prosumer' cycle.

A survey of Russell Group Universities

A somewhat brief, and methodologically limited piece of research, this may nevertheless prove salutary to the discussion at hand. Are leading British universities employing Web 2.0 technologies at all for their staff to make use of, never mind optimising their use of them? To give a crude answer to this question an investigatory survey of Russell Group Universities, plus Sheffield Hallam University was carried out. The focus was on the external websites provided by the Universities, investigating what provisions were made for three areas: i) the 'corporate face' of the website (this was expected to be largely static), ii) individual departments at the university and iii) research centres at the university.

The worst offenders had the following characteristics.

For individual departments and/or research centres:

- No effective provision for dynamic content
- No effective provision for community building and/or interaction
- Hierarchical (inefficient) and fragmented access to content management (which is a key motivation killer).
- No straightforward means of embedding (never mind tagging) multimedia content.
- No support for Web 2.0 technologies.

The problem is of course that beyond the 'corporate' needs, the dynamism and innovation that is part and parcel of academic departments is not reflected, nor does it have any effective channel for expression. Users, visitors and prominent online profiles nationally and internationally are attracted through original and engaging content. With the most lacklustre institutions the output and creativity of staff (and the students making significant contributions to their departments) is relatively invisible to the outside world, the occasional promotional campaign notwithstanding.

It is understood that a consistent approach and appearance is required from the 'corporate' side of the website - it should be clear to users where to go for information regarding the university, what its strengths are, how to apply for courses and so on. This part of a university's public facing web presence does not benefit so much from Web 2.0 technologies particularly and suits remaining relatively static. Beyond that however, both individual departments and research institutes should be allowed significantly free rein to arrange their web presence as they see fit.

Adopting and embracing Web 2.0 and SEO (Search Engine Optimisation) technologies is essential for attracting international students and remaining competitive internationally. Understanding this could, for example, seriously affect the difference between a university's profile on google.co.uk and google.com (the latter applying more to an international audience). The profile on the regionalised versions of google for target countries for recruiting international students should also be considered. If individual departments and

research centres are expected to find at least some of their own income, (and also do their own bit for attracting students) it is simply unfair to expect them to stand or fall on the basis of top-down imposed university web polices. No institution can afford to be static or adopt a one-size fits all mould or philosophy. Not if it wants to realistically compete in the increasingly globalised 'flat' world (see Friedman(2007)), where education can now, in theory, be supplied in a digital format.

Search engines love links, and to some extent, tags. The problem is to generate content that makes people want to link to your page in the first place. The number one way to encourage linking is to have dynamic content; especially if you can expose an RSS feed - links to social bookmarking or networking sites will also add another layer. Ultimately though this requires the ability of individual information producers (prosumers) to be able to easily share either their work, or at least to share announcements regarding it.

Hierarchical, strait-jacket structure stifles dynamism at the root. Universities should not be a political organisation or a single-product corporate company where everything has to be 'on-message'. Control has to be released for the university to flourish. Hierarchical organisations, particularly those obsessed with being 'on-message' suffer from the "burden of omniscience". Real information, in the form of sincere feedback is stymied at the source. This is the very opposite of everything currently being enabled by Web 2.0 technologies and the examples used above from UK politics should be salutary in this regard.

For a very useful analysis of how these kinds of bureaucratic changes can have huge effects on organisations, Dunleavy (1991) provides a fairly thorough accounting. He published this research prior to the internet gaining a public face beyond research institutions, however his analysis is very useful in showing how changes in hierarchy and information flow can have devastating impacts. It's as relevant to web strategy as to an organisations' internal structure and communication philosophy. It would be hugely beneficial if the managers of more large organisations would read it.

Wheatley (2001) also samples some very interesting examples of innovative changes in businesses in the U.S that were definitely ahead of their time – again prior to the internet revolution really taking off. The focus is on decentralising and innovation enhancing activities, around the time (when this edition was published) when the web was only just establishing a grip on business and education.

Survey results

Three categories for the various external university websites were used:

i) Static, one size fits all.

ii) "Functional templates" - several templates used for different purposes - e.g. one for 'corporate' functions, one for departments and another for research centres. This approach,

although not allowing free rein, is much better than the first as the organisational and navigation structure can be adapted to the functions required - corporate needs are obviously different to research centre requirements for example.

iii) Mostly, or completely free rein given to departments and research centres beyond the 'corporate' pages.

The breakdown is as follows:

Total Universities: 21 (Russell Group Universities + Sheffield Hallam University).

'Static': 2

'Functional Templates': 7

'Free Rein': 12

The majority appear to favour 'free rein' and it is perhaps worth noting in passing that the Oxbridge universities in particular allow free rein for their research centres. Oxford has also given similar freedom to its departments. Research centres, being the most dynamic driving force really should be allowed free rein, and the majority of Russell group universities appear to believe this, unfortunately a significant minority – almost half – do not.

Some analysis of correlations with page rankings and web traffic was also carried out, however there is not room to discuss this in this particular paper. Brief summaries were also written for each institution. Please contact the lead author if you want more detailed information.

Conclusion - A Web 2.0 strategy

Allowing for a proper web 2.0 strategy, empowering the individual departments and research institutes to do more is one of the key ways any educational institution could redress these kind of concerns. And the difference between Web 1.0 and Web 2.0 could really be one of the key differences between success and failure, particularly for an institution with large international exposure. Every single department is producing new content, sometimes on a daily basis. It is crying out for attention. Why not expose this, using dynamic web technologies? Or at the very least, allow those departments / centres with the will, to do so.

If all of the content providers at the individual institutions exposed RSS feeds (preferably also tagged, though this isn't necessary), some amazing dynamic presentation of information (not to mention some interesting statistical and qualitative analysis) would be possible. It could also contribute to the site search engines functioning much more effectively. Staff updating websites would also have a much easier time if they only had to

change a single RSS feed, which would then cascade out to any other pages (and users) that required the information. This is not to mention the fact that it often has to go through an approval hierarchy at many institutions. Staff can and should be trusted to act appropriately at large educational establishments.

Web 2.0 technologies open up a whole new range of possibilities. See Rigby (2008) and Bradley (2007) for some accessible coverage of the range of Web 2.0 applications, Bradley is especially good for identifying uses in an academic setting. Rigby shows how allowing feedback and interaction greatly benefited some political campaigns; something worth remembering considering the stakes are considerably lower for the promotion of an educational department!

One of the new opportunities is allowing for much more feedback and interaction in the ways Rigby describes. A lot of people would be interested not only in following a department, or research centre's activities, they would also provide very useful feedback given the opportunities. A group blog for research centres is a serious boon, where the various researchers can contribute regular updates that can then be commented, or even voted on, by peers and external interested people. It is also a likely way to guarantee traffic, repeat visits and external links.

It is now more important than at any time since the internet's inception for a successful business or organisation to have an effective web presence. Making good use of Web 2.0 technologies and pushing for the associated culture change is something that every large educational institution should address, or it will suffer and miss out on a crucial tool to remain competitive in these lean times.

The survey and the discussion above only scratches the surface of this issue – zeroing in on the application of Web 2.0 to a university's digital public facing presence. All of this and more applies also to the design and deployment of courses themselves and providing much better means for students to interact and direct their own learning. None of this can be achieved as long as universities remain within the 'Web 1.0' mindset with regard to their own activities.

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Appendix: Abstracts From The Conference Programme

Opening plenary

Ivan Moore, Phil Levy, Paul Taylor, Learning through Enquiry Alliance

From Learning Spaces to Knowledge Spaces: what do we believe about the spaces in which we build knowledge?

The Learning Through Enquiry Alliance (LTEA) is a partnership of Enquiry-Based Learning Centres for Excellence in Teaching and Learning (CETLs).

- Centre for Excellence in Enquiry-Based Learning (CEEBL), The University of Manchester
- Centre for Inquiry-based Learning in the Arts and Social Sciences (CILASS), The University of Sheffield
- Centre for Excellence in Applied Undergraduate Research Skills, University of Reading
- Centre for Excellence in Professional Training and Education (SCEPTrE), University of Surrey
- The Reinvention Centre for Undergraduate Research, The University of Warwick & Oxford Brookes University
- Centre for Active Learning (CeAL), University of Gloucestershire
- Centre For Promoting Learner Autonomy (CPLA), Sheffield Hallam University

The LTEA is committed to:

- Supporting the development of students as competent, critical, independent and creative enquirers.
- Cooperating, alongside our students, to achieve greater benefits for our institutions and the sector as a whole.
- A research-informed approach to pedagogic development.
- Making a positive difference to students' lives.
- Acting as a collective voice in teaching and learning policy debates.
- Pooling and co-developing knowledge about how to accomplish large scale strategic change so as to become better catalysts, brokers and agents for change
- Acquiring the technology so that our dedicated physical and virtual spaces to support students' learning can be connected to optimise the opportunities for staff and students to interact and together to create new communities of enquiry.

Keynote

Terri Grant, University of Cape Town

Promoting enquiry into professional communication practices through scenario learning

Terri Grant heads the Professional Communication Unit in the School of Management Students at the University of Cape Town. As one of the founder members, her principal aim is to prepare students for the communicative demands of their professions. To this end, she consults widely in business and industry to ensure that academic and work-based practices are well aligned. As lead author, her book, *Communicating @ Work: boosting your spoken, written and visual impact*, (2nd ed.) is prescribed at three institutions and recommended reading at several others. As team leader, she was recently honoured with an Innovative Teaching Practice award for her work on Scenario Learning and Pedagogy.

Student Plenary

Louise Goldring, Jamie Wood, Chris Corker, Stephen Logan, The National Student Learning and Teaching Network

The Student Learning and Teaching Network is an informal community of students actively engaged in learning and teaching. It is coordinated by a committee of student and recent graduate volunteers. As a network our core aim is to promote students as valid and active members of learning communities.

There are a number of ways in which students are involved in projects within the learning and teaching community, including:
- Student reps at institutional and course level;
- Interns and sabbatical students working with staff to promote learning and teaching;
- Students supporting students as ambassadors, mentors and buddies;
- Students designing learning spaces;
- Students designing the curriculum, learning tools and assessment;
- Student engaged in evaluation of learning and teaching;
- Students as researchers;
- Students publishing and presenting at conferences

Working in collaboration with the Higher Education Academy (HEA), the network promotes and supports staff and students to develop active engagement in higher education. The network enables students to meet together, share and develop through our various workshops, conferences and online communities. We encourage all students involved in learning and teaching to share their ideas, and experiences.

Find out more and join the online network community at http://studentlandtnetwork.ning.com/

Abstracts

Ben Abell

Sheffield Hallam University

Research proposal activities to promote enquiry-based learning: studying as individuals and within groups

Many subject areas within universities are delivered by tutors with extensive research experience, yet this is not always exploited in the teaching methods used. Research depends on enquiry, and should therefore be an effective process for students to learn in an enquiry-based mode. To maximise the transfer of enquiry-based research skills from tutors to students, a module was designed around a central task of a research proposal. A common difficulty for enquiry-based learning is provision of relevant assessment, which was addressed by linking assignments to the proposal. The module was Plant Biotechnology, and is a core module for BSc Biology students in their final year of study. The approach aims to promote learning that is deep and creative by capitalising on research experience held by the tutor.

An integral part of the module was the use of group work, so the importance of this aspect was tested in a similar module where students worked independently. This second module studied cellular control processes via a research proposal process. Its evaluation and comparison to the module in plant biotechnology will be discussed.

The general strategies employed in these modules could be applied to a wide range of subjects, and provide an opportunity for tutors to employ their research experience. During this session you will experience the research proposal process as you consider how you can apply similar methods to your teaching.

Phil Askham

Sheffield Hallam University

"Light, Liberty and Learning": Approaching autonomy by way of authenticity

An Interactive workshop facilitated by staff and students from the Real Estate subject area in the Department of the Built Environment. Presenters will use examples of authentic learning to explore the benefits and challenges of this approach to autonomy and how this enhances the quality of the student experience. Delegates will be invited to examine their own examples of authentic learning and use these to test theoretical models of authentic learning emerging from the literature. The main part of the workshop will use a variety of interactive techniques to analyse and map the examples and address some of the challenges

including the key concern of whether authentic learning gives prominence to the skills and employability agendas at the cost of academic development.

Authentic learning will be explored as an umbrella concept covering the related family of learning types such as EBL, PBL and Case Based Learning. This follows the identification of themes adopted by Rule (2006): real-world problems that mimic the work of professionals in the discipline; open-ended inquiry, thinking skills, and metacognition; discourse and social learning in a community of learners; and students who are empowered through choice to direct their own learning. Similar themes are also found on Herrington and Herrington (2006) and Herrington and Oliver (2000). These themes will be explored in more detail during the workshop and will be used as the basis for an analysis of delegates' own examples of authentic learning to test the validity of these approaches in a range of different contexts.

Adele Aubrey

University of Manchester

How could we model Enquiry Based Learning? Functional and values-based perspectives on student-centred education

This workshop will be of particular interest to academics that teach and wish to reflect on their teaching practice. During the session you will focus on aspects of one particular course unit that you deliver. The workshop has three goals:

 *   to assist you in developing a greater understanding of enquiry-based learning, by participating in a session where you will have the opportunity to examine your own teaching practice;

*   to provide a framework which may enable you to introduce innovation into your teaching practice;

*   to contribute to an educational research project (optional).

The session enables a theoretical exploration of your teaching practice, through the introduction of two evolving three-dimensional models of teaching and learning practices: a functional model from a practitioner's viewpoint, through to a learning developer's aspirational values-based model for change. The models attempt to capture the variety of EBL, allowing for a continuum from more tutor- to student-centred learning and teaching practices.

The workshop provides an opportunity for reflection and discussion on the student-centred aspects of your teaching practice and consists of individual work and small group

discussions with your peers. You will explore enquiry-based learning by placing your teaching practice on the axes of each model. Discussions will open up questions around values and ideals, and whether there is dissonance between these ideals and the actual teaching and learning experience that you and your students encounter.

The workshop will be highly interactive.

Karen Booth, Claire Craig, Sue Walsh

Sheffield Hallam University

The Students' early experiences of HE

This paper describes a study undertaken as part of a project undertaken in the Faculty of Health and Wellbeing. Its aim was to investigate the students' experiences of their transition into HE and how it had shaped their attitude towards learning.

A number of themes emerged which reflected a diverse experience and provided an insight into the students' needs and aspirations.

Research and relevant literature

There is an increasing diversity of entrants into HE in terms of educational and life backgrounds. This requires a considered approach in helping all students in their transition. Studies have shown that the majority of students who withdraw do so in their first year. (Yorke 1999; Yorke and Longden 2008)   The first year experience is therefore very important in ensuring students remain on their chosen course and in motivating students to learn.

A number of factors influence the students' experience of the transition, including previous educational experience (Boud 1998), social integration (Thomas 2002) and poor quality learning experience (Yorke and Longden 2008).

Relevance to delegates

Early experiences are important in laying the foundation for learner autonomy so understanding the student perspective will help in planning a strategy to ensure an enjoyable and motivating experience and aid retention.

Engaging the audience

The presentation will illustrate the themes which emerged from the qualitative study and the audience will be encouraged to consider the challenges to enhancing the transition and

the learning experience, prompted by some perspectives of staff from the Faculty in response to the students' views.

Rachel Bower, Cristina Lopez-Moreno, Maria Scheule

Sheffield Hallam University

From fresher to employee - developing learner autonomy skills for the journey

How do our students develop learner autonomy skills to equip them for the graduate market?

Through this paper, we will demonstrate how our student-centred placement preparation framework takes students (from any discipline) from fresher to graduate employee, developing the qualities and skills of an autonomous learner on each step of their journey.

This paper would be of interest to colleagues wishing to harness collaboration and technology to deliver practical, achievable measures to develop learner autonomy across a graduate programme with a placement element.

The objectives of this project are to place the learner at the centre of their own autonomous development, to enhance the student experience, to improve students' employability skills, and to help students take greater responsibility for their learning during and post placement in terms of preparation, engagement and outcomes.

The project has undertaken qualitative research based on focus groups and questionnaires with current students and face-to-face interviews, oral and video question and answer sessions and questionnaires with current placement companies.

This session invites you to put yourself in the shoes of a young adult student aiming to translate the skills and competencies gained on placement into graduate employment.

Mike Bramhall, Allan Norcliffe, Justin Lewis, Keith Radley and students

Sheffield Hallam University

Developing and encouraging autonomous student learning through enquiry and media production

Prensky (2005) and others have noted that student requirements for engaging with learning are changing given their expectations for a digitally rich curriculum. Can higher education

satisfy the student expectations for a more enriched learning experience by embracing digital technology? Can digital media support a more authentic learner experience and so meet   the   needs   of   employers?

Students in various disciplines across the faculty have undertaken enquiry based learning projects, and used digital media to present their learning for assessment. Our students were supported through workshop and drop-in sessions. For example, second year creative media practice students studying digital interactivity in the Millennium Galleries recently completed a working project with the museum using this approach. We found that their work covered more depth and met a higher standard. Students commented that: "It was nice to be able to share problems in the group and not get stuck by yourself." And also: "It is difficult for creative students to work together. But we learned how to delegate and share tasks."

Students are achieving higher marks and providing us with evidence to suggest that they are inspired by this enriched learning experience. Whilst this initiative offers new learning models it is also developing learner autonomy within students and encouraging employability   skills;   it   also   introduces   new   challenges   for   assessment.

This session will consider how these methods can be applied in all subject areas of interest to delegates, the nature of student autonomy, the characteristics of enquiry based learning and assessment approaches.

Outcomes for participants: Strategies for embedding EBL into the curriculum; models for assessing the development of Student Learner Autonomy; an authentic insight into EBL via a short presentation by students; tools for relevant staff development

Structure of workshop: Introduction to the workshop structure and definition of terms such as EBL and LA. Explanation of the importance of early student buy-in re the use of EBL

Activity 1: Presenting merits of EBL to students

Feedback from participants

Student presentation

Activity 2: Strategies to ensure effective integration of EBL activities within the curriculum

Student Q&A session

Towards measuring the development of Student Learner Autonomy.

Jackie Cawkwell, Viv Thom

Sheffield Hallam University

Student autonomy and the role of Education Guidance and Study Practice in contributing towards student success.

The paper explores the role of Education Guidance and Study Practice services at Sheffield Hallam University in supporting student success. It focuses on student transitions in the learning journey and learner autonomy.

This exploration is informed by:

- a reflection on the evolution of Learner Development provision in response to both the wider HE agenda and local institutional context

- our equally evolving approach to teaching and learning

- a description, supported by audio and visual resources, of our current activities

- the challenges we face in evaluating the impact of our work

Starting with a brief resume of LD work at SHU, we go on to argue that our student centred approach (Laurillard, 2002; Tenant, 1997) supports the development of learner autonomy (Darlaston-Jones, 2003). We further argue the interrelatedness of learner autonomy and such other key attributes as student success and employ-ability (Barrie, 2004). Taking as our starting point issues brought by students - typically an assignment brief and/or past feedback - we work with them to develop both the skills (academic writing, time management, team work *etc*) and critical and reflective outlook required for successful study. We believe this task-focused approach goes some way towards addressing the strengths and weaknesses of embedded LD models on the one hand, generic models on the other (Cawkwell & Roddis, 2009).

The paper concludes with a consideration of current, and planned, evaluation and impact measures.

Lynn Cinderly

Sheffield Hallam University

Turning student groups into teams

Claire Craig

Sheffield Hallam University

Creating communities for change: learning, autonomy and social activism

This paper describes a substantial piece of work undertaken within occupational therapy which has focused on the promotion of social change through curriculum development and innovation. It looks at how partnerships were formed with service users, students, educationalists, practitioners and industry across four European countries and what this process ultimately offered in relation to both the learning experience and to employability. Finally some of the challenges of developing and implementing a programme of this nature will be highlighted with plans for how to take this learning forward.

Within this presentation I will use rich illustrative case material and questioning to engage the audience. There will be plenty of opportunity for debate and discussion.

This paper explores learning as social change. If you are interested in ways of creating authentic learning environments, taking a step into the unknown and hearing about what happens when you do, come along to this session. You won't be disappointed.

Godfrey Craik

Sheffield Hallam University

Creating a Postgraduate Learning Community in SBS: the implications for the postgraduate curriculum 2010-2014

The workshop will present on the findings and recommendations from six Sheffield Business School research projects carried out from May 2008 - May 2010. This was a holistic action research based research involving both quantitative and qualitative data collection methods. The research team developing a framework model based on the life-cycle of a postgraduate student to explore their experiences as students on SBS programmes from the point of application through to graduation and further study. The team used focus groups, interviews and surveys to develop the findings into six areas linked to learner autonomy and intra-dependant learning. The projects were researching the following areas: Rolling

Induction & Employability; Developing a Virtual Course Community; Developing Reflective Practice; Developing Research Capability; E-Case Studies.

The workshop will present on the findings of four of the research projects. The study on rolling induction and employability suggests that we should pay more attention to the language used in our advertising and promotion materials; that students should have access to staff and IT service at the pre-arrival stage. The findings from the study on research capability make recommendations in the following areas: language support; supervisor's allowances; supervisor contracts; supervisory meetings and training. Findings from two other studies will be presented at the workshop.

The workshop is designed to allow time for group discussion, sharing of experience and to explore future research opportunities and university wide collaboration on promoting learner autonomy.

Hilary Cunliffe-Charlesworth, Keith Radley

Sheffield Hallam University

Making Film: the use of media technologies to develop autonomy in learners

The development of learner autonomy in first year students was perceived as a key requirement on a number of courses in the humanities.   The CETL in Learner Autonomy at Sheffield Hallam University provided space for an evaluation of a new module for students studying Media, Journalism and Public Relations.

This module built on the experience of using film production to engage learners in engineering, (Bramhall, Radley and Metcalf 2008). The use of film making has also been employed in undergraduate degrees in business studies, property development, and history and on post-graduate nursing studies. Students on all these courses had previously been assessed on their acquisition of subject knowledge and its application. The introduction of using film in these situations, and on the evaluated module, has resulted in students having a stronger understanding of the required knowledge together with the application of related theory. The use of film acknowledges earlier learning theories: Bloom's taxonomy of learning domains (1956) and the recognition that learners demonstrate different learning styles (Gardner, 1999) and results in the new concept of Inspirational Learning.

 After two years a clear impact has been evidenced through improved student assessment of nearly 400 students, and increasingly positive reflective feedback from students about the module and how students value its learning. However, staff assumptions of the students' abilities as practical filmmakers and digital natives (Prenky, 2001) have been challenged.

Fufy Demissie

Sheffield Hallam University

BA year 2 trainee teachers' experiences of taking part in an enquiry based module: 'Philosophy for young children'

This presentation will describe a project which used dialogic enquiry can be used to develop students' notions of criticality. It will explore undergraduate trainee teachers' changing perspectives of what it means to be 'critical' as a result of taking part in an elective module entitled 'Philosophy for Young Children' (P4C)(Lipmann, 1980). During this module, the students took part in philosophical enquiries to experience the process of P4C, before implementing the methodology in primary schools. Students' weekly blog of philosophical enquiries at university, and their experience of leading enquiries in school presented an unexpected opportunity to reflect on their own understanding of criticality.   The presentation will discuss the students' emerging perspectives on criticality and the challenges they face. It also hopes to explore ways of nurturing, sustaining and developing students' engagement in the 'habits of mind' that promote critical thinking. There will be an opportunity to hear students' perspectives and see clips from the website they prepared for the module assessment.

Julie Evans

Sheffield Hallam University

Do it yourself! - Design your own learning space

Do you want to engage in lively debate around the topic of 'designing learning spaces'? Would you like to find out about current ' designing space' projects in the Faculty of Development and Society at SHU? Want to get involved in designing an 'ideal' learning space to support learner autonomy?

Yes, yes, yes? Then this workshop is for you!

Come along and find out about current 'designing space' projects in the Faculty of Development and Society at SHU and the way in which Learning Hub Mangers are working with Architects, Designers and Departmental Staff to develop new learning spaces that support learner autonomy.

And then it's your turn....a chance to design your own version of the 'ideal' learning space to support learner autonomy. What would the layout be? What would it look and 'feel' like? What technology would be available? How will you encourage students to use the space?

In this highly interactive and practical workshop you will have the opportunity to explore and share your ideas about what makes a learning space successful in supporting learner autonomy. We hope to encourage creative thinking and new ways of working. In return we aim to further our knowledge and understanding about what others may want from a learning space and to inform our ongoing work in developing learning spaces and encouraging engagement from staff and students.

Oksana Fedotova

Sheffield Hallam University

Multimodal enquiry in game-based digital environments

Using the multimodal learning perspective as a theoretical framework, the paper will discuss and evaluate an audiovisual assignment piloted this year on undergraduate research modules within Creative Practice Programme. Commercial online multiplayer game World of Warcraft was used for initial virtual field trips early in the module to contextualise theoretical material and spark off a discussion based on shared experience. Audionotes and screen capture footage provided authentic material for analysis in class.   Assessment package was redesigned in accordance with EBL principles and incorporated an audiovisual element into the written coursework package (an analytical 'vignette' representing a specific aspect of student research).   Evaluation of student learning experience will be supported by the preliminary analysis of focus group and questionnaire data. Challenges for multimodal learning and assessment activities will be presented, and illustrated by a deconstruction of selected assignments, with a specific focus on diverse and often contradictory interpretations of 'engagement', 'creativity' and 'academic quality'.   The presentation will be illustrated by a screening of selected extracts of student work and followed by a discussion.

Lexie Freedman, Ruth Roberts

Sheffield Hallam University

SHoUT all about it

SHOUT (Sheffield Hallam Occupational Therapy Undergraduate Team) is an independent student group aligned to Trent Region occupational therapists. Established in 2008 by students at the university it has received national recognition for its work which includes mentorship, volunteering and providing support for ongoing professional development through the organisation of evening lectures for students and practitioners. This student led workshop will share the highs and lows of being part of the group and its various successes and challenges. You will be invited to consider and explore some of these challenges and working creatively and collaboratively look at ways to address these both within the context of SHOUT and also in relation to similar groups you may already be involved in or thinking of establishing.

It is envisaged that by the end of the workshop you will:

1. Have an overview as to what the SHOUT group have achieved in the time since they have been established
2. Understand factors that support and hinder students developing initiatives of this nature
3. Have the opportunity to share your experiences and explore the potential of future groups of this nature

This workshop will be of particular interest to students who are involved in similar initiatives and to staff who would like to support the development of similar projects across the university.

Melanie Giles

Archaeology: School of Arts, Histories and Cultures, University of Manchester

The place of finding: embedding Enquiry Based Learning in Archaeology

In archaeology, the act of discovery underpins the excavation of every find – whether it emerges from the soil, is discovered in an archive or recorded through oral history. As Walter Benjamin noted, it is this 'dark joy of the place of finding itself' which offers the 'richest prize' in learning (1979: 314). Yet the classroom and laboratory - and traditional teaching and assessment methods - can deaden even this most exciting of subjects. Since 'Enquiry Based Learning' can be defined as an environment in which the learning process is owned and directed by the student (Kahn and O'Rourke 2004), it can thus be viewed as a form of educational excavation: in which value is created through 'discovery and invention' (Makiguchi 1934: 285). Our project, funded through CETL Centre for Excellence in Enquiry Based Leaning, has revitalised the teaching of archaeology through a number of initiatives, using novel interactive technologies (Laurillard 2001).

We will briefly outline some of our methods through case studies: the 'CSI: Otzi – the Ice Man' investigation, a real-world debate scenario based around a Quarry Development, and a residential visit to experience 'Life in the Iron Age'. Through these and other examples, we will discuss the impact on both staff and students: how it created a more diverse learning experience, enhanced student's appreciation of the relevance of the past, developed professional expertise (Aitchison and Giles 2006, Cobb 2008) and citizenship, and helped reveal the process of discovery as a life-skill inherent to the graduate experience.

Louise Goldring (Student Engagement Officer), Jamie Wood (Postdoctoral Fellow), Kate Jones and Stephen Logan (Student Interns)

University of Manchester

Getting dynamic with group dynamics: facilitating collaborative Enquiry-Based Learning in practice

This student-led workshop on group dynamics builds on research undertaken while producing a guide to the facilitation of Enquiry-Based Learning (EBL) (www.campus.manchester.ac.uk/ceebl/resources/evaluation/) and on research into online facilitation of EBL. This project is an example of staff-student partnership and we aim to enrich the project by broadening participation. The workshop will focus on the tutor's role in facilitating group dynamics in EBL.

Intended outcomes
Participants will:

be introduced to theories of group dynamics

engage in problem-solving exercise on facilitating group-work in EBL

share experiences and collectively solve problems on facilitating group dynamics in face-to-face and online settings

Workshop facilitators will:

present work in progress

receive constructive feedback on work on group development and EBL facilitation

Process:

Introductions

Theory surrounding group development, including problems with online groups (15 mins)

Activity: planning the group project – how to avoid problems (30 mins)

Participants given a group work scenario and plan out the process, including potential problems and strategies to overcome them, with an emphasis on difference between online and face-to-face work

Discussion (15 mins)

Activity: Facilitating common problem scenarios; issues of online facilitation; feedback (20 mins)

Wrap up (10 mins)

Why delegates should attend

Collaborative working is a prominent feature of teaching and learning in Higher Education and life in the world of work. We developed the guide to EBL facilitation and a series of workshops because we felt that there was not enough focus on empowering graduate teaching assistants (in particular) to developing their facilitation techniques. Attend this workshop if you want to know what we found out, discuss facilitation of group work and share your own experiences.

Terri Grant, Claudia Khalil

University of Cape Town

Scenario Learning (SL): an enquiry-based approach to enhancing multimodal professional communication practices at university and in the workplace

This case study explores attempts to go beyond a language-based genre approach to teaching professional communication to one that contextualises teaching and learning within an embedded real-time scenario. Scenario Learning (SL) aims to foreground participant involvement (students and staff) and collaborative teaching-learning in a way that downplays attention to skills acquisition and a deficit view of student development and heightens the possibility of engaging with and enhancing student autonomy and multimodal communicative practices.

This enquiry-based approach has been used successfully for many years to teach journal article writing to Computer Science students, using an ICT scenario as the teaching backdrop and content provider. A more recent application in the Commerce faculty involved an Information Systems (IS) Honours cohort. The course was embedded in a specific real-world scenario: business process management (BPM), at a development organisation based at the university, the Student Health and Welfare Organisation (SHAWCO).

Evaluating the effectiveness of these applications through various theoretical lenses as well as qualitative and quantitative methodologies has proved illuminating. SL is perceived as motivating learning on multiple planes in its 'apprenticeship-like' use of a real-world situation in students' own institutional settings. Students' perceptions are that SL increases the range of learning in terms of building research and multimodal professional communication practices. They reported a raised awareness of firstly ICT and business management issues and secondly of institutional issues, stating their appreciation of the complexity of the university (and global workplace) where they did not appreciate this previously.

Danielle Hinton, Matt Bridge

University of Birmingham

A 10-year learner independence journey: creating enquiry in Academic Skills and Research Methods modules

A struggle has always existed in how to create academic skills and research methods modules for students that is engaging, seen as relevant, authentic, that promotes learner independence and employability. Enquiry Based Learning (EBL) has been a powerful driver towards realising our goal and this has been informed by the work of Hutchings, O'Rourke and Kahn (CEEBL), McMaster's and guided by the University of Birmingham's Learning and Teaching Strategy (2007). We were challenged to put the student at the centre of the learning process - "...initially as active participants in the learning process, and once equipped with the right tools, as active participants in the investigation and analysis of problems, issues and evidence encountered in teaching and learning situations. It [EBL] fosters and promotes learner responsibility and learner independence." (A Vision for Birmingham Learning). This workshop will explore the creation of your own EBL skills/research methods scenarios and explore managing the student experience.

Workshop process

- Setting the scene

- In subject groupings you will create an EBL scenario for framing skills/research methods learning

- Explore a variety of tools and techniques for managing the student experience

Workshop Learning Outcomes

- Engage in creating an EBL scenario for your subject area

- Explore management issues relating to managing the student experience

Danielle Hinton, Tarsem Singh Sooner

University of Birmingham

DiBL: Creating digital case studies to encourage learner independence and enquiry

The Designing for Enquiry-based Blended Learning (DiBL) events offered participants (working in small teams) a two-day hands-on experience of creating enquiry-based blended learning (EBBL) designs and multimedia triggers. A mixture of experienced academic and related staff facilitated, whilst participants had the valuable opportunity to take part in an EBL "student experience". In addition participants were able to create a subject -related design and multimedia resource that they could take away with them. The Community of Inquiry (COI) Model (Garrison, Anderson & Archer, 2000) was chosen as a base model and to provide a common framework language for participants. Explore this immersive staff development method, tools and techniques.

Workshop process

- Explore DiBL tools (workbook, EBL activity planner, resource pack and design icons)
- Experience an EBBL scenario as a student
- In small groups create a EBBL design and trigger for learning

Workshop Learning Outcome

- Explore the design of a flexible reflective activity to encourage active student engagement

Rahat Iqbal

Department of Computing and the Digital Environment, Coventry University

An Activity Led Learning approach for Computer Science

In the Faculty of Engineering and Computing at Coventry University we are investigating an Activity-Led Learning (ALL) approach to promote better engagement and an enhanced student learning experience. Group work is an important part of ALL where the focus is on students learning through self-directed investigation, discovery and doing, rather than through the traditional approach of listening to lectures followed by associated supported tutorials or laboratories. This paper will reflect upon the adoption of Activity-led learning in the computing curriculum by discussing various supporting methods that can be employed. In particular we focus on case study based method of teaching, learning and assessment. The case study-based approach is applied to deliver a Master-level Networking Planning and Management Module.

1. Network Planning and Management:

The aim of this module is to introduce students with all the activities that have to be performed to create a successful network plan as well as a sound coverage of techniques and tools of network management. This module is delivered using an Activity-led Learning approach.

The module is composed of two overlapping threads, one based on lectures and the second one based on Activity-led Learning. Through this approach students do not only gain a set of technical skills but also gain some business knowledge and practice some of their soft skills in simulated real life situations.

2. Activity-led Learning Approach:

Through this approach, students are encouraged to investigate the case study problem, in groups of 4-6, thoroughly and thus gain the subject knowledge about the domain as well as contemporary tacit skills. Their ongoing progress indicates them the level of knowledge and competence they are gaining.

The problem-solving students and teachers become a community of learners; they share ideas and discuss different aspects of the problem. They communicate synchronously as well as asynchronously using different collaborative tools including discussion forum.

The following are the topics of the five case studies. Details will be provided in the extended version of the paper.

1. Case Study 1: Requirements Analysis and success criteria:

2. Case Study 2: Analysis of existing networks and security:

3. Case Study 3: Logical structure of the network and planning:

4. Case Study 4: Physical structure of the network and implementation:

5. Case Study 5: Network Management:

Different evaluation methods, assessment criteria and real time feedback which is given to students, will also be discussed in the workshop.

Mark Jasper, Anna Verges, Adele Aubrey

University of Manchester

Aligning collaborative learning theory with technology

This workshop is aimed at academics and academic-related staff who wish to use technology to support enquiry-based learning, collaborative learning and group work. It includes an exploration of the theory behind collaborative learning and how available technologies can be used to support this.

The goals of the workshop are to enable participants to apply key theories of collaborative learning to activity design, appreciate why group work and collaborative learning are important and select and implement appropriate online tools to support collaboration and group work.

During the workshop we will compare working on your own, aggregating ideas and collaborating with others. Collaborative learning theories and online collaboration tools will be explored through group discussions and ideas shared on how they can be introduced into teaching practice. The theories and literature include:

- Zone of proximal development – Vygotsky
- Social Interdependence - Johnson and Johnson
- Cognitive Development Effect – Vygotsky
- Connectivism – Siemens
- Cognitive Elaboration Perspectives – Dansereau et al

Online collaboration tools such as Blogs, Wikis and cloud computing applications such as GoogleDocs will be examined to show how these elearning technologies can be matched with the collaborative learning theories and used to encourage enquiry-based group work.

Amanda King, Ben Partridge, Craig Machon, Megan Henderson, Lila Campbell, Cassie Hambrook-Robertson - (students). Chris Glover, Anne Oxley - (staff)

Sheffield Hallam University

Students as interns: students working collaboratively as researchers and developers

Inspired by the University of Exeter project, 'Students as Agents for Change in Learning and Teaching', the Learning and Teaching Institute has employed a team of 8 Sheffield Hallam students to form part of an evaluation of the impact of recent assessment changes, researching into graduate attributes as part of the student experience; and issues about

assessment and feedback raised – both positively and negatively - in the National Student Survey and the Sheffield Hallam Student Engagement Survey. One main attribute of the programme is not only to enable students to gain practical research experience, but also the inclusion of personal development and research methodology events and workshops, together with practical opportunities to develop a wider range of employability skills. This 'Students as Researchers' Project is central to the concept of students working with a high level of autonomy, collaboratively as researchers and developers with each other and with staff and students across all Faculties and Departments.

Under the overarching theme of developing learning dialogues, the Students as Researchers project has two strands:

Students as researchers, where each student researches an area of personal interest, which is relevant to University 'concerns' about learning dialogues as integral to the feedback process

Students as interns, where each student is supported by research and personal development workshops, organised and run by colleagues within the Institute.

The workshop, presented by staff and students working in partnership on the project, will offer both sets of perspectives about the relative successes of how the project has developed during its life cycle, suggest possible lessons learned, and invite participants' shared understandings of the issues raised. Delegates will be offered opportunity to critique this work in progress, and examine how the 'Hallam approach' might have relevance for their own practice, and develop a possible structure for a 'community of practice' in learning (Coffield 2008), with students viewed as 'co-producers', not as 'consumers' (McCulloch 2009)

Ivan Launders, Richard Hill, Simon Polovina, Babak Khazaei

Sheffield Hallam University

Informed Practice in the Study of Architectures for Enterprise Applications through the TrAM of Life-Like Case Studies

Architectures for Enterprise Applications (AEA) is a final year undergraduate (Level 6) module on the BSc Computing route as well a postgraduate (Level 7) module on the MSc Advanced Computing programmes in the Department of Computing at Sheffield Hallam University. Given the contemporary real-world challenges that characterise AEA, we have developed an innovative approach that partners educational and industrial practice such that that one is informed by each other. In addressing these challenges, we refer to a number of case studies that were developed to provide a simulation of industrial practice. The students then use a software platform that provides computer-based feedback to their learning experience with these case studies. This deepens their understanding of the

advantages and limitations of enterprise application models. Students assemble themselves into design teams and apply Transaction Agent Modelling (TrAM) to these case studies. This assessment reveals to students (and industrial practitioners) the core issues facing business enterprises that are now expecting the productivity of computers to be brought to the height of the real, knowledge-based world that these enterprises actually operate in. To assess the validity of this approach, we have conducted qualitative data analysis using NVivo. Nvivo reflects, codes, links and visualises the results of the students' work. Results showed that the student design teams were actively engaged in experiencing these contemporary issues. It evidences how autonomous learning is applied as experienced in industry rather than by some contrived educational means.

Kiefer Lee, Claire Craig

Sheffield Hallam University

What can we learn about how students engage with assessment feedback in Enquiry Based Learning?

This workshop aims to explore how effective feedback can facilitate and engage students in an enquiry or problem based learning (EBL/PBL) curriculum. It seeks to explore how curriculum designs that are supported by well-designed feedback mechanisms can engage students in constructing their knowledge and understanding in ways that are meaningful to them, personally and professionally.

Participants will engage in active discussion and role play on: (a) their experience of giving feedback; (b) their perception of how students view feedback; (c) methods of effective feedback; and (d) the use of feedback within the contexts of EBL/PBL curriculum design. It will be based on our action research on what and how students engage with feedback within an EBL/PBL curriculum.

The main outcome of the workshop is to generate awareness and reflection in participants on their own experiences of how their students engage with feedback in improving EBL/PBL. Our research in our institution and others shows that tutors are often very preoccupied with the design of assessment tasks whilst neglecting the feedback strategy that could be used to effectively support learning. Through the use of active discussion and role play, we would like to generate academic dialogues in the workshop that help participants to rethink their use of feedback within the contexts of EBL/PBL curriculum design in their respective disciplines.

In concluding the workshop, we will share what we have learnt from our students of their experiences of using feedback and a review of evidence-based approaches to providing effective feedback conducive for EBL/PBL.

Stephen Lofthouse

Sheffield Hallam Univeristy

Contextualising Enquiry Based Learning

In the summer of 2009 a cohort of students from the Sri Lankan Institute of Technology (SLIIT) came to Sheffield Hallam University in order to top-up their degrees to honours level. One of the modules undertaken by some of the student was practical projects. The aim of the module was to instruct the students in the use of an agile development methodology (Schwaber, 2004) and extensive use was made of the Enquiry based learning model and the work of John Dewey to facilitate student learning and development.

In collaboration with the Rotherham NHS Foundation Trust the students were provided with a real life, problem based, contextualised project to work on. This approach encouraged the students to break free of previous learning methods and embrace a newer, free thinking and exploratory style of development which proved to be very successful.

Kerry Lovell, Keith Norman

Sheffield Hallam University

Getting animated about autonomy…

We talk about the importance of the 'student voice' but how is it possible to ensure that these voices are being heard when for some students this process may feel risky and uncomfortable?

This workshop invites you to look at a range of tools that we have been exploring within the learner autonomy project within the Faculty of Health and Well-being. We will use this as an opportunity to focus predominantly on the use of two art based media: an animation tool that turns text to animation and a technique called photo-elicitation that involves using photographs as a medium to promote and structure discussion.

You will be invited to look at and respond to some of the images and animations students have created. The student authors and artists of these works will then share their experiences of what the process of making and creating these meant to them and the key messages they hoped to convey through the final product. Finally you will be invited to take part in a similar process and to create your own 'pieces'.

Richard Mather

Sheffield Hallam University

A collaborative Architectural Technology / Virtual Reality project to support the design of new buildings for a real-world design brief

Note: This session is limited to the first 20 participants

Horne and Thompson (2008) state that "3D modelling and Virtual Reality technology can be useful in built environment education in order to... allow users to experience a sense of immersiveness in the buildings, designs and concepts"

This ninety minute workshop will showcase an innovative interdisciplinary project that engaged students through enquiry based learning whilst working to an authentic, real-world design brief. This involved staff and students from the Architectural Technology and Interactive Media with Animation undergraduate degree programmes.

Architectural proposals for Shirebrook Academy were submitted by level 6 Architectural Technology students in December 2009. Architecture staff chose ten to be developed as interactive virtual environments by ten groups of level 5 students from the Interactive Media with Animation programme, studying a module called Virtual Reality. The Architectural Technologists then collaborated with their respective groups on developing a stereoscopic, interactive version of their proposals. This working relationship mirrors how people with these skills would work together in a professional setting. It was intended that a model of linking mutually-beneficial degree programmes could be established, and that the students involved in the project had an enhanced learning experience.

During the session the audience will be provided with information about the value of immersive visualisation environments in teaching and learning. The presenters will then describe the Shirebrook Academy project, and the audience will be given the opportunity to experience the stereoscopic interactive virtual environments that have been submitted by the students, and will hear evidence of the effectiveness of the collaboration. Time will be allocated for comments, questions and discussion. The workshop will take place in the Adsetts Centre Visualisation Suite.

Ivan Moore

Sheffield Hallam University

Developing Communities of Practice: The role of a centre for excellence in fostering staff and student communities

This paper will discuss the strategic efforts, successes and challenges of the CPLA CETL to engage with staff and students in order to foster a sense of community both as learners and as facilitators of that learning. The central aim of the CPLA is to promote learning and teaching practices which empower students to acquire responsibility for their own learning through promoting and innovating ways to enable students to construct their own knowledge in learning communities with other students as well as their tutors.

The idea of creating learning communities builds on the notion of learning as a social activity. An autonomous learner in this context is one who has developed the capacity to take at least some control over their learning, and who can identify their own learning goals, their learning processes, and how they will evaluate and use their learning. This paper focuses on the importance of social interaction and developing communities in fostering autonomous learning. Sometimes called 'collaborative learning' (Millis and Cottell, 1998; Smith and MacGregor, 1992) the emphasis here is on perceiving learning as an inherently social process. Social and dialogic learning is increasingly recognised as an important factor in promoting deep learning in Higher Education (Biggs, 1999; Oakley et al, 2004), and is typically exemplified in group work (Donaldson & Topping, 1996) and EBL practices (O'Neill & Moore, 2008).

Based on the experiences of staff and students involved in a range of CPLA funded strategic projects and innovations, this paper will take a holistic view of communities of practice and discuss how these projects are embedding learner autonomy through developing communities of practice among students and staff. At Sheffield Hallam University student communities are being fostered through practices that highlight social activities as tools to enhance deeper learning through fostering student communities of learning. Interdisciplinary staff communities of practice are being fostered through the cross-institutional CPLA CETL project scheme. Finally, the emphasis on the tutor as a facilitator of learning allows for a change in thinking from where the student is seen as a 'customer' (Ramsden, 2008) to a collaborative model of working in a partnership. This requires both parties to take responsibility for the students' learning process (Spanbauer, 1995), and allows for teaching and learning to be perceived as a shared experience in which both the learner and the lecturer are perceived as equally important members of a community of learners.

Sarah Naylor

Sheffield Hallam University

Enquiry based learning promotes innovation in students

EBL was integrated into a science based module at level 4. This presentation demonstrates the students' engagement and self-directed innovations resulting from the EBL strategy.

The quality of the EBL trigger effects the effective functioning of the group and their interest in the subject. For this module the learning outcomes were used as the EBL 'trigger'. Within the confines of these outcomes they were instructed that they could learn what they wanted, how they wanted and demonstrate their learning in the way they wanted. They were informed that the results of their projects would be presented at a science fair and that they should be stand alone exhibits. The projects were undertaken in previously established groups of 4 to 5 people.

Lack of structure can promote anxiety in students; therefore considerable support was available with the initial group sessions being facilitated. The students were given time and facilitated access to the x-ray room on campus and other equipment from the technicians.

From observation, students have been thoroughly engaged in the project. They have devised various methods of delivering evidence of their learning such as making a short film, making models, devising a quiz and making an interactive computer programme. There were eight groups in total and the projects presented at a science fair were judged by their peers, tutors and students from the year above. Prizes were awarded for the best projects.

Sarah Naylor

Sheffield Hallam University

Reflections of an enquiry based learning facilitator

EBL was integrated into a science based module at level 4. This is a reflective account exploring the anxieties, challenges and rewards of being a facilitator of an EBL module.

The EBL tutor plays a vital role in ensuring groups are functioning effectively. They should not monopolise the group activity and should resist the temptation to enforce their ideas onto the students. Facilitators should guide, not intervene, which can be frustrating for those more accustomed to an authoritarian role.

Some students view EBL as an easy option for the teacher (Ashby et al 2006). There may not be the input in time need to prepare and deliver in a didactic style, but the emotional investment into a successful EBL project can be considerable. The facilitator becomes much

more engaged with their students, as such can be aware of the students' anxieties and emotions.

Didactic teaching methods allow one to feel in control. EBL promotes feelings of insecurity; there is a need to be reactive to the various situations as they arise. The unpredictability can be challenging. From being someone who is an expert in their field you become an explorer along side the students.

The rewards are many; as students' enthusiasm can be infections it can provide a fresh view on an old or dry topic. The role 'keeps you on your toes' and provides a high level of job satisfaction.

The EBL facilitator needs to let go of the rains and let the students learn, this can be challenging and rewarding.

Eva Nordmark, Christina Gummesson

The Faculty of Medicine, Centre for Teaching and Learning, Lund University, Sweden.

How can we scaffold learner autonomy by assessment strategies and assessment criteria?

The purpose of this case report is to discuss the use of transparent assessment criteria as part of strategies to guide and develop learner autonomy. The study took part in a 10 week part time enquiry based online module on advanced level. The learning outcomes are the starting point from which the participants own needs can direct the learning and working process. The participants are scaffolded by learning outcomes and defined assessment criteria. These handrails combined with critical appraisal are expected to be used actively and continuously by the participants to support the learning process. The linkage between what is done and where am I going is expressed by self-reflections, peer review and teacher feed forward. The participants' opinions from the course evaluation will be presented.

During this session we will discuss the influence of the use of transparent assessment criteria, self reflection and peer-review as parts of the educational process. In higher education it should be an important skill to be able to reflect on your own performance, process and progress, and continuously identify your learning needs. What impact do assessment criteria have on the learning process and performance? How specific should they be expressed? By whom should they be formulated and applied to enhance learner autonomy? How can a deep approach to learning be supported? We will invite you to reflect and interact by exploring and sharing experiences on how to build and scaffold learner autonomy in creative ways.

Anne Nortcliffe, Elaine Stringer, Peter Cogill, Bridget Winwood, Andrea Kelcher

Sheffield Hallam University

Opportunity for symbiotic learning: Nursing IT experience

In the USA, Healthcare employers indicated that high degree competence in IT skills is essential requirement of health care professionals in order to fulfil their role, however over half the student nurse population on a nursing course ranked their IT skills as basic or less, Fetter (2009).   This is consistent with previous research by students in Faculty of Arts, Computing, Engineering and Science (ACES), and observations in the Faculty of Health Well Being (HWB), nursing students lack IT confidence and competence.

Equally observations by the Placement Employability Experience Unit in the Faculty of ACES have identified that although IT students are technically able; *they* are deficient in relevant experience of employability skills, for example communication skills. Employers' seek a range of employability skills and rank these skills above or equal to professional competence when seeking employees, (Ehiyazaryan and Baraclough 2009).

Therefore both sets of learners would benefit from a symbiotic project to improve their employability and professional skills. With permission of the previous trailed student led social venture "PC Nurse", Nursing IT was formally implemented in the Faculties to provide peer assisted learning.   As peer assisted learners can communicate to one another in a language that both understand, Smith et al, (2007).

 The paper will present the model of Nursing IT adopted and the results; both successes and pitfalls of managing such an inter-faculty learning autonomy project that falls outside the formal curriculum. Also, it will illustrate the transitional development of the employability skills in both sets of learners.

Anne Nortcliffe, Andrew Middleton

Sheffield Hallam University

Student audio notes evolution

The Student Audio Notes Project at Sheffield Hallam University encouraged students to act autonomously by using audio recorders to capture conversations relating to their learning. This approach was conducted in order to address the transient nature of significant conversations (Waterfield 2006). Digital audio is an accessible media that enables the learner to identify and record otherwise ephemeral experiences, so that they can re-engage later when they are ready to reflect and act upon the learning (Nortcliffe and Middleton 2009). Student audio notes, whilst having a similar potential to written notes in aiding recall (Intons-Peterson and Fournier 1986), may be better suited to many situations.

This paper highlights the evolutionary development of techniques used by students during the project.   52 students were given MP3 recorders to capture experiences that they identified as being useful, whether these were from the formal, semi-formal or informal curriculum (Middleton and Nortcliffe 2009). Many began by recording their lectures, broadening out to capture significant conversations of a formal nature including peer feedback and project supervision (Rossiter *et al.* 2009). Later less formal conversations and personal ideas were gathered. The paper discusses the approaches adopted by students, drawing upon an analysis of interviews and surveys. The audio methods will be reviewed according to their capacity to enhance learner autonomy. In conclusion, the paper highlights the evolutionary nature of finding technology-supported learner autonomy as the students became more attuned to the opportunities around them, and raises further questions for institutions seeking to encourage wider student participation in becoming responsible producers of audio learning notes.

Mark O'Hara, Abbi Flint and students

Sheffield Hallam University

"Building a bridge": using a student council to engage student representatives with faculty wide issues

This interactive practice based session will explore the potential of using complementary approaches to the traditional staff-student course committees to engage and empower student representatives to work in partnership with staff to enhance the student experience. Participants will explore a new approach to securing the engagement and participation of student representatives at a more strategic level being trialled in the Faculty of Development and Society; the Faculty Student Council. The development of the Student Council is rooted in the literature around student engagement within schools and colleges (Fielding, 2008) as well as initiatives elsewhere in HE aimed at enhancing what is sometimes referred to as the 'student voice' (SPARQS, 2009). The project as a whole draws heavily on the arguments advanced by the National Union of Students that universities should reject consumerist models of student engagement and instead develop approaches rooted in the scholarship of communities of practice (Streeting & Wise, 2009). The overarching aim of the project is to enhance the level of student representative engagement with the opportunities that the University provides to incorporate authentic student voices in enhancing the student experience. The presenters will outline the Student Council model and their reflections (as both staff and student members) on the emerging issues and challenges they are facing for discussion and debate throughout the session.

This session aligns most closely with two of the conference themes: Student Voice and Communities of Practice.

Christine O'Leary

Sheffield Hallam University

Developing autonomous learners in HE: a social constructivist perspective

Holec (1981) defines learner autonomy as learners' ability to take charge or responsibility for their own learning. However, the development of a learner's capacity for autonomy does not happen in isolation but through social interactions involving both peers and teachers (Little, 2000). Fostering autonomy implies a shift in the balance of power between teachers and their learners, leading ultimately to partnership (Raya, Lamb & Vieira, 2008).

This paper seeks to explore the curriculum design and practice implications of moving towards partnership between teachers and learners, within formal educational structures.

The research project focuses on a case study of a final year foreign language undergraduate programme, in a large Higher Education Institution in the UK. After a brief description of the context and curriculum design, the outcome of the analysis of the reflective logs and peer feedback of 40 students between 2007 and 2010, and my own diary reflections as a practitioner-researcher and their teacher, will be discussed alongside pertinent literature. The presentation will conclude by considering possible implications for curriculum design and practice, including assessment, within formal institutional settings.

Simon Polovina, Siavash Moshiri, Richard Hill

Sheffield Hallam University

Using vendor-specific training for explorative education in enterprise systems

One of the most pressing issues in Higher Education (HE) is the role that vendor specific technologies play in the education of information systems development. Many HE institutions argue that vendor-specific technologies are inappropriate in curricula. However the dominance of information systems within modern enterprises, and the development of business practices and processes that can be realised by competent software developers suggests that any curricula that does not expose students to such technology is fundamentally excluding a core component upon which any critical thinking can be based. It is insufficient simply to refer to a proprietary information systems vendor as a theoretical case study on which critical thinking can be based. Rather, as Biggs describes as constructive alignment, we move the students from this foundation along a path of enquiry-based learning towards lifelong critical thinking. To assist us we have used a variety of focused educational tools that facilitate the students' development of enquiry skills. We have also noted that this drive has been supported by our students, as well as employers who demand

students are educated with lifelong critical thinking skills rather then short-lived product-specific training. We used computers in our education not only to teach this vendor's software but in our innovative approach that allows us to rethink learning in digital worlds with hands-on subject-specific software. This in turn has been supported by a computing and learning environment in which students engage in exploratory learning in digital worlds on which to build their experiences and future learning trajectories.

Norman Powell

Centre for Excellence in Enquiry-Based Learning, University of Manchester

The use of unit evaluation survey data in the evaluation of small Enquiry-Based Learning (EBL) development projects

Enquiry-Based Learning (EBL) is a student-led form of learning that enables students to develop their personal, professional and transferable skills whilst deepening their engagement with their discipline knowledge through open research-like processes.

CEEBL (Centre for Excellence in Enquiry-Based Learning) is one of 74 HEFCE (Higher Education Funding Council for England) funded CETLs (Centres for Excellence in Teaching and Learning), whose purpose is to promote EBL. One of the methods that it has done this is through supporting an average of 12 small development projects a year.

This paper explores the possibility of using unit evaluation data to investigate the effect of EBL. Specifically, it examines whether introducing EBL into a unit has a positive impact on the student learning experience. Unit evaluation data has been analysed for units that were involved in all four year of CEEBL's small projects. Two types of comparison were made:

- Longitudinal: comparing the scores from the unit before the project (pre-EBL) and after (EBL).
- Contextual: comparing the unit with other units delivered in the same semester to the same cohort.

A number of cautions are made about the interpretation of the results. The results suggest substantive and significant improvements in student satisfaction for a number of units, particularly for context comparisons. However, it is neutral for other units.

Emma Robertson

Sheffield Hallam University

'Northern Soul': Developing student autonomy through the production of a public history resource.

This session will review the challenges, and rewards, of running a new level six history module in which students created their own digital media projects on local identities in Sheffield (film, oral history, wikis, powerpoint etc). The aim was to develop student autonomy by encouraging them to take creative control over their own public history projects, and to develop new skills in digital multimedia technology. The tutor collaborated with colleagues in LTI and external public history professionals, adopting the 'inspirational learning' approach developed by Keith Radley (LTI, Sheffield Hallam University).

Chris Short

Sheffield Hallam University

Interdisciplinary and cross course mentoring and integration

Engineering has always presented multidisciplinary challenges in the workplace and problems for the education of undergraduates (Armstrong et al 1982). Since these early days the challenges have continued to become even more complex with the development of rapidly increasing technological advancement and new subject areas.

Thus the teaching of engineering undergraduates at a multidisciplinary level is still a requirement which is made problematic by the same difficulties of separate academic disciplines.

Interdisciplinary project work can be used to provide a real world scenario for integrating single discipline subject knowledge

This paper describes a project, funded by the CPLA Small Project Scheme at Sheffield Hallam University, aimed at creating opportunities for enhancing engineering students' learning experiences through multidisciplinary project work and the development of links (initially informal) between design / mechanical engineering final year projects and taught classes in other engineering disciplines.

Students are inherently weak at working autonomously on project work and in particular often do not manage their time effectively but techniques clearly exist to develop students skills in this area (Anna and Kwan 2009)

Some of the issues experienced during this CPLA project, including issues of time management, motivation when doing extended projects, project management and supervision etc. (in relation to developing these skills as a framework for developing autonomy) are discussed against the background of specific case studies based on six final year interdisciplinary projects.

Developments for the future, including strengthening working across departments and subject boundaries with a view to formalising such links are also discussed.

Felicity Skowron

Sheffield Hallam University

The Alchemy Exchange - mentored learning opportunities

The Alchemy Exchange is a research and consultancy unit which provides students with mentored learning opportunities. Under the guidance of an academic lead and project manager the students are encouraged to put theory of their course into practice and develop skills such as primary and secondary research, business modelling translation, report writing or presenting.

The Alchemy Exchange students or 'Associates' gain paid experience from working as a team to a live commercial brief and liaising with external clients. In other words, working with The Alchemy Exchange provides students with essential real-world experience which is transferable to their everyday working lives once they graduate from the University.

The students are recruited via a competitive selection process to ensure they are suitable candidates for the 'talent pool' of Associates. As a member of the talent pool, the Associates benefit from training events. These events strengthen their skills for all things Alchemy Exchange.

The Alchemy Exchange will provide an audio visual presentation covering the details of the unit, the Associate and Academic perspective and case studies completed by the unit. A question and answer session will follow the audio visual presentation.

Katja Stuerzenhofecker, Richard Benda, Anna Snape

Religions & Theology, University of Manchester

Student-led discussions: principles and practice

This workshop explores how to foster learner autonomy through peer-learning in the Humanities classroom. It is aimed at staff involved in teaching, learning and assessment who would like to find innovative ways of dealing with awkward silences and lack of student engagement in classroom discussions. It offers participants the opportunity to experiment

with a student-led format for seminars that combines research skills development with students' reflective writing.

The workshop contains some presenter input to introduce our model of student-led discussions and a range of pedagogical interventions that develop students' ability and motivation to lead and participate in academic discussions. These interventions include diversity and facilitation skills training, structured textual research processes, generative learning objects, and debating models employed in Philosophy and in competitions. Participants will have opportunities in small group discussions and role play to consider these inter for their own teaching contexts.

Paul Taylor

The Reinvention Centre for Undergraduate Research, University of Warwick

Collaborative earning in research-rich environments: a 'learning in partnerships' workshop

'Learning within a research-led environment has been prioritised and valued as the optimum higher education experience by the UK's New Labour government and businesses.' (Mockridge *et al.*, 2010)

The Reinvention Centre enables undergraduates to become research-active and thus our approach escapes or exceeds the binary models of 'research' and 'teaching' as separate or overlapping entities (*e.g.* Robertson and Bond, 2001). Instead the Centre has worked towards a more radical re/definition of research as learning. Here, undergraduate students are not regarded as learners coming into an existing research environment, but as potential and actual co-researchers who are themselves producers of the research cultures they inhabit. This shift has required a re-conceptualisation of students as producers and of environments as dynamic.

We suggest that it is not enough that students are educated within a 'research-rich' environment. Although there is some evidence to indicate that their learning benefits from being in such a context, there is also an (as yet) underdeveloped strand of enquiry (*cf.* Creighton, 2009) suggesting that students undertaking their undergraduate degree in research-rich universities have few opportunities for collaborative work.

Development of environments that facilitate *collaborative* research between staff and students could therefore be a priority for research-intensive departments / institutions. This presents a challenge to designers of the built and virtual learning environment and designers of curriculum, including assessment. Drawing on case studies from the University of Warwick and participants' experiences our workshop will explore the opportunities for collaborative learning in a research-rich environment.

Danny Weston

Sheffield Hallam University

Unleashing Web 2.0 for Autonomous Learners

Whilst the single most important development for maximising learner autonomy has certainly been the advent of the internet, this potential has only begun to be realised with the introduction of the 'Web 2.0' technologies. This paper highlights the rise of the information 'prosumer' in an education context - in both corporate and academic settings. The modern, digital learner has come to expect much more control over the course and content of their own learning. New - relatively automated - tools enable and empower more people than ever to share and discuss content with one another online.

In an era of increasing competition, educational establishments must adapt to these changes or wither with irrelevance. The age of primarily centralised, one-directional learning is over. Institutions that are able to move ahead of this curve will have a significant competitive advantage.

This paper draws on the authors' various experiences in e-learning, electronic trading systems, applications support in industry and automation research in academia; all environments where the focus is on fast, user-directed learning and including the dual-headed 'prosuming' behaviour of being both the learner (consumer) and creator (producer) of valuable content.

Core 'Web 2.0' concepts will be explained - the 'perpetual beta', the era of 'good enough', social networking and the 'flat world' and a live demo of building a functional Web 2.0 website in under 15 minutes will be given to show how easily such technologies can be deployed in an education context.

Nadine Wills, Cairan Hurley

University of Sheffield

Emotional labour, differentiated learning and groupwork through the lens of EBL

We know that the same "experience" may be felt and learned differently by different people. When new experiences or different ways of doing things are proposed or done, this also can raise all sorts of anxieties both on the sides on students and staff. What are the implications, challenges and potentials of this? This workshop will ask questions about the intersections between emotional labour, groupwork, differentiated and EBL (enquiry-based learning) and what this requires from participants in learning and teaching contexts.