CPLA

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

Case Studies : Volume 1

Edited By:

Ivan Moore, Jo Elving-Hwang, Kenisha Garnett and Chris Corker

Sheffield Hallam University

SHARPENS YOUR THINKING

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Preface

There is much emphasis placed on improving institution-wide learning and teaching practice in a rapidly changing and continuously evolving Higher Education sector. The goal for many institutions is to develop learning processes that enhance the student experience and contribute to learner development. Hence, the development of learner autonomy is a key feature in academic curricula as it stimulates a gradual change in learner attitudes, facilitates the development of a more appropriate conceptual stance towards learning in Higher Education, enhances learning skills and supports lifelong learning.

The process of promoting learner autonomy encourages students to take a more active role in the learning process and involves a comprehensive range of factors such as motivation and engagement; managing learning; enquiry-based learning; peer-support; and collaboration, which are designed to enhance learning and teaching practice. This booklet showcases some of the innovative learning and teaching approaches that staff at Sheffield Hallam University have developed as a result of their engagement with the Centre for Promoting Learner Autonomy (CPLA), one of three Centres for Excellence in Teaching and Learning (CETLs) at the institution, funded by the Higher Education Funding Council for England (HEFCE).

CPLA has acted as a focal point for staff to develop their own teaching practice, with much emphasis placed on promoting learner autonomy. As a result, the Centre has been instrumental in inspiring a 'learning or student-centred' culture from which wider institutional change may be effected. This booklet is the first publication on Learner Autonomy at Sheffield Hallam University which provides an overview of innovations in learning and teaching methods in the context of learner autonomy across the institution. It includes a full account of small scale educational development projects that have stimulated (and supported) the growth of communities of practice among staff in their efforts to develop students' autonomy.

We hope that the case studies included in this booklet provide you with ideas to incorporate in your own teaching practice, stimulating greater innovation in teaching and learning to enhance the students' learning experience.

Ivan Moore

About the editors

Ivan Moore
Ivan is Director of the Centre for Promoting Learner Autonomy at Sheffield Hallam University. He has worked as an independent Educational Consultant since 2004 working with a number of UK Universities including the University of Manchester, Loughborough University, Nottingham Trent University and the University of Sheffield. His international consultancies include La Trobe University, Australia, the British Council in Thailand, University College Dublin, Limerick University, Dublin City University and the British University in Egypt. Ivan's career to date includes two years as Director of Learning at the University of Portsmouth and three years as Director of Learning and Teaching at the University of Wolverhampton. Before that he was Assistant Director of Educational Development at the University of Ulster where he was a lecturer for twelve years and Academic Staff Development Officer for four years.

Kenisha Garnett
Kenisha is Researcher/Developer at the Centre for Promoting Learner Autonomy. She is also the module coordinator for a graduate course 'Engineering, Science and Society' at the Sheffield International College (University of Sheffield) and has provided lectures on the principles and practice of municipal waste management to undergraduates at Sheffield Hallam University. Kenisha has recently submitted her PhD thesis on Waste Management Policy and Public Involvement at Sheffield Hallam University. In the past, she worked as an Environmental Consultant and Engineer in areas such as climate change, solid waste management and energy and water use efficiency both in UK and Guyana, South America.

Joanna Elfving-Hwang
Jo was a Researcher/Developer at the Centre for Promoting Learner Autonomy until March 2010, when she took up an appointment as a Junior Professor of Korean Studies and Director of Korean Studies at Frankfurt University, Germany. She earned a PhD from the University of Sheffield (UK), and previous to her current appointment she has been a lecturer in Korean Literature at the University of Sheffield, and a Korea Foundation Postdoctoral Research Fellow at the Centre for Interdisciplinary Gender Studies at Leeds University (UK).

Chris Corker
Chris is the CPLA student intern. He 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. Chris began working with the Centre for Promoting Learner Autonomy in 2008, providing support to the small project scheme including third party evaluation through focus groups and questionnaires. One of his interests in teaching and learning is the development of students as collaborators.

Contents

Principles and practice of Learner Autonomy

Learner autonomy is recognised as an important, but often misunderstood concept, and for this reason this booklet aims to clarify the term in relation to how it is interpreted and promoted at the individual and institutional level. The Centre for Promoting Learner Autonomy (CPLA) conceives an autonomous learner to be one who has developed the capacity to take at least some control over their learning. They can identify their own learning goals (what they need to learn), their learning processes (how they will learn it), and how they will evaluate and use their learning. The concept of learner autonomy involves addressing a student's stance towards their learning, reflecting a move away from the idea of simply memorising or learning to apply knowledge to being able to synthesise and contextualise the learning in a way that creates positive learning transfer (Knowles 1990). Key to developing learner autonomy is enhancing the learner's metacognitive and reflective skills and processes.

In other words, the aim is to enable students to graduate with a holistic set of skills, aptitude and motivation to learn in a rapidly changing world: they will have the ability to recognise what they need to learn, and how to learn fast (Baume, 1994). Holec (1981:3) defines learner autonomy as 'the ability take charge of one's own learning'. The emphasis here is on the learner and developing their capacity for self-directed learning (Lee, 1998), with an emphasis on having control over their learning process.

Fazey and Fazey (2001:345) describe autonomous learners as people who are:

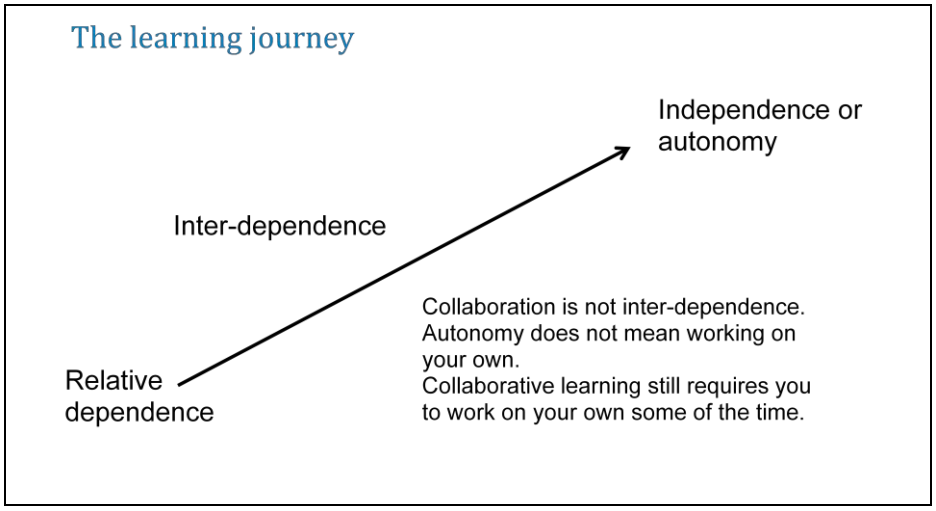
- intrinsically-motivated, perceive themselves to be in control of their decision-making,
- take responsibility for the outcomes of their actions, and
- have confidence in themselves.

In order to learn effectively and independently, it is necessary for students to have good information processing skills. They need to be able to develop strategies for finding, evaluating and using relevant information. Finally, they need to be able to manage their learning. These four concepts (a conceptual stance towards higher learning; a willingness to learn; information skills; and ability to manage their learning) are summarised in the table below and form the acronym SWIM. This is a useful metaphor as it implies that students must learn to swim for themselves, but that we will not let the students drown. The amount of support we provide will depend on how effective they have become at taking responsibility for themselves and how well they have developed relevant learning skills.

STANCE TOWARDS LEARNING	**WILLINGNESS TO LEARN**
Orientation to learning (what and why, reflective) A range of appropriate learning strategies Know how they learn and how to improve how they learn	Balance of vocational, academic, personal and social motivations to learn Intrinsic motivation Extrinsic motivation Goals Short - Medium - Long Confidence
INFORMATION	**MANAGEMENT**
Can identify what they know Can identify what information they need Develop a strategy for finding it (different resources) Can get the information Evaluate different sources of information for relevance and credibility Can use the information and add it to their knowledge base	Study Skills Planning and problem solving Evaluation & Metacognition Self-assessment Focus & 'stickability' Time and project management Balancing social, work and learning needs Assessment

In short, the learner possesses ownership of their own learning process, which in turn is manifested in changes in their knowledge, ways of conceptualising the world around them, skills and even emotional development. At an institutional level, the Centre strives to encourage effective orientation and a deeper approach to learning. Additionally, it promotes a culture of reflection and engagement that support students in developing an appropriate conceptual stance towards their learning in a Higher Education environment.

The process of developing autonomy is not quick. We can conceptualise the student experience as a journey from relative dependence to independence or autonomy as a learner. An interim stage may well be one of inter-dependence. Students will clearly need some form of support from tutors, but they may well rely on other students. Indeed, it is often desirable for students to work and learn collaboratively so as to encourage the development of teamwork and other professional skills. However, collaborative work still requires students to accept individual responsibility for their contribution to group work and for their own learning.



Engaging with principles of learner autonomy allows academic staff to rethink their role in supporting the learning process. Learner autonomy is in part about partnerships between learners and tutors, and as students make more decisions about their own learning processes, the more lecturers will become facilitators for that learning rather than directors of it and the source of relevant information.

The focus thus shifts the very balance of power and responsibility from the institution and the teacher to the learner, and ideally the learner should have full responsibility for their own learning. What this means in practice is that:

> *The teacher acts as a facilitator and a resource-person. Students are responsible for choosing and planning the curriculum, or at least they participate in the choosing. Learning is self-initiated, and often involves the process of enquiry and discovery; the learner is also responsible for evaluating the results. A difficult concept to grasp, at first, is that each individual is 100% responsible for his [or her] own behaviour, participation and learning. (Brandes and Ginnis, 1986: 12)*

Baume (1994:3) argues the idea of learner autonomy encompasses two main elements:

> *As a goal of education, the goal being to help students become effective self-directed learners, and as an education method, introduced for a variety of education, philosophical and economic reasons, perhaps operated alongside other teaching and learning methods, within more or less conventional types of course structure and organisation.*

There are various active learning and teaching approaches which certainly foster the development of skills and aptitudes that characterise an autonomous learner - such as enquiry based learning (EBL), problem based learning (PBL) or work-based learning (WBL). While 'learner autonomy' has occasionally been equated with the idea of 'independent learning', the concept itself is also very much related to the concept of collaborative learning

(Kohonen, 1992). Hence, group work or peer assisted learning can therefore be an effective way of fostering learner autonomy. This publication will give you some ideas of teaching and learning practices that allow students to learn more autonomously. It will also provide some concrete examples of teaching methods that staff at Sheffield Hallam University have engaged with in view of enhancing learner autonomy, and how this has affected staff's teaching experience, not to mention the effects it has had on the students' learning experience.

Incorporating elements of learner autonomy in a higher education teaching and learning environment has been recognised as good practice by HEFCE, and far from being a completely new development many lecturers are already engaging with some of these principles in their teaching practice. Paul Ramsden's report on the future of teaching and the student experience in HE to the Secretary of State John Denham highlighted the *need to maintain and enhance student engagement* (2008), and to counter the view that students should be treated as customers who have a sense of entitlement. Rather, he argues that they should be perceived as partners who are provided with opportunities to learn. This all highlights the need focus on the student as an active participant in the learning processes.

On a positive note, students who become autonomous learners are much more fun to work with: they ask interesting and often unexpected questions; they are motivated and often imaginative in their approach to tackle questions put to them (or ones that they have set themselves); they grow in confidence to express their views - and you might even find that your own students will put extremely interesting questions to you that you might want to research further. The case studies included in this book will demonstrate the positive enhancements to learning *and* teaching experiences for both students and staff engaging with concepts around learner autonomy.

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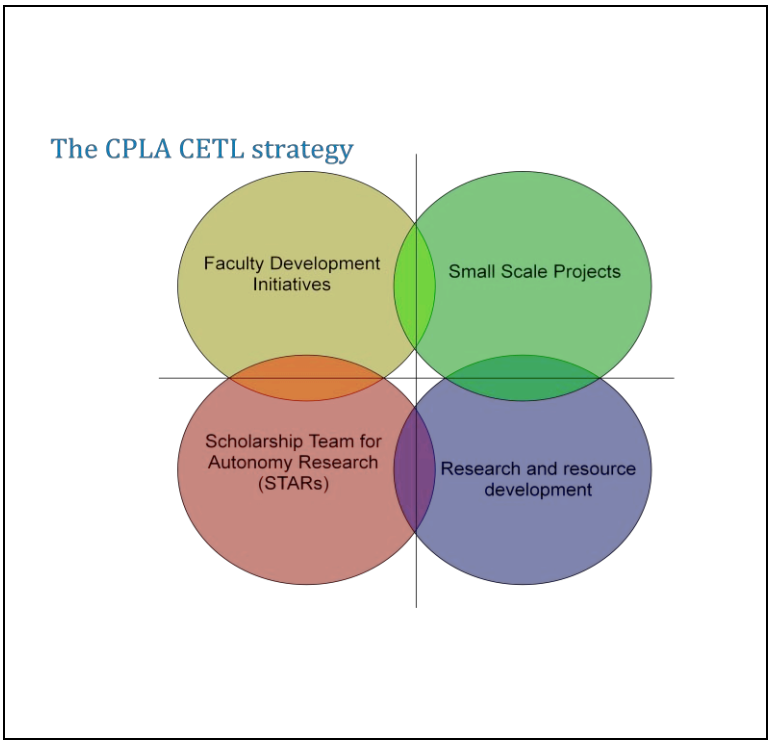
The CPLA small scale project scheme

The overall purpose of the Centre for Promoting Learner Autonomy (CPLA) is to promote learning and teaching practices which empower students to acquire responsibility for their own learning through promoting and innovating ways of enabling students to construct their own knowledge in partnership with tutors and other students. The CETL thus operates as a hub to foster innovative developments in actual teaching practices, and to promote a cultural change that aims to put the student at the heart of teaching and learning practices in profound and effective ways.

Many of the case studies in this publication arose as a result of our strategy, which involved four interlinked areas of development as shown in the diagram below. Through these activities:

- we facilitate the implementation of strategic initiatives in each of our four faculties;
- we stimulate, direct and support the development of a range of innovative teaching practices through our small scale project scheme;
- we enable a scholarly approach to the learner autonomy agenda;
- we develop and provide resources, supported by thorough research, evaluation and capturing the outcomes of supported development projects.



The small scale projects were initiated through a competitive bidding process. In February 2008, staff were invited to submit bids for project support and funding of up to £3,000 from CPLA. These were one-year projects that started in September 2008, and required staff to pursue approaches that promoted Learner Autonomy. The submissions followed a bid format, which included the headings in the table in the Appendix. Applicants were required to seek the approval of their subject group leader or head of department and were asked to consult with their respective Faculty Associate Director of the CPLA. These requirements assured that, in addition to meeting the bid criteria, proposals met with University, Faculty and Departmental strategies.

Through CPLA, 24 small scale projects were supported in the academic year 2008/9. This involved almost 100 members of staff and had an impact on approximately 2,500 students. CPLA project support was provided throughout the year. This included a series of workshops, action learning sets and 'at-elbow' support. The workshops addressed issues such as underpinning literature and scholarship of learning and teaching; the meaning of Learner Autonomy; project management; evaluating the student learning experience; and publishing your work. The action learning sets were developed to encourage a community of practice and to enhance a scholarly approach to the development work. At-elbow support ensured that CPLA was able to support the individual needs of project leaders. An interim poster seminar in January 2009 allowed all projects to share their progress and future plans, and a final symposium in July 2009 facilitated dissemination of the outcomes from projects. These dissemination events also reinforced the need for scholarly approaches to development and reinforced the community of practice. Guidelines and a framework were provided for the posters and final symposium, and these served as a first stage towards producing a final case study of the development project. Project leaders were supported in evaluating their innovations and in preparing their case studies. A number of project leaders also presented their work and findings at national and international conferences and in relevant journals.

This publication serves to support the work of CPLA in disseminating its work across the Higher Education sector. We hope that it will provide a source of ideas, all of which are evidence-based, for academic staff, support staff, educational developers, and senior managers. We also believe that it will be an inspiration for those throughout HE who believe in the value of active learning, enquiry based learning, and collaborative learning as a means of developing learner autonomy. This publication comprises 19 case studies which have arisen from the work of CPLA. Most have come from the small project scheme in 2008/9, although several of the case studies arise out of development work carried out between 2005 and 2007.

Appendix: The criteria and framework for the bidding process

Summary of proposal. (Include aims, objectives and anticipated outcomes.) How will partners be identified, trained and involved in the scheme? How will the new cohort be prepared for this engagement?
(max. 100 words)

Background/rationale for the innovation (include potential breadth of applicability/transferability of project) How will the partnership scheme benefit both groups of students?
(max. 100 words)

Project action plan (Give stages in implementation, *who* will do *what* and by *when*? Indicate extent of collaboration with colleagues and students)
(max. 250 words)

Benefits (identify the benefits in terms of student learning and promoting learner autonomy across the institution) (max. 150 words)

Corporate plan (identify how this project will address the goals established in section 2 of the corporate plan (improving the student experience). Particular reference should be made to recruitment, transition and retention) (max 100 words)

Evaluation (Specify how the aims, objectives and outcomes are to be evaluated.)
(max. 150 words)

Funding requested (Indicate purpose of funding: staff time, equipment, external expertise, travel and subsistence, materials, stationery etc.)

Supporting statement from your Subject Group Leader. (Please indicate in what ways the proposal is integrated with the faculty/divisional strategy for learning and teaching. Include any other forms of support which you will receive if this application is successful.) (max. 100 words)

Enquiry-based learning for Biology

BEN ABELL (B.ABELL@SHU.AC.UK)

FACULTY OF HEALTH AND WELLBEING (BIOSCIENCES),
SHEFFIELD HALLAM UNIVERSITY

Module Title: The Plant Biotechnology

Level of module: Level 6 (Third Year Undergraduate)

Support team: Jane Gurman (Biosciences tutor), Angela Stafford (external expert with links to biotechnology industry)

Abstract

The project aimed to promote learner autonomy through the application of enquiry-based learning (EBL) approaches to modules in a biology course. The project built on preliminary development of modules in plant biotechnology and sociobiology. A primary focus for the biotechnology module was the development of a proposed solution to a current biotechnology problem, which was undertaken by groups of students. Support was provided in the form of lectures in the early stages of the module, and then by workshops, which provided both skills underpinning the proposal, and a forum for reviewing development of the proposal. Some lectures were delivered by students, thereby building on previous learning experiences in sociobiology. Assessment focused on the proposal, including a previously prepared question in the final exam. New materials were developed for content, session plans, and assessment to implement the module design. These materials were largely successful and will form the basis of the module for other cohorts. Furthermore, core approaches will be implemented in additional modules in Biosciences, resulting in wider adoption of EBL strategies.

Background

Traditional teaching in Biosciences follows a lecture-based approach, which is tutor-centric and does not tend to emphasise learner autonomy. In contrast, Biosciences lecturers possess strong research backgrounds that are based on understanding and building new knowledge through enquiry-based approaches. To maximise the transfer of these skills and develop learner autonomy it seems natural to move towards enquiry-based approaches for module delivery (extensive resources can be accessed at: the Centre for EBL at the University of Manchester; and the Northwest Regional Educational Laboratory [1999]). Expected outcomes are that students will learn biology in a deeper and more coherent manner, promoting quality learning and the acquisition of stronger transferable skills (Kahn and O'Rourke 2005). The EBL expertise developed in these modules will be transferable to a wide range of modules across Biosciences and more widely in SHU.

The Biology course started in 2006, and there were 12 students in the first group, who have now reached their final year. Elements of EBL were already present within the course, and in particular a second year module Sociobiology. In Sociobiology, students worked in groups to research a chosen topic of animal behaviour, and presented their findings to the whole group, thereby developing core skills of enquiry. Thus, it was a natural extension to implement a final year module based on an EBL approach, which builds on preliminary development of modules in plant biotechnology and sociobiology. The specific objectives were:

1) Analyse module materials to identify areas for development
2) Prepare and implement an evaluation strategy
3) Involve external industry experts to enhance employability
4) Enhance links between research and learning
5) Train PhD students to support EBL groups

Objectives 1-4 were substantially met, with the overall outcome being the successful implementation of the new module.

Rationale

The main purpose of this project was to develop a new module for final year biology students on the topic of plant biotechnology. This is a new module based on learning through enquiry, designed to develop students' abilities in the subject area and overall attitude to learning. Some material had already been prepared, but most of the module content was created during this project, and the completion of module design was the initial goal. The other major goal was to evaluate the project to clarify the outcomes and ensure any success elements could be disseminated to influence the design of other Bioscience modules. The universal relevance of EBL across different subjects also encouraged us to attempt wider dissemination of our findings across Sheffield Hallam University.

The conceptual basis of the work stemmed from extensive literature on EBL and examples of practice accessed via the Centre for Excellence in EBL at the University of Manchester. EBL has been applied specifically to university bioscience education by Kerfeld in the US (Kerfeld; Kerfeld and Simons 2007). EBL encompasses a wide range of learning approaches, including problem-based learning and case-based studies. However, the common theme is that the learning is highly centred round the student, with tutors playing the role of facilitators. The approach adopts a constructivist philosophy (Holt 1970), whereby students build on their knowledge in a flexible manner that accounts for their background and interests and facilitates an easy transfer of theory to practice, thus building employability skills. Typically EBL employs significant group work to provide additional support from peers, and to add to the student-centred aspect of learning.

Problem-based and case-based learning are widely used in medical schools as they closely reflect the type of skills needed in medical professions, and are suitable for covering a wide area of knowledge (e.g. Boud and Feletti 1997; Spencer 1999). Other subject areas tend to

use other forms of EBL, which are adapted to the subject style. In this module, generic principles of EBL were adopted to allow student to direct the lines of enquiry and methods employed. One of the main reasons for basing learning on a process of enquiry was to develop valuable skills in independent enquiry and problem-solving that many students will find useful in future careers in science and technology. For instance, biotechnology companies require enquiry skills to design new products and devise solutions to technical problems. Students with a good knowledge and understanding of biology will have a platform for filling such roles, but would be much more prepared if they were better able to apply their knowledge and understanding. EBL places a greater emphasis on such application compared to conventional learning based on teacher-centred lectures. Since the module occurs in the final year, students enter with a strong knowledge base, albeit fragmented by the modular nature of the course. Thus, one of the goals was to promote the use of knowledge already gained and apply it in a more integrated manner to help students gain a more coherent perspective of their studies.

Our main objective was to incorporate the key strengths of EBL to promote strong autonomous learning of Plant Biotechnology. The process of enquiry and problem solving both individually and through peer groups was expected to develop learner autonomy. Students were encouraged to become less dependent on information passed down from tutors, and instead to acquire the skills to pursue independent enquiry. Tutors took on a more active role than that of a facilitator, providing ideas on how to approach a problem and offering guidance towards biotechnology problems, although still with the intention of promoting student autonomy. For example, tutors had extensive experience in biology research that was used to channel student enquiry and problem-solving into more relevant areas. This allowed more interesting and complex topics to be covered by providing support and a minimal level of constraint. Overall, the use of EBL was intended to make the best use of tutor skills to guide students in their development of autonomy.

> *The fundamental nature of science is imbedded in inquiry-based learning. Inquiry can be a very effective mechanism for better understanding the essence of science, its technical and reasoning processes, and the attitudes that accompany these processes.*
>
> *(Northwest Regional Educational Laboratory 1999)*

The approach

The Plant Biotechnology module is 20 credits and takes place in semester 1, with some overrun into semester 2. The schedule was set for a single 3 hour block each week, which included a 15-20 minute break at a convenient point. Planning for the module content was carried out with Dr Angela Stafford, who has worked in the plant biotechnology industry.

The core learning activity was a proposal to solve a current biotechnology problem, with all other activities linked into it. To provide some key conceptual information, a lecture series ran in the first half of the module, initially delivered by tutors, and then by students with defined content. In parallel, the remaining time (1-2 hours per week) was used for a number

of workshops to support the lecture preparation and proposal planning. Therefore, each block of 3 hours contained a mix of lecture and workshop.

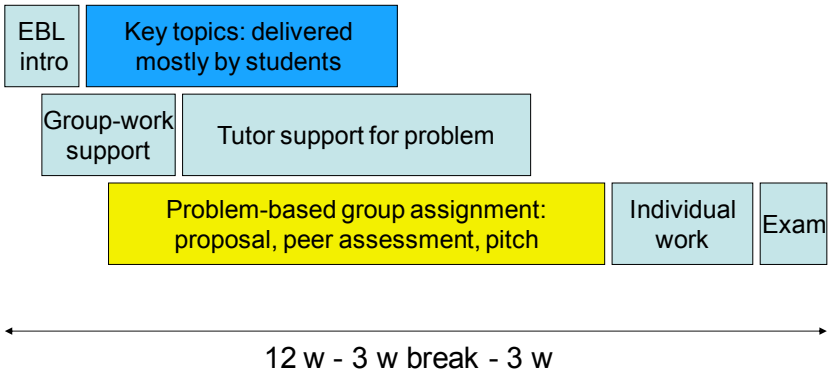


Figure 1. Overview of learning activities for the plant biotechnology module.

Group work was emphasised throughout the module, with each group of three staying unchanged throughout the module. To promote the functioning of groups, students used the 'Belbin analysis' to identify their typical role in groups and then used this to predict any potential weaknesses within the team. Although groups were chosen randomly by the tutors and were not altered, the reasoning behind this analysis was to raise students' awareness of their role within the group and help them to identify problems before they had any major impact.

The second half of the module consisted entirely of workshops to support development of the proposal, culminating in an oral presentation and written assessments. Workshops consisted of two main types: review and discussion of the proposal as it developed; and specific activities to provide input to the proposals such as literature searching and bioinformatics. Specialist support for these workshops was provided by guest tutors. The sessions were designed to be flexible and to provide tailored support for the group proposal, and more generally to encourage and motivate students.

We presumed students would have sufficient experience of independent study at Level 6 so did not expect them to have much difficulties with the approach, although potential problems such as group work and bioinformatics were countered by the provision of directed workshops in these areas. Tutors would also potentially find problems with facilitating the EBL style of learning, so we discussed how to provide the most appropriate type of support. The main strategy was to avoid providing any direct answers or suggestions to students, and instead to promote discussion and pose pertinent questions. This is traditionally practiced in biological research, so the move away from direct provision of information did not present a major challenge.

The strength of the EBL approach is that it unifies many of the topics that students have encountered previously, allows students to build on this knowledge, and develops analytical and creative thinking. The weakness is that less time is available to deliver new content, but this should be balanced by the more content-intensive nature of many other modules across

Biosciences. Therefore, the EBL approach requires some balance with other modes of learning.

The impact on students was expected to be: increased motivation, deeper learning of specific topics, and most importantly the development of skills that support application and evaluation of knowledge (Holt 1970; Whowell 2006). One specific impact was predicted to be better preparation for independent lab-based research projects that followed on in semester 2. These projects require the application of theory to tackle complex experimental work and in nature are closely allied to the EBL approach. Ultimately, EBL-style approaches are expected to provide students with the skills required to be successful in graduate study or in employment.

Assessment (teaching practice)

One dilemma inherent to EBL is how to assess the students, especially since most standard assessment methods are not relevant to EBL learning. For example, a typical exam tests a fixed body of knowledge and understanding, whereas EBL learning results in students gaining divergent knowledge. The skills of enquiry are also difficult to assess in an exam situation. Furthermore, it is difficult to determine the contribution that individual students make towards any group work. Therefore, we decided to assess some group work and then base individual assessments on activities arising from the group proposal. Assessment was focussed on the proposal, thereby ensuring that assessment was closely aligned with the learning activities. Whilst the proposal itself was produced as group work, the other assessments related to the proposal were performed individually. This individual assessed coursework comprised an analysis of the group work in terms of team dynamics and a critique of the proposal. A final exam also assessed individual students on all aspects of the module, including core knowledge, problem-solving ability, and a previously prepared (seen) question based on the group project. The remaining assessments were the student-delivered lectures and online multiple choice questions designed to promote learning of the lecture content. Overall, the assessment was designed to be closely integrated with the main learning activities, and to maintain a balance of group and individual assessment.

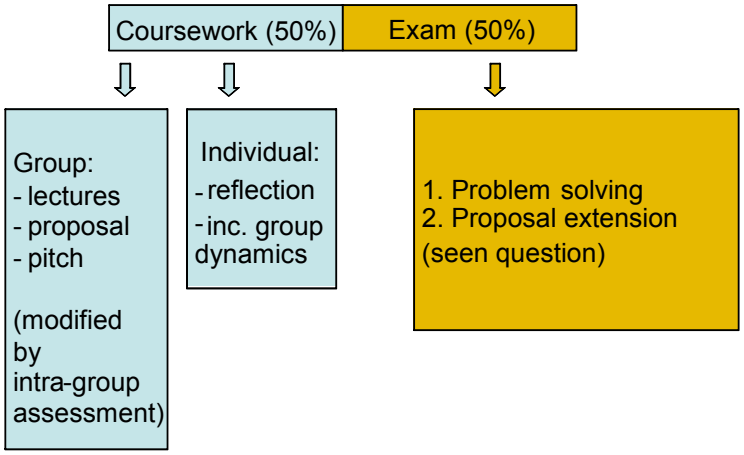


Figure 2. Assessment strategy for plant biotechnology module.

Discussion, summary and evaluation

The module ran successfully with a group of 12 students, providing positive outcomes in terms of performance and student satisfaction. All of the students passed with a range of grades from 51-83% and mean of 65%. These grades correspond to a high quality of coursework and exam scripts, and went beyond the core learning outcomes to highlight creativity and depth of enquiry. Most importantly, the exam grades were comparable to the coursework grades, showing that students had become capable of producing high quality individual work and had developed skills that could be employed in the exam. In particular, the problem-solving section was a test of the ability to apply knowledge and understanding to a novel situation, and some students gained full marks. The seen question was an extension of the group project work, and students demonstrated that they were able to use this experience to produce quality work individually.

Success was highly dependent on effective group work, which benefited from an introductory task and the Belbin analysis of team roles. The role analysis enhanced students' awareness of their own and other students' behaviour, and led to efforts to adapt to the requirements of the group. Groups did not always function effectively, but students generally perceived that their group produced more than they could have done individually.

Student feedback on the module was obtained halfway through with a focus group of randomly selected students. This highlighted an overall satisfaction with the learning experience, with some concerns about the group work and its potentially negative effect on grades. Students found that presenting lectures helped them to learn the content, but that it was difficult to learn from the presentations of other students. This difficulty arises from focusing on giving their own presentation and also from the minimal provision of notes, so this will be remedied by setting a prior deadline for submission of handout material. Students felt comfortable with the general approach of EBL, which may be due to partial use of EBL in other areas of the course.

A second focus group was conducted after completion of the module, facilitated by an independent person. Students made a number of key points:

- Learned effectively and were motivated to work hard for the module
- Benefited from the input of an external tutor with direct biotechnology experience
- Became more effective and creative by working in groups
- Took pride in creating an original proposal
- Developed core skills of research, communication, and presentation
- Gained confidence in tackling complex projects
- Drew on learning from a number of other modules
- Became more independent

Students thought the following changes would improve the module:

- Working in more than one group
- Providing more support materials for the student lectures
- Better access to textbooks
- Introduce a marked draft proposal to break the proposal into smaller steps
- More targeted support for bioinformatics aspects of the project (suggesting that the workshops are required, and may need to be extended in some cases)

In summary, the student comments suggest that the module is effective and has achieved its main objectives, and the module can be improved by making some minor changes in its organisation. The tutors also found the module enjoyable and an effective way to promote learning. The workshops provided the greatest challenge of tutor skills, requiring flexibility to deal with student needs at the time, and the adoption of more discursive positions. For example, during one workshop the students did not have sufficient written material to allow a full review process of their draft proposals, so we had a round table discussion of each project. The tutor needed to encourage critical evaluation of ideas without providing direct judgment, and promote new lines of enquiry. This was more difficult than leading students towards 'correct' answers, but was also natural because of the tutor's lack of detailed knowledge in the specific topic. This process mirrors a typical discussion amongst researchers at a scientific conference, where the answers are not known yet, and is widely acknowledged amongst researchers to be effective for stimulating ideas. This type of situation that arises in EBL shows how tutors can apply their research skills in the teaching arena, to support student learning.

Further development

The evaluation so far has been qualitative, so it would also be useful to gain some quantitative measures of student development. Summative evaluation has the potential to provide a more objective measure of the impact of EBL, but will only demonstrate definitive differences with sufficient student data. Therefore, student grades will be analysed to assess whether participation in the plant biotechnology module has impacted on their performance in a subsequent module requiring independent enquiry skills.

The plant biotechnology module will run again in the 2009-10 academic year, and in a very similar format since it has been deemed successful. Student feedback and tutor reflection has led to some organisational changes aimed at addressing the weaknesses identified. Key changes targeted are:

- pre-lecture submission of handouts for student lectures to enhance the learning experience for the student observers
- extra time between student lectures to increase the benefit of tutor feedback
- marked draft proposal to provide an early checkpoint for proposal development
- simplification of individual project assessment to remove overlap with the final exam

Student feedback indicated that more EBL would be beneficial, so this approach will be extended to a new module starting in 2009-10 called 'cellular control processes'. This module is 10 credits and is taken by final year students. Some of the structure from plant biotechnology will be used, with a research proposal at the centre of learning activity and assessment. However, one difference is that students will produce more individual work with some elements of group work, thus providing an opportunity to evaluate the value of group work. This module will also involve several other Bioscience tutors, and has the potential to spread the use of EBL across Biosciences.

Dissemination of our findings from this project will also continue within the Bioscience learning and teaching discussion group (LTActives), and more widely across SHU, which should facilitate and exchange of resources with other subject areas. Overall, the goal is to increase the EBL content in Biosciences and SHU to enhance the learner autonomy, and thereby the future prospects for students.

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Collaborative learning: supporting learner autonomy in Professional Education

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Abstract

Significant changes were made in a teacher education course over a period of four years to emphasise collaborative learning as an aspect of learner autonomy. These were informed by social practice theories of learning, including community of practice theory and scholarship and research on peer learning in higher education. The Mathematics Education Professional year brings together both undergraduate and postgraduate students with a wide variety of backgrounds.-Significant changes were made in course design. Particular features of collaborative learning in these developments included: an increase in group problem based learning tasks, the development of learning groups to allow for peer support for research, reflection and engagement in educational enquiry and peer academic tutoring. Student teachers and school based mentors were partners in these developments, which were informed by student teacher evaluations and focus group interviews. Issues are considered that have arisen both in terms of collaborative learning groups and involvement of student teachers as partners in course development

Introduction

This case study reports on a series of interrelated course developments made over a period of four years. The course development followed an action research model, with each year corresponding broadly to one action research cycle of identification of issues, planning, action, evaluation, feedback/noticing, and reflection on the issues. The term 'broadly' is used as student/teacher feedback and tutor reflection were both used to adapt or modify aspects of changes made during the action phase of the cycle.

There have been three principal theoretical influences on course design; social theories of learning, community of practice theory and complexity theory. These, in different ways, inform our approach to collaborative learning. Social constructivist and social constructionist approaches to learning are important theoretical perspectives on learning that generally support the learning approach on all Mathematics Education Centre's courses are (see for example, Bruner 1996, Mercer 1995). In keeping with this, we model ways of teaching and learning that emphasise social aspects of learning. This involves a focus on the importance of discussion and designing collaborative learning tasks that support this.

Community of practice theory (Lave and Wenger 1991, Wenger 1998, Wenger et al 2002) also influenced developments. Our aim is to encourage the development of a learning community defined as a community of practice where learning is a central aim of the communities' practices (Boylan 2004). In particular, we seek to challenge student teachers' existing beliefs about learning mathematics, modelling the course as a collaborative "joint enterprise" (Wenger 1998) of 'learning to teach mathematics for pupil participation and engagement'. We create opportunities for developing a strong sense of identity and shared purpose through 'mutual engagement' (Wenger 1998) on collaborative learning tasks. For example, a key experience early in the professional year is for each main teaching group to go to a partner school to provide a shared learning experience arising from a common task, developing a game for a group of pupils. We also seek to develop a 'shared repertoire' (Wenger 1998) by encouraging a common way of speaking about particular aspects of classroom practice as well as introducing student teachers to the shared language of the mathematics education community that is found in scholarly or research writing in the discipline. Thus the collaborative aspects of teaching as a professional discourse community are emphasised.

The third influence on course design arises from ideas that draw on theories of complex adaptive systems and learning systems (see for example Davis and Stimmt 2003). Important here are practices that encourage a great deal of interaction between student teachers that allows for a sense of 'collectivity' to emerge in the community. The different experiences and perspectives of individuals can contribute to community learning as well as to individual learning. Key ideas include the notion of a formal and informal system. We create a formal system of learning groups in order to encourage collaboration. These learning groups are not friendship groups. But we also expect and encourage the friendship groups and other connections between students to act as an informal system that binds the learning community together. The interface between community of practice theory and complexity theory has been used to emphasise the importance of the small collaborative learning group as an intermediate small learning network bridging between individuals and the larger community.

Background

The Mathematics Professional Year is a complex course. The course includes students on four different courses.

As well as students on the various courses, (referred to here either as student teachers, or simply students) other key actors in the Professional Year are university tutors (the teaching and academic tutor team based at SHU) and school based mentors (teachers in schools who are the lead teacher in the mathematics department in terms of supporting the students).

Course and description	Previous study before professional year	Backgrounds	Approximate percentage of PY students
1PGCE One Post graduate study.	Mathematics graduates or related degrees e.g. Engineering at SHU or elsewhere	Approximately half recently finished degrees, half career change	40%
2PGCE Two year post graduate conversion course.	Graduates with some mathematics in degrees but not enough for 1 year entry. 1 Year of study of mathematics in the mathematics education centre	Very varied in terms of age and ethnicity and previous academic attainment	20-25%
2BSc Two year degree route	One year study of mathematics at H level before joining Mathematics education centre One year study of Mathematics alongside 2PGCE at SHU.	Degree 'changers' - Perhaps has studied one year of a degree elsewhere or with HND and career change	5-10%
3BSc 3 Year degree route	Two years study of mathematics with the Mathematics Education Centre at SHU in an educational context	Some mature students but majority usually come from Post 16 education	30%

The Mathematics course is itself part of a large secondary teacher education programme, with students studying to teach twelve different school subjects. In addition all students take a General Professional Studies module. Three of these subjects, PE, Engineering and Design Technology, are taught by colleagues in other faculties (HWB and ACES respectively). Courses for students becoming teachers of different school subjects have distinct traditions and practices. This reflects secondary school culture. This means that agreeing change across the programme is a complex and sometimes slow process. In order to keep alignment with other subjects in the programme, individual subjects are constrained to a considerable extent in how they organise their courses.

During the Professional Year student teachers spend 120 days on placement in school with approximately 45 contact days at SHU. The expectations and needs of school mentors, senior liaison tutors and other teachers who support students in school are very important for University tutors to consider in preparing students for placement.

Another central element to the professional year is that initial teacher education takes place in the context of a national framework of competence based skills, the Professional Teaching Standards (TDA, 2007). All beginning teachers are assessed against these standards in order to qualify to teach and so their content is necessarily a significant influence on University courses. The standards offer both 'affordances and constraints' in terms of developing the course, often aspects of the standards are simultaneously an affordance and a constraint. For example, they offer affordances in that they provide a language to speak about teaching that is shared by school based mentors, student teachers and SHU tutors. However, at the same time this language is restricted in terms of the extent to which it allows for discussion about significant aspects of teaching and learning, such as how learning happens. Similarly, the standards call for student teachers to demonstrate collaborative skills and thus support and justify the teamworking approach on our course. However, the grading of student teacher competence can act as a barrier to collaboration with mentors and generally supports a culture of comparison which can act as a barrier.

Taken together these different elements in the Professional Year constrain both the extent and pace of change in terms of promoting learner autonomy and collaborative learning. At the same time aspects of the course, such as the development of teachers to be independent reflective practitioners require students to develop learner autonomy.

Rationale

Over a period of four years the mathematics education professional year course has seen significant changes. Course development was supported by a TQEF funded project 'Enhancing Continuity in the Professional Year' 2004-2006, a CPLA project, 'Participation and non-participation in learning communities', and directly from Post-Compulsory and Secondary Area (PCASO) development time funds.

There were five significant factors that encouraged us to make changes to the course. Firstly, there was a significant contrast between the level of learner autonomy required of the students whilst at Sheffield Hallam and that required when they were placed in schools. At Hallam, students had a very full time timetable of tutor led sessions. The expectation in schools was that students should very quickly begin to take responsibility for classes and begin to work as independent professionals, all be it with support from mentors and experienced teachers. Secondly, an important feedback from school mentors was that some students found it difficult to work collaboratively in departmental teams and in particular to work closely with their mentor and receive advice constructively.

Thirdly, there was also a lack of understanding in schools about the detail of study at Sheffield Hallam. In one meeting with mentors during the project it became apparent that the mentors' assessment of the strengths and weaknesses of the SHU taught part of the course was in some cases an inversion of the tutors' assessment of our strengths and weaknesses. In a situation where it is difficult to secure enough high quality school placements for students, relationships with mentors are very important as is their view of the quality of our preparation of students. We summarised this issue as a lack of continuity

of learning experience between University and work based learning. A fourth motivation, and connected to the previous one, was our desire to prepare students better for a school world in which team working and collaboration are increasingly important.

The fifth was that two groups, the continuing and the 1 PGCE students, were largely taught separately by overlapping, but distinct, small tutor teams. Each group had one lead tutor who was responsible for course programme, session planning and teaching as well as academic tutoring. They were supported usually by one other tutor. A significant amount of tutor led sessions were designed independently leading to some duplication of work and so impacting on effective use of limited staff resources. The Mathematics Education Centre has a long tradition of supporting collaborative group work. However, in the Professional Year collaborative learning was largely restricted to taking place in tutor led sessions, rather than outside it. This too raised questions about effective use of tutor time. Student evaluations also indicated student concern about differences between the groups' experiences. Students in both groups pointed to examples of the 'other group' having, in their view, a better experience in particular areas. A particular concern was differences in verbal guidance or preparation for assignments that could lead to possible differences in outcome and inequity.

The approach: changing the learning experience

What has changed?

Later I give an account of the way in which course developments happened. First to give a sense of what these changes mean for student teachers on the course I offer two constructed accounts of important aspects of being on the Professional Year course: one for a student teacher in 2004/05 (Box 1) and one for a student in 2008/09. Not all the changes experienced by the student teachers are directly related to the development projects cited above. For example, the introduction of Master Level credit is part of a whole programme development. Some changes are more indirectly related. For example, in a Professional Year tutor team, a mini community of practice (Wenger 1998), emerged with a clear identity as the course was developed and redesigned. The creation of this team has allowed for different and improved systems for supporting struggling students whilst on placement. A central thread to the many changes that have taken place has been to create possibilities for greater independent learning in particular through collaboration with other students.

Box 1: Professional Year Student 2004/05

I am in the same teaching group for all my sessions. I do not have much contact with students in the other group. I see them around but except for GPS sessions I don't work with them or talk to them, although I might find myself paired on teaching practice with one of them.

I am taught mainly by one tutor with some support by a second tutor. The other group is taught by a different tutor. When I have chatted to students in the other group it seems we have

similar but slightly different sessions and at different times.

There is a blackboard site. It is mainly used for storing information.

I have three mathematics education assignments. They are assessed at level 5 or level 6. The assignments are about planning, analysing assessment data and writing about events that happen in the classroom.

I have an academic tutor who I meet with in a group. During tutorials the focus is on information exchange. We come back to University once during teaching practice.

When I am in school I have a school based mentor. The mentor has limited information about what I do in University. There is a school based tasks booklet. I have quite a lot of freedom to choose how I lesson plan. Sometimes this can be confusing moving to a new placement where school expectations might be different.

Box 2: Professional Year Student 2008/09

I am part of different sized teaching and learning groups. Mainly I am with either the 1 Year PGCE or continuing students. We have a joint timetable and tutors teach the same titled sessions to each group. Altogether I will have a seminar or workshop with one of 6 tutors plus traditional sessions led by teachers during school visits. Once a week we join up with the other group to have a whole cohort session. At the start of the year we do a 'getting to know you activity' in this whole cohort group.

Around twice a week when at University instead of a workshop session led by a tutor I work in a learning group of 4 to 6 students. There are three types of work I do in groups:

sometimes we have a practical task to work on together such as preparing a short activity to do with a group of pupils in school, or

sometimes we work on a learning group reading task. We have individual reading and reflection tasks to do, which we then share and continue to work on in our learning groups. These learning group reading tasks support our academic study

sometimes we meet to prepare for academic tutorials. We are given guidance on peer academic tutoring. In peer academic tutor sessions we look at and give feedback on each other's teaching practice file, or drafts of each other's academic work. We work together on developing enquiry skills and share and discuss our enquiry proposals. We then meet up with our tutor as a group and discuss how the group peer tutorial session went and issues that have come up

We come back to University twice during each teaching practice.

There is a blackboard site which has a set of discussion boards with forums related to issues in school and to academic work.

I have three mathematics education assignments. If I am a PGCE student I have the opportunity to gain up to 60 M level credits. Assignments are about planning, reflecting critically on themes in mathematics education and carrying out a 40 credit point educational enquiry. I have lots of opportunities for self, peer and tutor formative assessment and feedback.

When I am in school I have a school based mentor. My mentor is given quite a lot information on the course including copies of my academic assignments and some of the reading associated with them. Everyone on the course starts by planning on common templates and uses the same language to talk about lessons. Mentors have information about this.

As well as my teaching practice school, I also go into 2 or 3 other schools as a part of a larger group with other students. Often I do preparation for, or reflect on, these visits in my learning group.

How has it changed?

The general approach to change has been to increase the opportunities for collaborative learning. Our belief is that our ability to collaborate is not set by a fixed learning style but is itself an example of social learning. We recognise the need to scaffold students' learning with increasing levels of challenge in terms of the nature of collaborative tasks set. In doing this we are also scaffolding the challenge for the group as it develops from a collection of individuals to, hopefully, a learning community with a distinct identity. We also explicitly address issues of group learning and the challenges and benefits of it, both to support our students as higher education students but also to support our students as beginning teachers. It is also important for the success of the independent group tasks that they build on active collaboration in tutor led sessions. A common approach to collaborative tasks is a model of individual work on a task before group sharing.

To support the development of community, we have offered a range of innovative learning experiences. For example in a session called ‘Presence in the classroom’ students work in a movement studio, participating in mathematical and non mathematical movement activities that are intended to have a team building effect. In some workshops and seminars the students are expected to move frequently in the room to work and discuss with many others. Often this might happen in a 'cocktail party' format with students moving around the room having short conversations with each other whilst standing.

There has been an increase in opportunities for student teachers to take responsibility for their own learning. This has required the development of sessions that allow for the

formation of groups that have a diverse range of learning preferences and team roles. It has also been necessary to produce guidance to support independent learning activities. Such guidance and task descriptions have been continually reviewed and refined.

In developing peer and self assessment strategies, we have modelled an approach to self assessment. We offer examples of reflection on teaching sessions informed by academic literature and reviews of key literature. Students then engage with us in assessing these examples in a structured way as a prelude to self and peer assessment in learning groups.

Course development has involved an expansion of the roles of both tutors and students. For example, in addition to conducting academic tutorials with students, tutors now facilitate peer academic tutoring. Students now have a role of giving feedback on each others' work in a more structured and focused way. This in turn calls for students to develop activities specifically on giving feedback and on the development of the social and personal skills needed for collaborative learning.

How did we make the changes?

The development of the course has not happened in a linear fashion or according to a predetermined plan outlined at the start. In keeping with the theoretical perspectives that have informed the developments, such as complexity theory, change has come as a sometimes 'messy' process that is part of the richness of practitioner research and change. Those who have carried out action research projects will know that the reality of the way in which scholarship, experience, action, reflection, evaluation, external pressures, team debates and so on, influence each other in a way that is not represented by a tidy diagrammatic action research cycle. In that sense the course has evolved through a series of adaptations to particular issues or circumstances.

An example of this evolving approach has been in the development of the learning foci of collaborative learning groups. These began as groups who came together to carry our practical or problem based tasks such as designing a resource or creating a lesson plan for a specific purpose. We then added in the peer academic tutor functions including formative assessment. The introduction of a more extensive range of reading tasks was a response to the move to M level assessment in 2007/08. Following evaluation we have reduced the number and extent of these tasks in 2008/09.

We have drawn extensively on the team's experience of collaborative learning in mathematics classrooms, we have also informed our practice through existing scholarship and research (for example Jacques 2000 and Falchikov 2001). Over the four years, we have tried various models to group students. We allowed a great deal of freedom so, for the continuing students at least, they have worked largely in friendship groups. We have placed students in groups that have been predetermined by the tutor and asked them to work in these groups for every session. There is a limited amount of research that indicates tutor designated groups may be more productive than student chosen groups (Falchikov 2001). However, our current approach is to allow freedom to choose other group members with

certain constraints that mean the groups are self chosen but it is unlikely to be only an existing friendship group. In 2008/09 we have begun to use Belbin Roles as one of these constraints.

It has been important to value a range of voices in the developmental team, including those who urge more radical change and see the benefits of what could be, and those who are more cautious and know the benefits of what already exists. Equally important has been that this diversity has been coupled with shared values and purposes within the team: to support beginning teachers to learn to teach for pupil participation and engagement. We have supported each other as tutors in developing the new roles and learning activities that course developments entailed by collaborative planning and increasing opportunities for team teaching.

It has also been important to engage school mentors in partnership. A formal example has been the involvement of mentors in a curriculum design team that initiated many of the changes and contributed to the development of a new approach to developing students' lesson planning skills. More often this contribution has been informal through extensive discussions about different aspects of students' development as issues have arisen in particular cases.

Evaluation and benefits

Student involvement has been central to course development. This has included established forms of evaluation such as from course representatives and end of year evaluations. In addition, we have used 'real time' feedback, by having short feedback activities at the end of sessions. In this we modelled good assessment for learning practice that we hope students will translate into their own practice in schools. We introduced an interim course evaluation to give students the opportunity to shape the content of the second block of time at University rather than delaying changes to the following year after end of year evaluations. Because an important purpose is developing community we have used a survey designed as a measure of community feeling in a group of learners (Rovai 2002). There are issues about the reliability and validity of this instrument, however, it has allowed for comparisons to be made between cohorts year to year. During two years of the course, groups of students have been interviewed and 10 students attended a half day workshop which led to the production of a summary of important factors which contribute to the success of collaborative learning groups. This document has been used with students in following years as a prompt for reflection on group learning.

Although these additional evaluation activities have been important, perhaps of more significance has been a willingness to listen carefully and critically to the students' voices about the course design and content, regardless of whether it is offered as formal or informal feedback. This does not mean necessarily accepting everything all students have to say. It is important to use the same skills of critical reflection that we encourage in our students in considering student feedback. For example, until recently there was considerable inequity in the financial support for PGCE students and BSc students in terms

of government funded bursaries (there is still inequity but it has been reduced). Resentment about this inequity for some of the of BSc students in one particular year led, in the tutors' view, to a more general negativity about some aspects of the course which was in contrast to the experience of other students. Having a range of evaluation and research tools helped us to be able to enquire more deeply into reasons for students' engagement or lack of it.

In any case what the various evaluation activities have made clear is that not all students say or want the same thing. However, it does mean considering that the issues that may arise for students as they negotiate what are sometimes gaps and contradictions between the learning experience at University and the learning experience in school are as much if not more our responsibility than the students or the schools. Sometimes there is little that can be done in the short term about these contradictions and gaps other than to engage the students in conversation as partners and fellow beginning professionals and so to make these issues further opportunities for learning about the complexity of education and teaching.

Relating issues of evaluation to the action research model, we have focused on considering the different information gained by evaluation as offering feedback that requires critical reflection. In this the development of a team of tutors as a collaborative professional learning community helped this process of critical reflection as multiple perspectives were represented.

Because of the extensive evaluation activities and feedback from ex-students and schools that employ our students, we can identify a number of significant benefits for students:

- A greater sense of a learning community
- The opportunity to work with and learn from students in the whole cohort
- The opportunity to learn in a small collaborative learning group
- Development of group work skills
- Clearer guidance about key professional skills including lesson planning, leading to greater learning in these areas
- Greater use of VLE
- Experience of the approach to teaching and learning of a wider number of tutors
- Greater consistency about use of language
- More consistency and equity in support of assignments including more formative assessment

Benefits to tutors include

- More effective use of staff resource
- Clearer guidance for academic tutoring
- Improvement in reputation of students' preparation helping to increase number of placements

- The development of a 'Professional Year Team' as a sub group within the Mathematics Education Centre team.

Benefits for schools include

- Clearer shared expectations of students
- Improvements in students overall ability to receive feedback and work collaboratively with mentors
- Positive feedback on the quality of our students as they become newly qualified teachers including a significant number who quickly take on leadership roles in their departments

In addition the changes in the course have helped to further improve the reputation of the SHU professional year course and this has fed into increase number of student placements.

Discussion of dilemmas, tensions and unresolved issues

Although there have been considerable benefits from the course there have been costs as well. When the students were taught in single groups by only one or two tutors they had the opportunity to create stronger bonds with these tutors. These tutors were responsible for most teaching and tutoring and assessment of the students, and arguably they had greater knowledge of each individual, than tutors will have of the current cohort. It is also important to recognise that there already was a sense of a learning community within the teaching groups before these course developments; one sort of learning community has been replaced by another with students now spending time between three different sized learning groups.

During the development process interesting tensions emerged in terms of promoting learner autonomy. We wanted the students to take on more independence for their learning but to do it in collaboration; this meant promoting a more uniform approach in some areas. For example, the previous way of developing lesson planning skills was through a tutor-led session in which students reflected on different styles of lesson plan. After this session students were encouraged to adopt one of these styles or to develop their own. Early on in the development process, following discussion amongst tutors and with mentors and students, the tutor team took the view that this was an inappropriate amount of freedom to offer students in their first few weeks of teaching and the autonomy could be refocused into a more productive area. By requiring students to all use the same lesson plan proforma at the beginning of the course, the focus shifts from the style of planning to the substance of their approach to teaching and learning, selection of resources and so on, and developing a common language, or a shared repertoire (Wenger, 1998) to discuss classroom practice. These we believe are more important areas at this stage of their learning in terms of developing and exercising their autonomy as teachers. The influence of social constructionist theories of learning and the concept of scaffolding will be apparent here. In addition a more uniform approach to lesson planning style means that students are more easily able to engage in self and peer assessment of the lessons plans. The focus is now not

on individually developing their own lesson plan proforma or style but on collaboratively developing and sharing a number of plans for lessons. Essentially we want to support the students in the exercise of autonomy in the areas most appropriate at this stage in their professional development.

The move to greater independent learning has meant a reduction in the number of tutor led sessions. This has involved difficult choices about what to include and what to leave out. Particularly when leaving out sessions which, if initial teacher education was as long in the UK as it is overseas, we feel would be vital to a teachers' preparation. There is also a change in tutors' role, and so identity, as the nature of their relationships with students begins to change. Given this, the evolutionary approach to change described above has been important.

Restructuring assessment to promote collaborative learning and peer and self assessment foregrounds some of the tensions and contradictions that can arise in developing greater learning autonomy in this way. In order to create opportunities for collaboration and peer learning on assessment tasks, it is necessary to be more directive about how and when students engage in tasks. For example, peer assessment of a lesson plan is much easier if done on the same proforma. In order to allow for learning group discussion of enquiry proposals, students have to be required to hand in work by a certain dates. Such paradoxes and contradictions may in the end be unresolvable.

An individual student's success is in part dependent on how well the group interacts; a factor that is only partially influenced by the individual student or the tutor. Support is given in collaborative skills and issues that arise can be addressed through group tutorials. However, there are many other factors during the professional year that similarly cannot be directly and immediately controlled by student or tutor. Whilst the programme aims to ensure the quality of the student experience, inevitably the support students get, the relative level of challenge of classes taught and more everyday, but nevertheless important, issues such as travel distance to placement inevitably varies. However, by having a mixture of learning experiences including group learning, differences of experience in different areas can be compensated for in others.

Future developments

The development of collaborative learning is on going. As stated earlier in 2008/09 Belbin team roles are being used to support the process of forming collaborative learning groups. Rather than using the more usual more passive questionnaires, action methods (Weiner 1997) are used to allow students to identify their relationship to Belbin roles and having a balance of roles in the groups is a key constraint on group formation. This will be evaluated later in the year. Connected to this is our intention to introduce some form of self and peer assessment of their group work skills.

During the time of the course developments, Mathematics Education moved to City Campus. This led to students raising the issue of being able to find suitable accommodation to carry

out learning group tasks. In addition some students suggested that it might be useful to have tutors on hand when learning groups were meeting. Due to timetabling processes we were unable to address the issue properly, but we are considering timetabling large rooms when learning group times are indicated and possibly arranging to have a single tutor available for the whole cohort for some of this time, to support individual groups, particularly around any issues that may arise around group process.

In 2008/09 Mathematics was also part of a cross subject project supported by the CPLA called 'Developing enquiring teachers through peer group learning'. This involves tutors and students from Mathematics, Science, RE and English Education. Details of this project can be found at http://extra.shu.ac.uk/cetl/cplaprojectsmain.html

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Promoting learner autonomy and creative engagement in first year Engineering students through media

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Abstract

This project builds on the premise that first year undergraduate students enter higher education with a high motivation to learn and to adapt to new ways of learning that differ from their previous learning experiences (Fazey and Fazey, 2001; Yorke and Longden, 2008). The central idea was then to give engineering students a challenge that would allow them to engage creatively with an 'authentic' learning task that would encourage them to develop a greater degree of learner autonomy. Ultimately, this positive engagement was seen as key to creating greater level of enthusiasm among first-year engineering students for their chosen degree course. Moreover, while learner autonomy and creativity characterise an ideal engineering graduate, it was felt that these qualities are typically less emphasised in engineering education itself, and this project also sought to address this obvious shortcoming.

This case study therefore presents the learning, teaching and assessment methods used in a first year engineering undergraduate module, with a view of tapping into what are perceived as first-year students' intrinsic aptitudes and motivations to learn actively and creatively. The aim was also to encourage students to take responsibility for their own learning processes, improve their confidence as new learners in Higher Education and so to improve module pass rates, and ultimately, student retention. In this case, video and media production were introduced in the module to allow engineering undergraduates to take a non-traditional approach to learning.

Background and Rationale

The module ('Materials, Manufacturing and Environmental Engineering') that the project focused on, had previously been taught over two semesters through a very traditional method which consisted of series of keynote lectures, followed by seminars and practical laboratory classes. Level 4 (first year) students enrolled on the BSc Automotive Technology

and BSc Engineering Design and Innovation degree courses are required to take this module as part of their degree.

While some problem-based learning through case study exercises had been undertaken by previous cohorts of student during Semester 2, attendance rates were low and the first-time pass rates remained at a less than satisfactory level of 75%. Moreover, the exercises appeared not to develop learner autonomy in first-year students, even when this was identified as one of the key learning outcomes of the course. This appeared to be due to the fact that the exercises were technically prescriptive and very much tutor-led, and allowed students very little control over the learning task itself, or the way the task was completed.

It was therefore decided that a new approach that would encourage students to take the initiative and lead in exploring an engineering problem, in a hope increasing levels of motivation and learner autonomy. Drawing from the definitions developed by the Centre for Excellence in Teaching and Learning (Promoting Learner Autonomy) at Sheffield Hallam University, the characteristics of an autonomous learner were conceptualised as:

- Critical thinking skills
- Self-awareness and self efficacy
- Taking responsibility for one's own learning
- Confidence
- Working creatively in complex situations (CETL bid, 2004)

To develop these qualities in first-year undergraduates, the module organisers decided that the course should be, to a significant extent, learner-led so that the students would have a real opportunity develop the above qualities as learners (see Peters, 2004). One way of allowing this development to take place, was to allow students to learn through processes of social interaction while working in groups. The module leaders also wanted to capitalise on student's existing skills and competencies in using information technologies, which students now often 'take for granted and integrate them seamlessly into their daily lives' (Caruso and Salaway, 2007). In particular, as students in mainstream education are becoming increasingly knowledgeable and proficient in creating and up-loading digital media[1], it was felt that these resources are bringing about new opportunities in the way teaching and learning is delivered and managed in higher education. Finally, the module leaders wanted to make the most of the fact that most first-year students are generally positive about their first year at university (Yorke and Longden, 2008) and are equally willing to adapt to new learning styles at this stage than during the preceding years when their ideas of what higher education is like is already formed (Fazey and Fazey, 2001).

The main aim was therefore to enhance student retention through improving student motivation and engagement, as well as fostering creativity and confidence in first-year

[1] MySpace' and 'YouTube' are just two examples of free user-generated on-line video sharing. Recent studies conducted by JISC (2007) and ECAR (2007) show that those who do enter Higher Education tend to have higher expectations, and are much more skilled compared with their predecessors.

engineering students through enquiry and authentic learning. To this end, students were asked to produce a digital media presentation on an engineering-based issue. The rationale behind asking engineering students to engage with visual and digital media was to offer them a creative opportunity to move beyond their 'comfort zone' through giving them a challenge that did not necessarily directly relate to their chosen topic of study. However, the idea was not to turn engineering students into media students, but to give them a task that required a considerable amount of background research and creative thinking in order to produce a video clip that was grounded on solid subject specific knowledge and understanding, but simultaneously presented in an 'easily-digestible' format.

This was a considerable challenge for students who had typically just less than a year before finished their 'A'-levels exams and felt confident about studying independently to pass an exam, set in a familiar format. For many, the prospect of learning to work collaboratively (and yet autonomously in that there was no familiar exam format for them to study for) was a challenge. They were therefore required to 'think outside the box' in that while the subject topic was directly relevant to their degree course, none of the students had previously had an opportunity to approach and showcase an engineering-related learning task in this way.

As well as developing skills in media production, this was also presented as an opportunity for students to develop other key employability skills, such as presentation techniques, project management and communication skills whilst working collaboratively and effectively in groups.

Teaching Practice

The first semester of the two-semester module was taught in more 'traditional' way in that teaching consisted of lectures and seminars, which gave students grounding in the study of engineering. The new learning and teaching approach took place in the second semester over a period of twelve teaching weeks. The main difference was that students were asked to be more autonomous and self-directed in their learning. The cohort was divided into two groups, which in turn were divided into smaller groups of no more than five students. The small groups were expected to work on their projects independently and in collaboration with their group members. The two tutors involved in teaching this module met with the groups every two or three weeks, where the students could discuss their progress and raise any issues that they might have with regards to their project.

There were two types of project work that the students were asked to choose from:

Video presentation: One half of the first year group of students was required to produce short video clips (of less than two minutes) related to the theme of 'Materials, Manufacturing or Environmental Processes'. This involved filming in the laboratories to capture some actual materials engineering processes. These students were then introduced to basic digital media

skills through a series of lectures on video and media production, such as camera skills, the 'grammar' of television, interview techniques and editing skills. The resultant clip (or asset) was embedded within a PowerPoint presentation, and located within the Blackboard Virtual Learning Environment (VLE) for other students to view.

Brief: The second half of the student cohort covered the theme of 'Engineering Disaster Management'. As part of their task, during the first two weeks of the semester the students were required to develop a half page 'brief' related to an engineering disaster that had happened anywhere in the world, on real-life topics such as 'Why did the Twin Towers collapse after impact?' Or 'The NASA shuttle disaster'. The brief was developed during the first two weeks of the semester. This brief had to:

- give the background to the disaster and where it fits within the context of materials and/or manufacturing and/or environmental engineering;
- define the project/problem, provide details of the outcomes/solutions (particularly in relation to future prevention); and
- present a work programme or project plan to include how they would find information, the type of information, responsibilities and team roles for the different aspects of the project.

The final piece of work also involved students having to download pre-edited video clips from the internet to use as visual aids in their presentation.

Both groups of students presented their projects at the end of module 'Student Conference'. An external speaker was invited from industry to deliver the keynote on 'Engineering Disasters'. This added a level of formality and allowed students to get a feel for a 'real-world' conference event.

Students presenting at the end of module conference

Support

Because the students were not used to this type of assessment, it was deemed essential that they would be well supported throughout the semester. The students were supported and prepared for the project work in a number of ways. A series of seminars on video and media production skills was provided during semester 1 and then again in semester 2. Scheduled drop-in sessions were also provided, where students could raise and discuss any relevant issues with the tutors.

In order to allow the groups to build on each group member's strengths, students were also introduced to the Belbin's description of roles within an effective team (2003) at the beginning of the semester and before embarking on researching for their assignment. Students then undertook a self-perception analysis of their Belbin team role and were encouraged to reflect upon this analysis in assigning roles within the group.

Assessment

The assessment for the module involved:

- Student conference presentations (25%)
- A time-constrained, multi-choice test based on the research findings presented at the student conference (50%)
- Report (25%)

The end of module 'student conference' was held during the latter part of semester 2, but early enough to be able to have the in-class test a few weeks afterwards. To ensure that the students engaged with their peers presentations, questions based on the knowledge disseminated at the conference were included in the test.

Students were assessed on their presentations and marked by a panel of staff and external specialists working in the engineering industry. Students were asked to submit copies of the presentations prior to the conference, which allowed the tutors to produce a conference programme. This again added to the gravitas of the event itself.

Only the presentations were marked as no group reports were required. This reduced the staff assessment burden and allowed for a fast turn around of feedback to the students as well.

The students were also invited to reflect on the skills they had gained through the process and include these in their Personal Development Portfolios (PDPs), although this was not part of the formal assessment.

Module Evaluation

The evaluation focused both on the students' views on the module, as well as on the extent to which the students' felt that this course had enhanced their autonomy as learners. At the beginning of Semester 2, a questionnaire was distributed to students to find out about their perceptions of learner autonomy, their existing learning styles and expectations, as well as on the extent to which they felt they were confident in their vocational skills. The questionnaire has a good response rate at approximately 70% (28 out of 40 students). Additionally, a number of focus groups were carried out at the end of the module to further explore student views on the assignments in order to identify the benefits (and possible challenges) of this type of learning and teaching methodology.

Initial Questionnaire on Learner Autonomy and Learning Styles

Perhaps unsurprisingly, more than half of the students who responded to the questionnaire had no idea what the term 'autonomous learning' might refer to (students were not given a definition but were invited to give their own views on what the term might refer to). The remainder thought it meant either 'to take control of one's own learning' (7 responses), 'independent or self learning' (4 responses) and 'planning my own studies' (3 responses). The fact that most equated autonomous learning with independent study was reflected in their responses whereby majority of students felt that they were 'autonomous learners' already, and that although group work was considered beneficial, they felt that the best way to develop learner autonomy was through independent study.

Other findings showed that students were very strongly assessment driven, and would only research and gather information when undertaking an assignment. In addition, most students expected clear guidance from their tutors and lecturers with regards to learning tasks and relevant sources of information.

With regards to which vocations skills they thought most important for a qualified engineer were problem-solving skills, ability to work in a multidisciplinary environment, ability to organise workloads effectively in order to meet deadlines. Not surprisingly, the students also rated IT skills important, but felt that they were already competent in using IT.

Focus group findings (after the student conference)

A focus group was organised to find out the extent to which the students had found the assignment and the experience of presenting at the student conference helpful or challenging.

The day itself was a great success and students commented on how much they had learnt from their engagement on the project. They particularly enjoyed the fact that presenting at a simulated technical conference in front of their peers and keynote speakers from the industry allowed them to practice for the 'real world of work'. They also felt much more confident and motivated about tacking engineering related problems in the future, and felt more employable as a result:

> *"Presenting information and ideas to an audience helps with employers."*
>
> *"[Working like this] gave me skills to apply in any situation in the future."*
>
> *"Doing this has boosted my confidence."*

Presenting at a simulated conference also enhanced students' motivation and confidence, and also gave them the impetus to make the most of the strengths that can be capitalised when working effectively as a team:

> *"We [as a group] also benefited from….the experience of doing something like this [student conference. It's the first time I've done something like this."*

> *"Working as a group is the best option as you get to know who they are and how other people work, what are their strengths plus their weaknesses."*

Finally, the students felt that the active and autonomous nature of this assignment was a motivational factor, and allowed them to learn more effectively as a result:

> *"Going away and looking for the information for ourselves was quite good, rather than being spoon fed."*

> *"I've found out much more about manufacturing and materials and how engineering disasters are investigated […] my presentation skills have definitely improved as well."*

The challenges the students typically faced during the process included:

- Technical issues (getting to grips with the audio-visual technology)
- Engagement with other member in their groups (difficulties in encouraging some of their fellow students to attend)
- Fear of the 'unknown' (the open-ended nature of the new case study work; undertaking a student-led activity, rather than tutor-led)
- Time management (balancing the time spent on this type of project compared to other assessments as most spent more on the project time than originally envisaged)
- Discipline-specific issues (the need to quickly gain understanding of the deeper technical concepts that underpinned their case studies)

Conversely, tangible benefits of this learning process included:

- Increased student motivation which lead to much deeper learning
- Employability skills gained through this way of working were directly linked to students' Personal Development Plans (PDPs)
- Increased confidence
- Enhanced skills in effective team working and project management
- Course marks improved
- Working with multimedia promoted digital fluency
- Students felt much more autonomous as learners from early on in their studies

Staff perspectives

For staff embarking on a new way of approaching learning and teaching was fraught with risk as there was no guarantee that the approach would actually work. Initially, there was also a considerable amount of 'front-loading' to be done, which was quite time consuming.

However, once the module was running, there was less direct contact with students, and the contact hours were always directly relevant to the students' learning needs - albeit this required the staff to be highly adaptable and quick to respond when it came to the students' learning needs. The assessment method also reduced the burden of marking for staff quite significantly, and therefore the overall teaching burden on the staff was less than in previous years.

Moreover, the tutors involved in the running of this module also relished the challenge of being pushed out of their own comfort zone (along with the students), and strongly felt that 'something creative like this' was needed in order for the first year students to showcase their true potential. The success of this teaching approach, evidenced in the highly creative and high-quality presentations produced by the first-year engineering students, was therefore particularly satisfying experience for the staff. The staff felt that this had allowed students to showcase the two key qualities of skilful engineers: creativity and critical thinking. Moreover, they felt that they had also managed to capitalise on the fact that most first-year students do typically feel very positive about their studies (see also Yorke and Longden, 2008), and that allowing students to engage in enquiry-based and authentic learning, while handing over the responsibility for their own learning from the tutor-led mode to a student-led one, had enabled students to keep motivated and challenged throughout their first year at University.

The increased attendance and retention rates were also evidenced in the pass rate for this module. Overall, the first time pass rate for the first year module increased from the previous 3 years from 77% 75% and 80% to 95%. (The only referrals were those students that failed to attend the conference.)

Conclusions

Overall, this approach was highly successful, albeit the less flexible format assigned to 'Manufacturing Processes' groups was less popular simply because it did not capture the students' imaginations in the same way as the 'Engineering Disasters' did. This, whoever, was more to do with the subject topic than the process itself. The main issue was with the fact that simply filming manufacturing processes in a lab appeared to have much less connection with how materials engineering impacts what happens in the 'real world', like it was in the case of the NASA space shuttle disaster.

Despite the risks initially associated with introducing new media technology to students, the staff found that students quickly adapt to the technology. They also readily rose to the challenge of managing their own learning processes, and many commented having got immense satisfaction from having tackled and mastered a new skill as part of their engineering course.

For staff, facilitating course was challenging, yet rewarding. In terms of cost and staffing, the format proved highly cost-effective, despite the initial front-loading. The media files that students produced, could be used as a learning resource for future cohorts of students,

adding to the long-term benefit of working in this way. Most importantly, however, it was satisfying to observe that compared to previous years' cohorts, who had been taught in much more 'traditional' way, students were more motivated and enthusiastic about their chosen degree of study.

Interview clips on student feedback on this module can be viewed at:

http://cyclops.shu.ac.uk:8080/ramgen/archive/lits/LTI/studentvoices-1.rmvb

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Using E-role play in teaching ICT skills to Occupational Therapy students

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Course: BSc occupational therapy

Yearly cohort: 65 students

Abstract

Higher Education institutions are placing increasing emphasis on electronic learning (e-learning). This is partly in recognition of the increased flexibility it offers (Hollis 2000) and partly in acknowledgement that information communications technology (ICT) is now a key skill required by most employers. This is particularly true of the health service where advances in digital technologies are moving apace. With the inclusion of e-learning within the health service modernisation agenda (DH 2001, Cavell et al 2004) it appears more imperative that students studying these subjects are able to leave university IT literate, and with a clear command of the technologies they will encounter in practice. This case study describes an initiative that used e-role play to help students develop their ICT skills on an undergraduate occupational therapy degree course. It considers the practicalities of setting up such a project before examining the respective strengths and limitations of this approach.

Introduction

Occupational therapy students need to develop a sense of autonomy and confidence in reasoning and understand the need to continue developing their knowledge and skills on graduation...the process of learning online provides graduates with the customs and routines that promote continuing educating, enabling them to remain current in their profession (Mueggenbury, 2003).

Over the last five years there has been a growing interest in the potential of e-learning for students accessing health courses. For example, virtual learning environments, wikis, CD Roms. Video conferencing and the Internet have opened up many opportunities and added a further dimension to the learning experience. For students who are confident in using technologies these advances offer increased flexibility in terms of the range of learning opportunities available and the pattern of delivery (Hollis et al 2006). Some authors have argued that the use of new technologies promote learner autonomy and prepare students for future practice (Gould and Maitland, 2002). Indeed, Knowles (1992) singled out computerised simulations using videos as being particularly effective in enabling students to develop skills in critical thinking and decision making.

However for students who lack confidence in using ICT this increasing emphasis on new technologies can act as a barrier to the learning process. Some authors have gone so far as to suggest that 'distance education may bar students from the crucial element of interchange with teachers, researchers and other students that prepares students for a lifetime as knowledge workers.' (Gould and Maitland, 2002: i) This has led to repeated calls to assess student readiness to on-line learning (Bentley, 2003).

Background

The undergraduate degree in occupational therapy at Sheffield Hallam University utilises e-learning within its overall teaching and learning approach which focuses on enquiry based learning. Students are given a stimulus to trigger the learning process. Working together they undertake the necessary research, share their findings and identify further questions for study. The process is intensive and they are expected to undertake electronic literature searches, communicate and share information via an on-line learning environment. Modules are short and summative assessments are completed at four week intervals. The course attracts a diverse mix of students. A typical yearly cohort would comprise of 65 students, probably half of whom are school leavers and the remainder are more mature students who have come through an Access route. These students arrive with varying skills relating to Information Communications Technology. Some are very confident and highly competent in using the computer, others less so. For example, this is an on-line entry made by a student just two weeks into an occupational therapy degree course. It is remarkable on two accounts. Firstly in terms of her grasp of the case study and secondly her command of ICT given that she had not used a computer prior to coming to university:

> *It appears that Liza entered the MH (mental health) services with severe depression that was identified by her neighbours. She was initially treated with Venlafaxine. However this may not have had an effect as she was eventually given ECT.*
>
> *Following treatment she experienced memory loss (this is a side-effect of ECT) and moved into sheltered housing, where she was coping, until she fell in January. The consultant has suggested that the decreased mobility that Liza is experiencing has had a negative effect on her socialisation opportunities and therefore potentially caused a relapse of depression (note also that the effect of ECT is only short-term). No doubt her other symptoms are not helping with her communication with others (the anomia, poverty of speech etc). We could also maybe explore the 'coping strategies' mentioned in the referral and any further information about family would be useful as this may give an indication how often and how long she is in the company of other people. All of this may help us to give some consideration to where she goes next. I personally believe that she should stay at the sheltered housing as moving to a different place may confuse her further (as Claire explained during the workshop) but we may need to convince the warden on this!*

However, for other students, who are less confident in using ICT, the emphasis placed on e-learning can become problematic. The intensity of the course means that they have little

time to develop additional skills. This is particularly apparent within the first module, Individual Experiences of Health which introduces students to key concepts of occupation, health and well-being. It provides an orientation for students onto the course and helps them to prepare for placement which takes place immediately after Christmas. Feedback from students has been consistently positive. However over the four years two common themes from this feedback have emerged: the challenge of accessing so much information on-line and the perceived gulf between theory and practice. To the students three months of learning in the classroom without the necessary practical experience make it difficult to place their learning in context.

From a staff perspective there are concerns in terms of how the lack of IT skills impact on the overall learning experience. The university has invested heavily in new technologies and much of the inter-professional learning is taught via the virtual learning environment (Blackboard). In some worrying cases it has been noted that some students going into their final module of the first year still lack confidence in using technology.

Rationale

The challenge therefore was to create a learning experience where students could develop skills in using information communications technology and build their confidence in research. Motivation was a key factor and it was important that students perceived this learning as authentic, applying their evolving knowledge and understanding to situations they may encounter in practice. Safety was also a consideration. Students needed to feel that they could learn from their mistakes without putting service users at risk and receive regular feedback about their progress.

During discussion over coffee with a colleague we hit upon the idea of creating an on-line scenario where the discussion tool within Blackboard would provide the mechanism for a form of e-role play. Students would be given a referral for a client and would then have the opportunity via the virtual learning environment to engage in discussion with 'the client' and the 'multi-disciplinary team' in charge of the person's treatment. I would play both roles, responding in character in order to set challenges, pose dilemmas and create further scenarios for learning. This would sit beautifully with the ethos of enquiry based learning.

Service users play an integral role within our teaching and there was a question as to whether they should take on the role of the 'client'. However given that the students have only been in the university for one week before undertaking my module I wanted to use this as a mechanism to learn who they were and to gain an insight into their thinking in order to grade and differentiate activities. To this end I included a third strand within the discussion board for student interaction, a place where they could share and talk through issues with each other and collectively think through how to approach a particular task or dilemma. This would offer the rare opportunity of being privy to their interactions and to gain insight into their clinical reasoning skills.

Teaching Approach

E-role play sits very comfortably within enquiry based learning. The process begins with the student receiving a paper copy of a referral just as they would in practice. An example of one such referral is shown below:

Students use their existing skills and knowledge to identify key terms or terminology they are familiar with. Starting from this positive stance builds confidence. The referral mirrors what students will encounter in practice and offers the opportunity for orientation to terminology and for research around a particular 'condition', its signs and symptoms. Working as a group the students identify unfamiliar terms, information that they need to research, who will take responsibility for this and how they will share the information.

The second trigger takes the form of an entry on Blackboard. Students are informed that the person and the multidisciplinary team (the consultant, physiotherapist, nurse, and psychologist) are on-line and that they need to work together as a team and with the MDT and client to identify the client's needs and to establish a treatment intervention.

This provides the perfect opportunity to set dilemmas, challenges, to open up a range of learning opportunities and raise questions so that even at this point students learn that sometimes a definitive answer does not exist. The opportunity to literally 'see inside' the mind of the student and to track their reasoning processes provides the tutor with a unique opportunity to create a very individualised learning programme so that the range of tasks and 'dilemmas' can be generated according to levels of understanding. The tutor can be very responsive and can act quickly on the evidence provided thereby maintaining student engagement, confidence and motivation.

All communication takes place through the virtual learning environment. Students work together in small groups around the computer during enquiry based learning sessions and as a consequence are able to share their skills.

Assessment

This initiative fits within the wider assessment strategy. It enables the tutor to formatively assess:

- Levels of understanding in terms of the content of information
- Written communication skills: particularly the ability of the student to use language appropriate for purpose, for example the subtle differences between communicating with the client and their family and communicating with a consultant and the multi-disciplinary team
- Skills in using Information Communications Technology (ICT)
- The students thinking and reasoning processes
- Group work skills

One of the greatest strengths of the overall approach is that the tutor can offer on-going feedback in 'role'. Responding 'in role' as a client or consultant can be quite powerful as the students are able to 'see' and 'experience' the consequences of their actions. For example if students use language inappropriately or address a person incorrectly the 'virtual client' or member of the MDT can respond appropriately. The student then has to find ways to rectify this. Similarly if a student misinterprets a piece of information the tutor can either correct this immediately or allow them to pursue this path, weaving in the consequences of this misinterpretation before they venture too far off track. Again this can help the students to recognise the need for accuracy and also to develop problem solving skills as they try to recover this mistake.

As a tutor it has been possible to reflect back to students the level of their achievement and to offer on-going encouragement. Here is a short extract from one of the on-line responses to a group:

> *You are really thinking like OTs. This is excellent. Do you remember that I mentioned this term called clinical reasoning which is basically how you think and arrive at decisions. Well you are doing it. You are using these very subtle observational skills to pick up on the details, giving you clues in terms of what is important to Liza and then transferring this into a possible treatment plan based on her interests and needs (and your understanding about depression and dementia. I have attached some slides from a recent workshop about depression and older people which you may find useful. Keep up this excellent work.*

Evaluation and Feedback

Ongoing evaluation through the use of questionnaires has highlighted the value that students attach to this initiative. One of the most striking outcomes is that we have witnessed a significant rise in the number of students using Blackboard. This year, records showed that 62 out of 65 students had engaged with the discussion board, which was consistent with the previous year's results. As a result students are able to make more use of the resources in subsequent modules and to confidently navigate the virtual learning environment.

Above all students express energy and enjoyment. E-role play is extremely challenging but also great fun. The following comments are reflective of the general feedback we have received about the module,

> *'I really enjoyed the role play on line'*
>
> *'It brought learning to life. Completely engaging: the time flew by'*
>
> *'It made me feel like a real OT'*

As a result of this learners are incredibly motivated to participate in the learning tasks and to undertake extensive secondary research. There is a real sense of the 'spirit of enquiry' pervading their work as the following quotes, made just one week into the module, illustrate:

> *I just looked up poverty of speech - it is also known as alogia (was this in the referral? I don't have it on me to check). It means a general lack of additional, unprompted content that is seen in 'normal' speech. It can make it hard to hold a fluent conversation and can sometimes be seen as avoiding questions (tend to be one word answers, I think)*

> *Okay, Diurnal Variation in Mood seems to be about changes in mood in relating to waking and sleeping. People with depression disorders may wake up feeling severely depressed or suicidal but then mood lifts during the day..or it can be the reverse; mood okay on waking but becomes more depressive as day continues. I wonder whether we can ask the MDT how Liza has experienced this?*

All but a handful of students fully embrace the role and very quickly they become immersed in the process. It is remarkable to see the subtle shift that occurs as the acquisition of knowledge for an assignment is no longer an end in itself, rather learning becomes the means to help the client, to provide vital information that will influence the course of treatment they will experience. In 'thinking like a detective' students have to confront the fact that there may be ambiguities and that learning doesn't stop after one set of answers has been reached. Once one avenue of thinking is exhausted they have to begin again, researching from a different angle, teasing out new understanding. They need to master the art of asking the right questions and not take their reading at face value as the following quote taken from the discussion board indicates,

> *ECT is Electroconvulsive therapy!! Sounds dramatic but is apparently quite common. ECT is used predominantly as a treatment for severe depression. It is generally reserved for use as a second-line treatment for patients who have not responded to drugs. (Liza may not have responded to Venlafaxine). The first-line use of treatment is for situations where immediate clinical intervention is needed or alternative treatments are not advisable. There are concerna about the effects of ECT on memory though! Maybe this is what is causing problems with Liza? Or maybe the memory problems were there first?*

In using the medium, students are using skills in research, reading and summarising information in written form. This occurs at various levels. For example, they need to extract the main points from their reading to share amongst the group and also to clarify and relay their progress to the multi-disciplinary team. These are key skills required in practice and the ability to condense their intervention.

Dr C Craig,

In response to your e:mail enquiring about the OT assessment for Eliza. To date I have met with the warden of her sheltered accommodation who saw Eliza at irregular intervals and felt that prior to the fire there had been a change in Eliza's memory and increase in confusion which had affected her relationships with other residents. Eliza had been joining others in the communal areas on a regular basis, and was thought to have been responsible for cooking her own meals. I plan to meet with Eliza's social worker and carers in the next few days to get a better picture and will feedback then.

As the 'MDT' I can add in an element of pressure, requesting reports at short notice or making requests for progress to date.

And another one:

Dear Occupational Therapists.

I understand from Dr Craig that you are involved with this case. I am her allocated social worker. Please make sure I have a copy of your report as I will use this to justify my application for funding for a residential care or nursing home place or package of care at her present accommodation. As you will be aware funding is very tight in the current climate. I do hope you will bear this in mind during your assessment.

Interestingly, the students rise to the occasion without the usual anxiety that such assessments usually generate. This suggests that allowing students a degree autonomy and control over their assessment improves not only motivation, but has other unintended benefits, such as decrease in the levels of anxiety that relates to academic achievement.

Further Discussion and Conclusions

As yet we have not evaluated how this has impacted on placement and the next stage of the development would be to look at this. Plans are already afoot to undertake a full scale evaluation involving clinicians as well as students.

In reflection, this approach is very successful, mainly because of the creativity of the students and their willingness to fully immerse themselves in the learning and technology. There are examples where students have been on-line over weekends to 'check' if the person in the case study is all right and we have had to build in 'closure' because students have become so involved, treating these electronically constructed case studies as though they are real individuals.

This level of engagement perhaps reflects the authenticity of the scenarios. It is interesting that we do not include lots of high tech gadgetry and images, simply a paper case study and

a blackboard site. Perhaps this lack of structure provides the students with the freedom to develop their ideas and to use their imagination in a way that is far more liberating than if we imposed our thinking about what the character 'looks like'.

From a staff perspective the process is highly enjoyable, stimulating and fun. Being able to observe and track the students' reasoning processes and to create challenges and dilemmas based on where they are at in their level of understanding means that learning is incredibly personalised and even after three short weeks we possess a great deal of information about the strengths and needs of individual students. It feels important that during these first few weeks we create a 'safe' environment for learning so although many of the dilemmas posed can be extremely challenging students have the opportunity to rehearse their responses before being confronted by real-life scenarios where the decisions they make could have considerable implications.

Experience has shown the importance of setting clear boundaries in terms of when the multidisciplinary team and service user are 'available'. Otherwise it is possible to find yourself constantly on-line, engaging in stimulating debates and role play but at the expense of personal life.

The main challenge we have faced has been around practical issues such as the organisation of rooms so that during enquiry based learning sessions groups have access to a computer. This is not always easy when you have six groups scheduled for three two hour sessions each week.

Further development

The project has generated a great deal of interest and colleagues from nursing, social work and physiotherapy have expressed an interest in taking on a role within the multi-disciplinary team. Students have asked whether it is possible to extend this initiative to other modules, perhaps remaining with the same 'service user' as they continue their journey through occupational therapy. Next year we plan to invite third year students to work with us and to contribute to the role play. This will enable the third years to consolidate their skills and draw in dilemmas they have faced on placement.

Overall this initiative has raised a number of questions for me as a tutor. I have been challenged by the depth and level of understanding students reach within a few short weeks. The final word, however, belongs to the students:

> *'The last few weeks have been truly inspiring. I really hope that other students have the opportunity to experience this forms of learning. This virtual world has let me glimpse something of what the future might offer and this is somewhere I definitely want to go.*

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Making Media

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Level of module: Level 4 (First Year Undergraduate)

Number of students: 200

Project team: Annette Baxter (Careers Adviser, Student and Learning Services), Sue Cooper (Module Leader, ACES), Keith Radley (Learning and Teaching Institute), Andrew Middleton (Learning and Teaching Institute)

Abstract

Making Media was a new level 4 core module for all students of Media Studies, Journalism and Public Relations courses. The module aimed to embed and evaluate student learner autonomy, allow students opportunity to apply media theory to practice, and to develop reflective practice to enhance employability. There were 200 students on the module undertaking a programme of lectures and practical workshops supported by on-line learning resource and a reflective Blog space. Assessment was through two tasks: submission of a group digital audio and digital video product and a personal reflective account. Evaluation indicated that while students by and large recognised their development of personal transferrable and practical technical skills as a result of undertaking this module, only the most academically able stated that it had significantly enhanced their understanding of the application of media theory to the practice of making media. Most did, however, demonstrate a developmental shift to becoming active and autonomous learners.

Background and Rationale

There were 200 students enrolled onto these courses in the academic year 2008/2009, consisting mainly UK home students and just a small number of EU and international students. It was noted that while the majority of entrants had an A-level in Media, 28% expressed having no experience of media or confidence in their media production skills. In contrast to students entering other SHU film and media degrees, this cohort typically had therefore only minimal (or very limited) experience of media production at A-level, even when all four examination boards do include this aspect as part of their syllabus. Therefore, it appears that there is a disparity here in that while the academic staff expect new entrants to have undertaken practical media studies prior to entry, the students who apply to university to undertake a theoretical media-related course have, in fact, had only limited previous experience of using a range of digital media.

The module had a number of aims and objectives to bridge this gap between tutor expectations and existing level of expertise. To this end, the module aimed to:

- To ensure confidence in the use of equipment for the production and editing of a media product
- To develop an understanding of the relationship between media theory and media practice
- To encourage inter-professional learning and develop skills related to working for/with a client while managing a media project as a group
- To establish the use of PDP and reflective practice towards career planning.
- To embed and evaluate student learner autonomy by encouraging students to 'take ownership' of their learning from the onset of their undergraduate studies.

As well as these academic aims, it was also intended that this core module undertaken in the first semester of their first year would help the students to socially integrate with peers, to settle into university life in Sheffield and become familiar with the different study patterns and autonomy expected of learners in higher education.

The original module concept centred on enhancing learner autonomy in first year students. In the planning process consideration of the content of the A-level Media syllabi offered within the UK demonstrates a significant gap between theory and practice. This module was designed to respond to this apparent gap in existing theoretical knowledge and (lack of) practical skills, in order to ensure students had robust basic skills in media production. This module was also intended to contribute to a more balanced syllabus to compliment an already well-established theory module in the first semester. However, the relationship between theory and practice was perceived as key to the courses, and thus the staff who wrote the new module were keen to ensure that the theoretical principles taught in the lectures should underpin practice developed in the workshops.

The assessment tasks consisted of a range of group created pod-casts and digital videos (50% of the mark but a mark amended by the members of the group evaluation) and an individual reflective report (50% assessment that asked for reflection on level of prior experience and skill development, the relationship between theory and practice, an understanding of employability and the growth of learner autonomy). Thus, there was to be a balance between formative and summative assessment, group and individual autonomy. The aim was to ensure that students could both develop and consolidate autonomy (Brown and Knight, 1994). Indeed, the concept of the module was to provide a model module where the students had control of their learning, and the role of the teacher shifted to that of a co-learner and co-researcher (King and King, 2009). Furthermore, the students were to demonstrate their reflexivity (Brockbank and McGill, 2007), and shift from individual directed learners, to a group of autonomous, critically engaged and questioning learners. The aim was therefore to initiate learners who can be confident, professional and prepared for employment in an industry that emphasises the need for competency in practice over theory (Dickson, 1999). And yet, the aim was also to help students to realise that they were now to be university students who comprehend the purpose and function of the educational

opportunities offered within university (Lamb and Reinders, 2008), and who take control of their own learning in the following semesters.

The Approach

The module ran in Semester 1. In the introductory lecture the module leader provided an overview, and directed students through the module guide, expectations and assessment process. Each seminar tutor then explained the focus for the component that their seminar offered, and how that contributed to the basic framework of the module. These included issues on making the moving image and making digital audio. In addition to this, the careers adviser led a session on technical and personal skill development and their relevance and/or application to current and future employment and industry expectations.

The students were divided into ten timetabled seminar groups and scheduled for eight weeks of workshops. The students were allocated into these groups randomly, and consequently some groups included a mix of course pathways, while others had no experience in media production. The workshops were to be organised so that students were given opportunities to work collaboratively with their peers from other disciplines. In practice this meant that students would be encouraged to make links with those at Level 5 (second year) on a different course route within the faculty (computing) who would act as clients for the production of a press release (PR), article (Journalism), podcast or digital video (Media). This facilitated an exchange model of support, a cross pollination of techniques across the disciplines and encouraged student peer support. Reflecting this, it was decided that the assessment exercise should also focus on the process rather than the end-product. The emphasis was therefore on both collaborative learning to enhance interpersonal working skills (key to employment in the subject area) and on enhancing learner autonomy through encouraging critical thinking and problem solving skills.

Some groups held strong expertise in filming and editing. During these sessions the students undertook four workshops in digital audio then swapped and undertook the making moving image workshops. The workshops were timetabled and compulsory. However, the timing of these workshops did not relate well to the lectures, which meant that the students were frustrated with the order of the content of the workshops, or even the perceived relevance to their core study topic (notably the Journalism students).

Due to the large student numbers involved, five of the workshop groups covered audio workshops and five parallel workshops focused on digital video. After four weeks the groups swapped so that by the end of the eleven weeks each student had each done eight weeks of the practical and interactive digital video and digital audio workshops in which they developed their practical skills of using the equipment and developed confidence in applying the media theories to practice. In these workshops the student groups developed digital video and digital audio based products on the topic of student life at Sheffield Hallam University or living in Sheffield.

The lecture and workshop programme was complemented by a module Blackboard site where lecture notes were maintained and tutors posted podcast summaries of the issues arising. A 'Blog' spot was also established on the site, which gave the students a space to reflect upon the learning from each week's sessions and could comment on the group dynamics, skills development and project progress. The blog was well used, but not all students engaged with the format. The staff could access the site, and they monitored the site to gain a view of students' concerns regarding technological issues. The blog was not edited or commented on by staff.

Workshop leaders also posted weekly topics onto the Blog to prompt the reflection on topics related to the technical skills and theoretical aspects of media for example: 'How important are the technical, creative and communicative aspects of working with digital media to me? Why?' and also on the personal and employability skill aspects developed in the course, such as 'How am I improving the planning and design approach my team is taking based on what I learnt from the previous exercise?' The Blackboard site also contained a grade centre, where staff input marks and students had access to results. There was also an area for feedback on the module from the students.

However, although considerable detailed planning of the module had been undertaken, the absence of the original module leader created a delayed start for the planned changes. There was also a significant increase in the number of students recruited to the module and due to work planning issues, no extra staff members were available to take on the extra responsibilities this created. As a consequence of these factors, the module plan had to be revised and simplified while maintaining the same learning outcomes. Timetabling issues prevented the originally planned cross-faculty collaboration being possible, meaning second year Computer Network students could not work with first year Making Media students as planned. Moreover, a Showcase Event, in which students would have had an opportunity to showcase their achievements, was cancelled. In part this was due to an official visit by a dignitary which led to reduced student access to facilities. In retrospect it was also felt that for this new module, organising such a showcase event with invited special guest was 'too much too soon.' Nevertheless, the key focus was still on engaging students through a production of group work project in their process of transition to higher education learning environment. Peer support also allowed for the development of learner autonomy (Ecclestone, 2002). Moreover, while formative assessment was recognised as key to achieving the key aims and objectives for the module, this aspect in the actual module had to be deferred due to practical issues with timetabling and (lack of) resources.

Assessment

Within the original module proposal, the assessment tasks involved peer evaluation of storyboards, and interaction with level five students from the BSc (Hons) Computer Networks course. There were a number of unusual circumstances that prevented this: the planned module leader went on long term sick-leave and the anticipated number of students rose from around 120 to 220 requiring additional teaching sessions, room bookings and equipment. A member of staff from the Learning and Teaching Institute (LTI) had been

seconded to the Faculty and was key to supporting the replacement module leader, plus another member of the LTI was drafted in to teach the digital audio. Furthermore, it was not feasible to work with students at level 5 and the Venture Matrix due to the size of the student cohort, and the small number of staff available to undertake the teaching and assessment.

These tensions led to the nature of the assessment tasks being reviewed. Within the original module design there was meant to be a peer-assessed assignment, whereby the second year Computer Network students (acting as 'clients') assessed the first year Making Media groups' work. As the second year computing students did not participate in the eventually redesigned format of the module, each team of Making Media students instead assessed their peers in their task groups. The assignment requirements therefore also had to change, so rather than groups submitting a story board and product, the students were required to submit a group digital audio and group digital film instead. The second assignment task remained unchanged and students were required to submit a reflective report.

Marks were allocated equally between practical and reflective assignment pieces.

Evaluation and Reflection

Evaluation of the module was undertaken in a number of ways at various times throughout the module. At the mid way point immediately after the workshops had swapped over, the module evaluator visited two workshops sessions (one video and one audio). A series of questions were prepared and the students undertaking the series of video workshops interviewed each other on video responding to the questions. For the group studying audio, a facilitated focus group discussion was recorded. At the end of the module, students were encouraged to complete a course evaluation questionnaire hosted on the module Blackboard site. This generated a 49% response rate.

Considerable feedback was also obtained from Blog entries and the students' final reflective assessment task. This assignment asked the students to consider their prior levels of expertise; how and if these had altered; to comment on the relationship between theory and practice; and to reflect upon their development towards employability. A further two follow up focus groups were arranged and a selection of students invited during semester two. However, as students did not attend some follow up topics could not be pursued.

A focus group evaluation meeting was also held with participating staff in order to collate their feedback and observations of the course. This was followed up during semester two with further individual meetings with the teaching staff which formed part of the planning process for the future academic year. These meetings also provided further reflection, notably on the high standard of work undertaken by the former Making Media students subsequently taking a practical module during semester two. This progression was therefore seen as evidence of on-going reflection and development arising from the students' semester one learning experiences.

Evaluation Findings

Assignments

The assessment outcome changed from the original plan. Among the staff teaching on this module there was on-going debate about the nature of the assignment, and specifically what was to be assessed. The key disagreement was whether the assessment should focus on the end-product and the extent to which it demonstrated the level of practical and technical skills that the students had acquired; or whether it should focus on the learning process and how the students negotiated with each other and referred to the relevant course materials in order to produce the end-product. While the latter would clearly encourage students to reflect on the development of their self-reflective and critical thinking skills, enhance their awareness of personal skills development, relevant theories, working styles and so forth, it is crucial that staff agree on what is assessed and how.

Students also expressed a need for assignment guidelines and a marking schedule so that all were clear on what was expected of them in the assignment. In response to this, the module leader will arrange a module meeting with all participating staff and to amend the module documentation as necessary for future use. In the future, the module leader will also place clear dates and information on the Blackboard site for students.

The reflective writing task identified weaknesses in the students' academic writing skills. This was perceived as a positive feature by the academic staff, and led to discussion across staff teams. In response to this, the administrative staff will link students to the Blackboard organisation Writing Pad. While the Blog was useful for formative development as it allowed students to get used to reflective practice (and helpful for the project team in evaluating if students were enjoying the module), it was not assessed. This confused some students, and in future the purpose and format of the Blog will be clarified on the Blackboard and in the module guide.

The assessment timetable was planned over the second half of the semester. However, because incorrect software had been loaded onto the PCs and due to events on campus that restricted students' access to the building and editing equipment at a critical time in their module, the submission date had to be shifted. The problems submitting assignments and subsequent lost work from some groups, was therefore only detected after the students had left for the vacation. The process of assignment submission was therefore confusing for some and some groups lost their work as they did not know how to manage and store digital files. Introduction to digital fluency required to ensure students are aware of file management. It is also suggested that there is a 'trial run' for submitting work before the final assessment deadline. In future it is also important to ensure formative task enabled early in semester with a mark, and then amend the assessment submissions dates to account for non-submissions and module retrieval.

From staff perspective, one member of staff was required to mark 181 pieces of individual work; this may have created inconsistencies in marking. In future, reflective reports need to

be shorter to restrict word count and staff work planning processes need to ensure sufficient staff time is allocated to the module for delivery and marking.

Feedback mechanism

Audio feedback provided via the Blackboard site was positively received.

Course content

Some students found the project topics 'boring' ("Induction to SHU" and "Student Life at SHU"), and noted that these topics had already been covered in other modules. It is suggested that in the future risk assessment and health and safety procedures are addressed at an earlier stage of the module planning process, and that 'buy in' from a wider range of staff across departments on campus is arranged so the students can film in different locations, and cover a broader range of topic areas in order to extend their critical engagement and improve motivation.

Progression

Of the 204 students enrolled onto the course, 27 failed or were referred (13.1%). Of these, 11 were referred (5.3%) and 16 failed to submit an assignment of any form (7.8%). This includes those students who had withdrawn from the course within the first semester.

At the outset of the module, 28% considered they had no expertise in the area of media production, and a further 57% considered they had only a basic knowledge. At the end of the module the students demonstrated that 32% had still not made a direct, but rather an implicit connection between practice and theory; 28% demonstrated some relationship; a further 18% showed a clear understanding; 15% a strong understanding and 7% a high level of comprehension of the relationship between theory and practice and had been able to demonstrate this on the module. It seems that the make-up of each group may have had an effect on this, and therefore rather than randomly allocating students into groups, in the future more attention will be paid in order to ensure there is a balance of technical skills, experience and abilities within each group. The skills levels will be determined by using prior experience and pre-entry qualification as a guide.

The most interesting data produced was that regarding if and how students recognised they had demonstrated and developed learner autonomy during the module. Just 0.5% indicated no engagement with this aspect, 35% showed some engagement, 36.5% showed a good understanding, and 23% showed very strong perception of how they were now autonomous learners, with 5% showing excellent development as autonomous learners. This data was obtained from the tutor evaluation of the individual reflections submitted for assessment as the summative assessment.

Practical Issues

There were a number of practical issues that emerged in the planning or during the running of this module. The main issues concerned, learning spaces, the availability and (lack of) expertise in using IT software or other relevant equipment. For example, during lectures student computers were set differently than staff computers which made practical demonstration of packages and processes in class difficult. Moreover, IT technical support is based in the Harmer Building and most of the digital media teaching was based within Furnival Building. Consequently the students felt this 'disjointed' and restricted their access to equipment and technical support, and the lack of technical support and facilities also led to complications for the students in storing their work. The needs for lecture or seminar room space also changed due to changes in the module outline, but it was difficult to change room bookings to account for these timetabling changes. This meant that the teaching spaces were not always appropriate or effective and even stifled interactive teaching and restricted group activity and communication. There were also issues with new equipment (HD cameras) that was bought, but which turned out to be inappropriate to the project. In line with the new emerging trend for citizenship journalism it appears that more MP4 cameras need to be available to enable students to develop good pieces on simple equipment that compare well to the more contemporary professional standard equipment that is being used in the industry.

Requests for IT support and packages need, therefore, to be made earlier in the module planning process. This will ensure that relevant software, such as Adobe Element (for editing), will be installed onto all student and staff machines in the labs/newsrooms/media rooms. Careful consideration needs to be paid to significant issues such as storage of student work and ensuring that funding for the cost of software licences has been obtained well in advance. Finally, it is also important to ensure that information on equipment availability, booking systems, risk assessment, health and safety, copyright and ethics are available on the Blackboard site and referred to in the module guide so that the students and staff are equally aware of these issues.

Feedback

In student feedback, many students recognised the enhanced employability and transferrable skills they had gained from the module. They commented that the course had enabled them to gain 'a greater understanding about the career options open to them', given them 'experience in a range of media related techniques', had helped them to 'sort out what they liked/disliked', and an 'opportunity to try things for the first time and become aware of options that they had previously not considered'. The majority felt they had gained from the module, either in terms of personal skills development and/or practical media related techniques. Several students recognised their need to get experience outside their studies in order to continue to develop both personally and professionally, and stated an intention to join volunteering and student union societies in order to build upon their experience and skills. Another example of students using their own initiative in response to recognising the

need to embrace new platforms of self promotion and broadcasting can be illustrated in a group of students who uploaded their video assignment to YouTube.

Working in groups appeared to have worked well, and while tensions arose within groups from non-attendance or non-participation of certain members it was interesting that this did not affect the group members' overall assessment of each other. This said, a 'group agreement' that was designed for this year but not subsequently used will be implemented in future. Several groups of students talked of 'procrastination' that initially held them back from embarking upon their group practical projects. However, once they grasped the aim of the project they acted together to complete the project assignment.

Some students expressed alarm at autonomy and the amount they were expected to do independently; they had expected to be taught and told and then 'released' gently. In the future this balance between autonomy and tutor facilitation will be achieved through teaching students how to do the first project and facilitate their second project. Several students also noted that, despite having asked, they did not get tutor help until the final few weeks of the module. There were manuals and downloadable resources available enabling students to be autonomous and find the answers to their questions for themselves. The role of the tutors needs to be more clearly explained in future as students seemed unsure and surprised about the difference in staff roles (both tutors and technical staff) at university compared to those they had grown accustomed to at school.

Project Findings

Despite numerous, mainly practical, difficulties, the outcomes of this course were by and large positive. In terms of student achievement, while many students entered the course with self-defined low levels of technical skill and ability, the same students have demonstrated evidence of on-going reflection and development arising from their semester one experiences and application of learning between modules in semester two. The result has been, albeit anecdotally evidenced, work that has been of an exceptionally high quality.

Evidence from the module evaluation indicates that students entering the Making Media module developed confidence in their practical technical skills. They recognised the personal skills required to create a piece of media and saw the relationship of these to their improved employability. Many also identified practical steps they would take to continue to develop their personal and technical skills during the remainder of the course listing such activities as volunteering, part time work experience, joining student union societies etc. As such, students appreciated the employability focused development from this module. Students also recognised that learner autonomy is good as long as the support is available for them in the right place and time when they recognise they need it.

Further Development

Many of the specific suggestions and action points for further development for this module are detailed above. Many of these have already been actioned in preparation for next year's delivery. In this section, however, a few additional evaluative observations will be outlined.

A new date for a Showcase Event is to be arranged at the beginning of the next academic year, and it is expected that this event will serve to be an inspiration to the new first years on the module as well as be a reflective opportunity for the second year former Making Media cohort to see 'how far they have travelled' since the start of their first year. It is also anticipated that the event will celebrate the achievements of the Autonomy CETL and the formation of a new department of Media Arts and Communication.

Due to changes in the course structures and the need for greater course distinctiveness it has been decided that this module is to be dropped from the Public Relations routes (Public Relations, Public Relations and Media, Public Relations and Communication). While the need for clear course routes is vital, the decision to drop this module was undertaken reluctantly by some of the PR course team. However, due to continued buoyant recruitment for Media and the Journalism degrees, it is anticipated that the module will remain large and this year number some 160 to 180 students in total.

However, some students, particularly those on the Journalism pathway, expressed a sense of frustration and disillusionment at the seemingly 'irrelevant' audio/video practical assessment task. Therefore, to ensure a sense of inclusion, relevance and engagement for students from all pathways, it is suggested that in future the course assessment recognises media in its broadest sense, including not just audio and video, but also print-based media.

It is recommended that the assignment focuses on a reflection of the students' personal development, employability skills and transition into university level study, and includes a personal action plan for their continuing personal development, effective learning and employability while they study at SHU. Moreover, these good reflective techniques and practices need to be sustained, and unless 'a space' or mechanism for on-going reflective practice is created and formalised for all students on all course pathways, the skills these students have developed in this first year module are at risk of being lost.

While there is a PDP process in some courses to allow for 'joined up' reflection on learning and its application of between modules and over academic years, similar systematic mechanisms for reflecting upon and storing personal learning development materials would need to be created and supported for others.

In terms of module evaluation, only the most 'academically-able' students identified specific factors in their reflective reports that demonstrated greater awareness of theoretical understanding. This does not mean, however, that other students did not develop such awareness. On the contrary, there was much evidence within the evaluation data to suggest

that students developed a 'greater awareness of what went into producing a piece of media' than they had originally appreciated.

It is also recommended that future evaluation should be conducted with discontinuing students, those who did not engage with the module and those who did not submit assignments. Due to time constraints this was not feasible within this project, but further exploration of the issues that affects these students' lack of progression is required, particularly in relation to the module delivery style.

Although there was much support from the Promoting Learner Autonomy CETL team to support the development of the module, many of the emerging good practice evaluation tools and resources were developed too late to be of value for this year. However, it is anticipated that these developing methodologies can be employed in future. Evaluation strategies need to be designed and planned within the course design, content and timetable of the module. This will prevent the 'over collection' of (qualitative) data that took place this year, not all of which could be feasibly used, analysed or referred to within this final evaluation report.

With regard to staff development, however, great benefits were identified from staff of different teams working collectively to design, deliver and support the running of this module. The interaction of a multi disciplinary team of academics, seconded staff from LTA and a Careers Adviser from Student and Learning Services, led to all staff learning from each other and being able to contribute and add synergy to the running of the course. Different perspectives, skills and collaboration led to greater synergy and subsequent ongoing cross departmental working practices and sharing of good practice. In fact, to an extent it can be said that this way of working was possible this year by default and not design, due to the changes in module design as explained above, CETL support as well as thanks to LTA secondments to the Faculty. It is essential, therefore, for these collaborations to be formalised if this synergy is to be sustainable, and for the benefits of cross- and inter-departmental working to be continued and developed in future.

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'Now I feel like I am at university': using the Philosophy for Children (P4C) approach to promote engagement and academic literacy amongst undergraduate students

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Abstract

This paper describes a project which supported students in taking responsibility for their learning by encouraging them to pose and interrogate their own questions during seminar discussions. The work spanned a variety of undergraduate courses related to Early Childhood and Education, including professional courses for trainee teachers and early years professionals. Feedback from students and tutors had highlighted a lack of engagement by some students in the academic dimensions of these courses and drawn attention to the significance of social and cultural contexts to the nature and quality of seminar discussions. In order to address possible barriers to participation, the team decided to support the development of academic literacy initially through promoting engagement, confidence and critical thinking through oral work. Using a community of enquiry approach, tutors worked alongside students to support them in pursuing enquiry and critical thinking. The project evaluation has suggested that participants are becoming increasingly confident in generating their own questions, influencing and shaping discussions and reflecting upon the development of their own thinking. Moreover, tutors have begun to question and adapt their teaching styles in order to promote student-led dialogue more effectively. This paper will provide a detailed overview of the approaches used and report on the evaluation of the student and staff experience. The work will be used to prompt consideration of the value of oral work in developing academic literacy.

Background

Philosophy for children

Philosophy for children (P4C) originated in the USA, in an attempt to balance school curricula that prioritised content over process skills (Lipmann, 1988). Influenced by Dewey, and Vygotsky, Lipmann devised a programme to develop children's reasoning skills using stories as stimuli for enquiry and dialogue. His aim was to promote 'skillful, responsible thinking that facilitates good judgment; by helping teachers to create supportive communities of enquiry (Lipmann, 1988; SAPERE last cited 23/6/09). In Lipmann's programme, teachers used philosophically themed stories as starting points for an enquiry. This was followed by children formulating their own questions, before voting on a question

that became the focus of the enquiry. By helping children to formulate their thoughts and respond to others' views, the teachers' role was to facilitate rather than direct the discussion (Haynes, 2002).

In the UK, the P4C approach is increasingly popular in schools, and actively promoted by the Society for Advancing Philosophical Enquiry and Reflection in Education (SAPERE). Whilst retaining the key principles of Lipmann's programme, SAPERE has adapted and developed aspects of the original programme to suit the UK context. Unlike Lipmann, SAPERE encourages using a diverse range of stimuli such as films, photos, songs, stories, and promoting P4C across all age groups. Its central aim is to promote a way of teaching and learning that encourages:

'..Children (or adults) to think critically, caringly, creatively and collaboratively… by helping teachers to 'build a 'community of enquiry', where participants create and enquire into their own questions, and 'learn how to learn' in the process.' (SAPERE last cited 20/06/09)

The next section describes the background and aims of the project, followed by a rationale and a detailed description of the methodology. The findings will be analysed in relation to students' and tutors' perspectives, followed by reflections on the strengths and limitations of the project.

Motivation, aims and objectives

The stimulus for this project was my participation at a two day teachers' introductory course on the principles and methodology of P4C. At the end of the course, all the participants felt that the experience was highly enjoyable, and the approach extremely successful in promoting high quality discussion. The experience encouraged me to trial the P4C methodology in my own seminars, as levels of student participation and engagement were often limited. On the first occasion, I used a book chapter as stimuli for discussion, and on the second occasion, I used a poster as stimuli, to help students to reflect on their experiences at university. My own observations suggested that students appeared to show higher levels of engagement, and more students than usual contributed to seminar discussions. In addition, informal feedback and findings from two in-depth interviews highlighted that, for some students the approach was motivating and helped to deepen their learning.

This project builds on these earlier experiences of using P4C and aims to:

- Investigate whether P4C can be used in a higher education context,
- Explore tutors' perspectives on the effectiveness of P4C in improving engagement and participation, and,
- Explore students perspectives of P4C-led seminars

Tutor participants

The project involved 4 tutors from the faculty of Development and Society. All the tutors were ex-school teachers, and taught on a range of courses including teacher training, early childhood studies and foundation degree in early years. Tutors were used to working in different ways: some taught on seminars that followed on from lectures, whilst others used free-standing seminars and/or sessions that included elements of both lectures and seminars. Notably, seminars were primarily tutor directed; tutors specified the learning outcomes and provided appropriate resources and learning activities. But in using the P4C methodology, tutors had to modify aspects of their normal practice. Apart from providing stimuli for the discussion, they did not determine the content or directly influence the discussion. Instead, their role was to facilitate the discussion by helping students to set ground rules, and to intervene as appropriate in order to clarify, summarise, or highlight links and contradictions between the suggestions put forward by the students (Haynes, 2002).

Student participants

The group of students who took part in the P4C led seminars included three first year seminar groups from the BA Early Years QTS and Foundation degree in Early Years courses, and three third year groups from the BA Early Years QTS and BA Early Childhood Studies degree courses. The group size ranged from 7-30, and included both younger and more mature students.

Rationale

Since Dewey's time, influential learning theorists have argued that interaction and communication with others are fundamental to learning and development. In attempting to express ideas and make sense of others' perspectives, individuals clarify and develop their own thinking and sense making (McGregor, 2007; Alexander, 1995; Lipmann, 1988). In the context of higher education, seminars provide the ideal opportunity for learning through dialogue and provide opportunities for team work, communication skills, and learning from peers. Moreover, in listening and responding to others' perspectives, students can also begin to develop increasingly sophisticated conceptions of knowledge, that are considered to be important in developing critical thinking skills (Moon, 2005; Perry in Jaques, 1984).

Notably, despite the advantages of small group learning contexts and students' apparent reluctance to engage and participate, the literature on student learning has not fully explored the seminar learning context. Instead, the research has mainly focused on improving teaching strategies to develop students' conceptions and approaches to learning (Casey et al. 2002; Jaques, 1984). Whilst insights from these findings have helped tutors to think carefully about aligning learning outcomes, assessment and teaching strategies, they have not sufficiently focussed on the nature of the student experience of learning in seminars (Mann, 2001, Barnett, 2005, Casey et al. 2002).

One possible barrier to engagement and participation may be the nature of the seminar learning context itself. It is possible that some students may find seminars a challenge on a number of levels (Barnett, 2005, Jaques, 1984). For example, not only do students need sufficient knowledge and understanding of the subject area, but they also require effective communication skills such as asking questions, speaking clearly and explaining ideas (Casey et al., 2002; Brookfield and Preskill, 1999; Jaques, 1984). Moreover, seminars entail significant affective aspects; whether students feel safe to speak, and/or feel that they have something worthwhile to say can influence readiness to take part in seminar discussions (Jaques, 1984; Mann, 2001). For some student groups in particular, such as females or first generation students, the affective dimension could have a significant influence on the extent of engagement and participation in seminars (Mann, 2001).

So, given the importance of effective participation and engagement in seminars and students' apparent reluctance to engage effectively, it seems appropriate for tutors to reflect on how they teach and how students learn in seminars. In section 3, I will describe the stages of the P4C methodology, and in section 4, I will outline the key themes that emerged from interviews with tutors and students on using P4C to improve engagement and participation in seminars.

The approach

After a half a day training event on the principles and methodology of P4C, the tutors selected the sessions that would best suit the P4C methodology. They used the approach in a range of contexts including: an introductory session (learning through play), exploring controversial topics (equality and quality education, safeguarding and parents' role) and topics that encouraged students to reflect on professional and personal experiences (leadership, the role of key workers in early years). In the following section, the pre-preparation and methodology are explained in detail.

Preparation activities:

Before the first enquiry, it is essential to start with an overview of the principles and practice of the P4C approach. P4C advocates joint knowledge construction with an emphasis on a community of learners who are caring, collaborative, critical and creative (SAPERE last accessed 23/6/09). However, depending on previous educational experiences and preferred ways of learning, students may dislike the approach because of their unfamiliarity with the pedagogy. Thus, it is vital to outline the pedagogy of P4C prior to carrying on the first enquiry by clarifying the nature of learning in P4C and the role of the tutor.

Methodology for P4C

a) Presentation of stimuli: e.g. photo, poster, set reading

Tutor encourages students to focus on what is puzzling/interesting about the stimuli and to reflect individually or to discuss in pairs.

b) Posing questions:

Based on the stimuli, students generate questions they would like to explore further. The tutor writes questions on a flip chart

c) Analysing questions:

Tutor encourages students to analyse questions –e.g. by encouraging students to identify similarities and differences between questions.

d) Voting

Tutor asks the group to vote for 1 question. Once the group decides, the chosen question is written out separately on a separate piece of paper, and the 'owner' of the question is invited to say why they chose the question and to clarify the key words and phrases.

e) Discussion

Tutor invites students to share viewpoints on and experiences relating to question. Often a discussion begins to develop its own momentum. Tutor interjects where necessary, e.g. when discussion comes to a stop by asking 'does anyone have a different viewpoint, does everyone agree with that point..?', or when same points are repeated but speakers do not realize they are agreeing with someone, or when speaker says a contradictory statements but is not aware that they have done so, or when the discussion loses coherence (tutor might summarize key points so far and invite new perspectives/thoughts), or promote critical thinking skills by encouraging students to ask for evidence.

f) Final thoughts

Tutor suggests a period of quiet reflection (a few minutes) and asks each student for their last thoughts, on the question raised and the discussion that followed. The comments may relate to process (e.g. voting procedure, opportunities to speak) or content (aspects individuals may have liked to pursue in more depth) or both.

In a group familiar with the process and principles of P4C the enquiry can be concluded in 1 hour. However, time for debriefing is important because it gives an opportunity to reflect on the enquiry. Students can be encouraged to reflect on the ground rules, their perceptions of the stages of the enquiry, or they may be directed to consolidate insights gained as a result of the enquiry. For example, they may reflect on the individual questions raised, apply insights to practical tasks, identify new questions for discussion for the next enquiry, or begin to write a reflective account in a journal or online forum. The tutor may also give a follow-up paper or book chapter to read, or provide students with relevant data/research to consolidate the enquiry.

Impact on student learning experience

In order to evaluate the impact on student experience, all students were invited to meet a researcher to review their experience of using P4C. To enable all those that expressed an

interest to share their views, two focus groups and one-to-one interviews were held. These were supplemented by a paper-based questionnaire. Surprisingly, although the methodology was used with a diverse range of students, interviewees reported broadly similar experiences. Responses were mostly positive, although perhaps, this is not unexpected in a self-selecting group of students. Similarly, all the tutors felt that the levels of participation and the quality of the discussion were significantly higher than what they would normally expect.

The next section outlines students' perspectives of the impact of taking part in enquiries on their learning experiences. Key themes were empowerment and participation, critical thinking and the learning environment.

Empowerment and participation

Interviewees' responses and post-enquiry evaluations referred to aspects of learner autonomy, such as increased engagement and motivation (Sheffield Hallam University, CETL last accessed 7/7/09). In one focus group in particular, the students related engagement and motivation to notions of empowerment. As the following comments shows, contrary to popular expectations, the students seemed to value the opportunity to take charge of their own learning:

'Normally, we'd be given information and then told to do something with it. This way we were given the information, we read it and interpreted it in our own way and then shared it with other people.'

'The students taught the students rather than the lecturer teaching the students kind of thing… the learning I got out of it was more valued, the fact that we had done it ourselves rather than being a piece of paper… I valued it a lot more. I think the learning was a lot more'.

'I think we got a lot out of it. We felt quite satisfied when we were asking the questions.'

'… and we were asking the questions ourselves – so I was more about us teaching ourselves in a sense.'

The responses were surprising because they challenge the popular discourse on student passivity in seminars (Brookfield and Preskill, 1999). The students were clearly enjoying the experience, and rather than relying on the tutors, appeared to use their own experiences as a rich source of learning.

Critical thinking

Throughout the interviews, participants referred to a variety of learning experiences that arose out of the experience of using P4C. In one seminar discussion on junk food and children, one interviewee, (a parent), reported how her peers found her perspective 'really valuable', because it enabled them to get a better perspective of the parents' role. Others

reported how the opportunity to hear different perspectives enriched their learning experience:

'You notice a lot more things that you didn't before as well, people bring up issue that you never thought …would have thought of… which was useful.'

'I think it worked really well because it seemed to give everybody else the onus rather than the tutor talking...you were questioning yourself, questioning your development and your idea about things...'

Students' comments also suggested that P4C gave them an opportunity to use and reflect on key skills such as analysis and evaluation. For example, commenting on the teaching and learning aspects of P4C-led enquiries, students reported that the methodology allowed them to '*dissect a subject',* and to learn to reflect on, and be critical and analytical of reading material. Students also reported that the opportunity to analyse questions enabled them to use a range of skills: such as justifying their own reasons, analysing similarities and differences between questions, and challenging each other on the exact meaning of words and questions. As one student commented '... *it was interesting because we'd all meant similar things but to other people it came across in a different way*....' For another interviewee, the process showed her the importance of using precise words to aid meaning *'...you need to think a lot about the wording and how that question is interpreted by someone else... .'*. The learning experiences students referred to are significant because they illustrate how the seminar can be a powerful context for learning (Brookfield and Preskill, 1999).

Learning environment

The learning environment can have a critical impact on student engagement and learning (Moon, 2005; Biggs, 2003). This is particularly pertinent in social learning contexts such as seminars (Moon, 2005; Jaques, 1984). As one interviewee commented, '*You are always a bit apprehensive to talk...In case what you are saying might not be relevant or might be seen as silly to other people*....' A recurring theme in all the interviews was how the rules helped the discussion flow, and gave a sense of security so that even reluctant students were contributing to the discussion. Supporting this point, findings from anecdotal and interview data suggested that the inclusion of the rule 'you don't have to speak if you don't want to', was apparently significant. Some interviewees commented that the rule signalled a more relaxed ethos that appeared to encourage more people to speak out: '*…it was so laid back, they felt they could speak…one of my friends is quite shy but she still said quite a few things'*.

Participants' commented on the importance of seminar atmosphere on students' willingness and ability to participate in discussions. For example, in one seminar group, negative group dynamics were apparently impacting on students' willingness to express opinions. But the interviewee seemed to suggest that taking parting in these seminars improved the atmosphere somewhat: '...*We have not done that before and it was a different atmosphere in the group. In one group there has been quite a bit of tension... If we'd done that right at the start we probably would have got to know each other more'.* These comments are significant because they give tutors useful insights into the importance of the learning environment in

promoting effective student participation and engagement in seminar discussions. In following section, I will outline the tutors' perspective on using the P4C methodology.

Impact on tutors teaching styles and approaches

Supporting reflections on teaching

Post-enquiry evaluations and interviews held by a researcher showed how P4C led to interesting critical reflections on practice. One tutor found the approach '*liberating*' because, in contrast to her usual teaching style, it was a way of teaching that required and supported students to think for themselves! Another tutor reflected on how using P4C gave her a deeper insight into existing tensions between her practice and her philosophy of teaching and learning, *'I have constant battle between content and process ... It helped me to reflect upon the importance of giving time, the way I support and extend student discussion'.* A third tutor felt that she gained useful insights into the influence of the physical environment on student learning. She was surprised to note that once students had experienced sitting in a circle, they were keen to repeat the experience, because they valued the benefits of eye contact when talking and listening to others.

Engagement and involvement

There was a clear sense of tutors themselves getting involved and excited. Most seemed pleasantly surprised at the level of thinking students displayed, and the clear evidence of students changing perspectives and opinions as they became engaged in a community of enquiry (Haynes, 2002). As one tutor commented, '...*at times the level of student engagement was so intense it made the hairs on the back of my neck stand up*!' The satisfaction of seeing students showing higher levels of autonomy and the more reserved students expressing viewpoints was also noted by another tutor. Initially concerned about relinquishing her usual role, she commented: '*by letting the discussion go off, they still came back to something; I thought it was a really interesting question for enquiry – they pruned it down themselves'.* Another commented:

'The most positive aspect was the confidence students showed in challenging particular ideas, while doing this in a way that was sensitive to the possibility of different point of view. Also positive was the very natural way in which the discussion focussed on picking key concepts, ...I was very impressed by the depth of students' thinking and the way in which they were able to draw on their own professional experience in an authoritative manner'.

Anxiety/uncertainty

For some tutors, teaching using the P4C approach required a qualitatively different way of behaving and being, and inevitably created some anxiety and uncertainty. In addition to concerns about coverage of content, tutors reflected on changed roles and identities. For example, one tutor commented; *'I was quite anxious... because I would be taking more of a back seat ... I found that I had to give a lot more thought into what I was doing than usual'*. When a student commented that the tutor became 'invisible' during the discussion, the tutor was pleased but at the same time, the observation raised important questions about her

teaching style. Another tutor was concerned about the effectiveness of her facilitation skills, commenting, *'it is a challenge to intervene appropriately and facilitate the process with good open questioning*'.

It seems then, that whilst tutors' experience of using the P4C methodology was enjoyable and satisfying, it was also pedagogically challenging. In the next section, I will evaluate the strengths and limitations of the project and the methodology, followed by the conclusion and possibilities for further development.

Evaluation

Strengths

The aim of the project was to trial a school-based enquiry methodology to promote student engagement and participation in seminars at University. The project was successful in a number of ways. It showed that both students and tutors reported observable improvements in the quality of seminar discussions. In addition, tutors found the approach a useful tool for reflecting on their pedagogical practices and a scaffold for enabling students to become actively engaged in their learning. Moreover, the findings highlighted the challenges students face in engaging successfully in discussions. As the findings in section 4 showed, P4C gave students a valuable opportunity to reflect on their learning, and a supportive structure that enabled them to express viewpoints, and to learn from each other.

From the perspective of the methodology, the project was successful in demonstrating that P4C is suited to the higher education context, and could be a useful tool for enhancing learning in seminars. In particular, the simplicity of the methodology meant that the approach was accessible to tutors, and at the same time, gave them a clear structure for modelling and promoting important thinking skills.

Limitations

There are a number of limitations relating to the methodology. It is possible that for some students the formalised nature of the methodology may not be appealing. Notably, whilst one interviewee positively remarked on the seating arrangements, some expressed uncertainty. Students may also fail to see the relevance of the approach to their learning, unless the tutor clearly communicates the principles and aims of P4C methodology. Indeed one student, when reminded of a previous P4C session, remarked '*is that one when we didn't know if we were learning anything*? Lastly, from the tutor's perspective, over-enthusiasm for P4C and/or a lack of the sensitivity to students' views and preferences may lead to student disengagement. Nonetheless, anecdotal evidence has suggested that it is possible to overcome some of the practical difficulties through careful preparation, understanding of the purposes and principles of P4C, and sensitive and knowledgeable tutors.

There are also limitations with regards to the nature and scale of the study itself. Firstly, this was a small scale qualitative study that focussed on students' and tutors' perspectives; it does not provide evidence of a large-scale impact of P4C on student learning, or on

module grades. Secondly, all tutors were self-selected and using the approach for the first time, which may have impacted on tutors' largely positive perceptions. In addition, the students were all female and training to work with young children; it is possible that their particular context may have coloured their perception in ways that might not be relevant to other students. Thus, further work with other groups and in other contexts over time is needed to fully explore the potential of this approach in higher education.

Conclusion

Tutors' use of the P4C methodology created an enabling environment for learners, and students felt supported to learn and relate to each other in new and exciting ways. Moreover, the project enabled tutors to gain a useful insight into the student learning experience, and at the same time, gave students the opportunity to reflect on their learning. However, the small-scale nature of the study means that generalisation to other courses is limited. Ultimately, it is unlikely that one approach, such as P4C can address all the concerns about students' engagement and participation. But this project has shown that a closer look at seminars can provide useful insights into students' learning experience, and that P4C can provide a starting point for professional dialogue on pedagogy, and be a useful tool to initiate students into the culture and expectations of learning in higher education.

Further development

The outcomes of the project will be extended in the following ways. Firstly, through establishing a community of enquiry where tutors can take part in enquiries, enhance facilitation skills and continue the professional dialogue on pedagogy. Secondly, there are plans to use the P4C approach on a more systematic basis within a 1st year personal and professional module, to promote engagement and to model and articulate the concepts of enquiry, argument and evidence.

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Developing Learner Autonomy through student-led resource creation within the Faculty of Development and Society

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Abstract

This case study shares the experience of a small scale project that was based in the Learning Hubs in the Faculty of Development and Society (D&S). The Learning Hubs provide a way in which the Faculty aims to enhance the experience of our students during their time at Sheffield Hallam University. This is achieved, in part, through maximising the effectiveness of the use of the physical and virtual space available to us to support student learning.

The aim of the project was to provide the opportunity for students to work as enquirers to create re-usable learning resources to be 'housed' within the Learning Hubs. The focus was therefore not on a module or a course, but on supporting individual students within the Learning Hub itself. Links to modules, where they existed, provided a positive dimension to the project. Our intention was to encourage students to engage with the project as members of small teams of 'consultants'. Each team was asked to develop and produce a reusable learning resource based on their own research in response to triggers provided by the 'client' - i.e. the Learning Hub Managers and module teaching staff. The anticipated effect on learning was that students taking part would develop their research and enquiry skills from the experience of taking on the role of 'consultant' with the creative freedom that working in this way would bring. This was to be evaluated through interviews with students to find out if this way of learning had been beneficial and to encourage those taking part reflect on their own preferred personal learning style.

In facing the challenges this project presented, the project team have learnt lessons for future projects run through the Learning Hubs in D&S; namely:

- Less may sometimes be more. By focusing on one of the ideas for student projects,
- we may have been more successful in achieving our outcomes. There is a sense of us having set out to do too much.
- Despite student feedback suggesting a demand for extra-curricular activity, getting students to engage in this activity and to remain engaged is very difficult without drivers such as links to assessment.

- Also, the number of projects running in the Learning Hubs at the same time as this one meant that there were a number of opportunities competing with each other when recruiting students to take part.

Background

The project was based in two 'Learning Hubs' (LH's) in the Faculty of Development and Society. The LH's are one of the ways in which the Faculty is responding to the challenge of providing our students with a positive experience during their time here at Sheffield Hallam. Through the Learning Hubs we provide opportunities for personalising a student's journey through Higher Education. This is achieved, in part, by working in collaboration with Faculty staff and University Central Departments to 'join up' the services available to support our students and to embed them as appropriate within, and alongside, modules and courses. Through the localisation of support mechanisms - for example, the provision of study support drop-in sessions held within the LH - we are able to bring services to the student rather than asking our students to go in search of the services they require. The result of this is the provision of a more coherent experience that makes more sense from the student perspective rather than asking our students to fit in' with the way that we are organised as an institution. This student centred approach encourages engagement with the support that is available.

The LH's provide a way in which we can develop, embed, and share, innovative learning and teaching (L&T) practices. Each LH has a manager who works with students and staff from across the LH to devise and facilitate projects that encourage new ways of working and learning together. In addition, a key aim of the LH's is to promote a strong sense of community and identity amongst its users. The physical environment of the LH is used to visually celebrate the subjects based there and to support learning through shared experience and knowledge.

Rationale

Working initially alongside with the Research Informed Teaching (RiT) initiative, and with involvement from the Student Union, this project set out to develop enquiry-based learning skills in our students, and take an increasingly student-centred approach to learning, teaching and assessment (LTA). The focus of the project was not on a module or a course but on the student within the Learning Hub itself, albeit indirect links to modules were to provide a positive dimension to the project. It was hoped that successful outcomes would result in a rolling-out across the Faculty. Previous research into what our students wanted from the LH's had indicated that there was a demand for extra-curricular activity and that students were keen to work with experienced staff to develop their skills.

The two areas of the Faculty (pre-departmental restructuring) in which we ran the project were:

- Arundel Learning Hub at City Campus which 'houses' Primary & Early Years Programme, Applied Studies in Education, Childhood and Counselling (ASECC), and Professional Curricular Development, which formed part of the Division of Education and Humanities
- Southbourne Learning Hub at Collegiate Crescent Campus, home to 4 subject groups: Criminology & Criminal Justice; Law; Psychology; Sociology, Policy & Politics; within, what was at the time, the Applied Social Science Division.

Our aim was to involve students from across subject areas with groups of students from different courses and levels working together. Teams of students were to be encouraged to put forward project proposals that would engage them in research activity around their subject or a specific part of their student experience. The outcome would be for the teams to produce a learning resource based on their research. The resources produced would then be displayed in the Learning Hubs so that they could be reused by the Learning Hub Community.

Anticipated benefits and outcomes were intended to:

- provide students with the opportunity to reflect on the type of learning resources and activities that would be useful to them to encourage fuller engagement with their subject
- enable students to research and experience activities which will develop enquiry skills
- give students the freedom to develop creatively and, through 'owning' their project, build self-confidence
- develop team-working and communication skills
- develop transferable skills in students that will enhance their learning experience and also create stronger employability prospects following graduation
- provide an extra-curricular activity within the Learning Hubs which could potentially be rolled out across the University
- provide visual evidence of links between student-led research and learning and teaching
- produce 're-usable' learning resources that could be displayed within the Learning Hubs to promote subject identity and to support our developing sense of community

The approach

A project plan had been agreed across the project team in the summer before semester one. The project was due to begin in semester one but due to conflicting priorities that a number of other LH projects the start was delayed until semester two.

Roles and responsibilities within the LA Project Team were defined as:

Clients	Two Learning Hub Managers and relevant teaching staff (based to any modules linked to student project proposals)
Consultants	Student Teams
Project lead	Learning Hub Manager - responsible for overall project management and evaluation

Our initial plan was to market the project, outlining potential benefits of involvement, to students across the LH's. Student teams (each consisting of 3 to5 students) who would develop and submit their own proposals would be recruited. The LA Project Team would then meet to select projects from those submitted and would allocate funding.

However, delaying the start of the project (from semester one to semester two) due to the number of other LH projects being implemented at that time, gave the team time for reflection. From a student perspective, we had to consider what would draw students to get involved in the project. The team acknowledged that the opportunity to develop skills and be involved in something through pure interest might not be enough to encourage involvement, especially since this would be additional to their assessed workload . Our project plan was therefore revised to reflect this acknowledgement, and we developed what was referred to as a 'basket of ideas' of projects for student teams. These were aimed at target groups in the two LH's and so were more specific with a view of encouraging intrinsic motivation for students to get involved.

Arundel Learning Hub

The following ideas were suggested for Arundel LH:

- Resource packs for (ECS) placement (to develop creativity in young children with links to the Reggio Emilia Approach already utilised in the department of Education)
- Written Guide for teaching placement

These ideas were based on feedback from Early Years Education students who had suggested that there were not enough resources to support them whilst out on placement. These project ideas were supported by teaching staff who helped us to promote the idea to students in seminar sessions. Two student teams were recruited, both of whom decided to research and develop resources packs for placement.

The ideas developed by the student teams, based on their research, were thought to be innovative and useful by teaching staff. Funding was allocate for the purchase of relevant resources which could be put together the placement packs as recommend by the students.

Unfortunately, at this stage the students opted out of the project due to being under pressure from placement attendance and assessment deadlines. The LH staff then made the decision to go ahead and purchase the resources and to put together the resources packs. These packs are now located within the Arundel Learning Hub and are being used by students out on placement this year. Follow-up evaluation into how useful the resource packs are, and their effect on learning, will be completed at the end of this academic session.

Southbourne Learning Hub

In Southbourne LH we took a slightly different approach. Our target groups and suggested projects were:

- Mature student team (from the peer support group that had recently been set up) to develop information resource that would support the mature student experience. There was a suggestion that this could be an information guide, a short film, a web page or something similar.
- L4 Applied Social Science programme students were asked to reflect on their own induction and experiences during semester 1, and to produce material for 09-10 incoming L4 students about the transition into HE. The suggested resource title was 'Surviving your first semester'.

The student projects were to be structured in the format of two 3 hour workshops. Students would take on the role of Consultant and the Learning Hub Manager was the client. The reason for choosing this approach was to give students an opportunity to experience a 'real-life' situation. By formalising the roles of those involved we aimed to provide students with an increased sense of ownership and responsibility for their projects. In doing so we intended to improve the students' employability by enabling them to develop transferable skills and to have an 'actual' experience that they could reflect back on and refer to in the future. The learning in this sense, would be ongoing beyond completion of the project.

Workshop 1 - Learning Hub Manager (LHM) was to introduce the idea and communicate clear expectations, provide 'triggers' (pictures, words, phrases, web links, references, related resources); and to advise on methods of production and support available. The group was to be left alone to work on the idea for a specified time span. Group feedback was to be gathered at end of session, including a 'map' of thought process and the project outline on what is to be produced and how it would be done.

Workshop 2 - Production of the final resource. In the time between the two scheduled workshops, the LHM was to arrange support and materials to make this possible.

It was thought that this method would allow us to limit the time commitment expected and also reduce the level of responsibility in terms of the range of things we are asking the groups to do.

This approach was seen to have many tangible benefits to students, namely:

- open to all students across the LH with the intention of working across subject and level boundaries;
- provision of an extra curricular student opportunity to develop skills; and
- provided the opportunity for students to feel responsibility for 'owning' a project and to think more freely and creatively.

Our initial expectation had been that it would be enough to make links to a module or to work with a specific group of students with a common interest students. It was hoped that students would engage with the project despite the lack of connection to assessment within a module. This expectation was soon acknowledged by the project team to be too ambitious. Despite offering payment of £30 to anyone taking part in both workshops we were unable to secure any interest in the L4 project around experience of induction and orientation. Initially five mature students expressed interest, but only one of the five committed to the dates proposed and so neither project ran. It appears that because none of the activities were linked to assessment within a module and so getting students engaged and then maintaining that engagement was a challenge. Moreover, having such an 'open' brief initially could have been off-putting for students who may have felt daunted by the prospect of doing a project like this.

An additional Faculty project idea was going to be put forward in both LH's which involved a Student Representative team developing a guide for student representatives, for example on 'being more effective representative' or a short film about the experience of being a rep. However, again prior to the semester two start of the project this idea was withdrawn as it had been decided that this would be developed elsewhere in the Faculty.

Assessment and impact of the project on the student learning experience

As there were no direct links with assessment within modules, there was no measureable impact (anticipated or real) on the development of assessment or the way in which students were assessed.We had initially planned to evaluate the effect on the student learning experience through a number of means. Our original project plan had indicated that:

- Individual student feedback would be requested from students taking part in the form of a reflective log. The project team will use these to assess student experience of the project and the impact of involvement in the project on the development of autonomy skills.
- Student groups will be asked to evaluate (with guidance) their individual projects and this will feed into the overall evaluation of the project.
- Feedback will be obtained from users of the Learning Hubs to assess the impact of the resources produced.

On reflection, it is clear that this was a lot to expect from students who were volunteering to participate in an activity that they were not being assessed in. As we became more realistic in our expectations, the evaluation plan was reviewed and in November 2009 looked like this:

- Questionnaire to students at the beginning of their projects to find out about their previous learning experiences and preferred learning methods
- Interviews and/or focus groups at the end of the projects to encourage students to reflect on output (learning resource produced, what (if anything) they have learnt and how they have found this way of learning.
- Feedback from teaching staff - involved through links to modules - about the effect of student involvement in this project in terms of the development of transferable skills.

It is disappointing to report that this project appears to have had very little impact on the student learning experienced due to the limited numbers of participants. We have been unable to gain any feedback from the students who initially showed interest and who developed ideas.

Discussion, summary and evaluation

Despite not achieving our intended outcomes, many lessons have been learned from the development and running of this project. The LH's were in a relatively early stage of development when we secured funding to run the project. A number of other projects were also running in the LH's and so there was competition in terms of the numbers of opportunities for students to get involved. As some of the other projects were further embedded into modules with assessment links, these projects were tied into a stronger structure in terms of timing. As such, this project may not have been given the resource it required to make it a success.

The project was very ambitious in its scope. Any one of the final student project suggestions could have been a project in its own right. In setting out to try out many things we achieved very little, and therefore 'less would maybe have been more'. Had we selected any one project that came out of our 'basket of ideas' then we may have been able to have gained more from having a narrower, more concentrated focus.

Further developments

Any one of the student team project ideas could be taken forward and developed as a project in its own right. However, it is clear that this would be more effective if the project was embedded within module delivery and linked to assessment.

From a personal point of view, my own understanding and interest in learning autonomy, and what it is that encourages our students to engage and take responsibility for their

learning, has been strengthened. Despite disappointing results from this project, I feel better equipped to develop my own knowledge further and to develop and take forward similar projects in the future.

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.

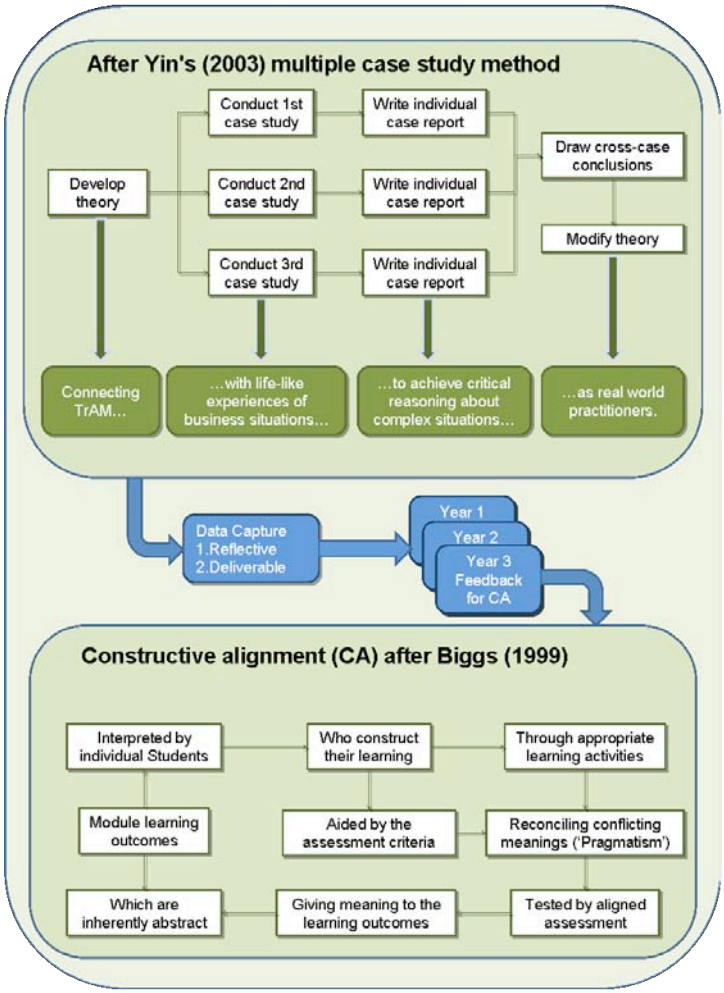

Figure 1. Multiple case study method after Yin (2003) linking with Constructive Alignment, Biggs(1999).

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.

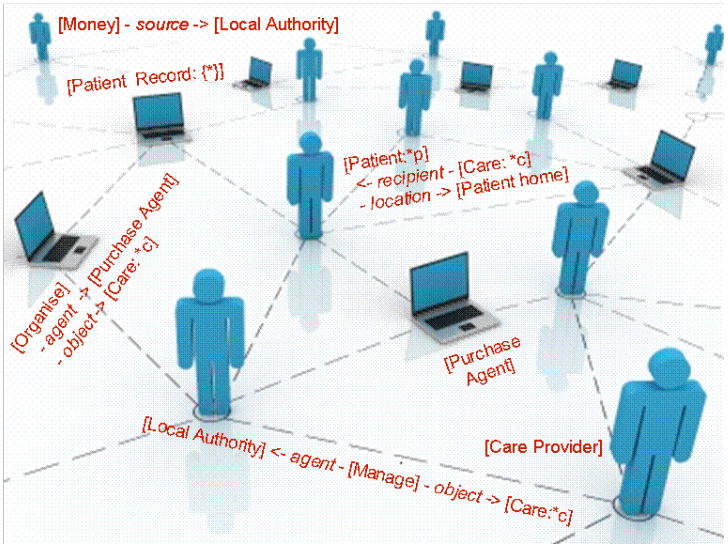

Figure 2. A Theoretical Framework Called Transaction Agent Modelling (TrAM)

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.

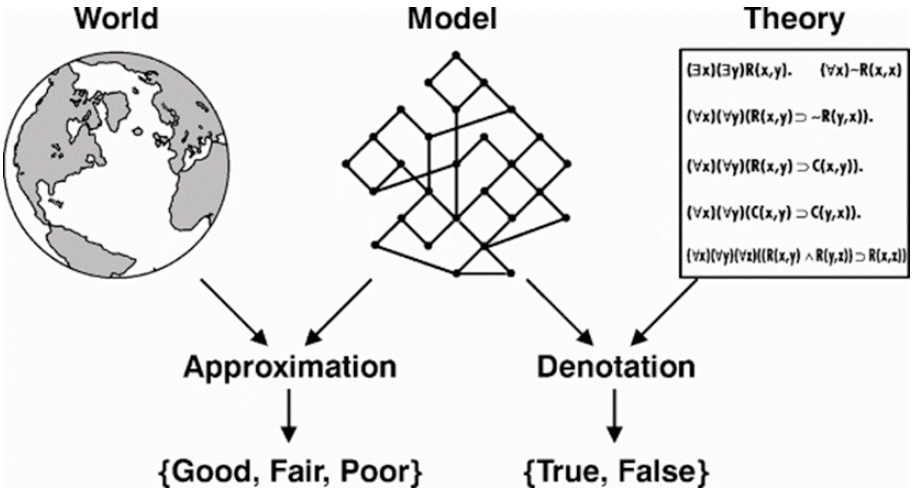

Figure 3. Box (Box, 1979; Sowa, 2000) "All models are wrong, but some are useful"

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.

Right & useless *"Don't bother"* *"Precisely wrong"* *"Modelling the immaterial"* *Model Complete in terms of fundamentals, automation and visualisation but an inappropriate use of the model.*	**Right & useful** *"80% of work just to get that 20%"* *"Perfectionism"* *"Unrealistic to achieve"* *Model Complete in terms of fundamentals, automation and visualisation resulting in design benefit.*
Wrong & useless *"Not a model"* *Poor or incomplete model fundamentals meaning the following steps of automation and visualisation are going to be wrong.*	**Wrong & useful** *"20% effort, 80% impact"* *"Approximately right"* *"Wrongness in model is not sufficiently material"* *Model incomplete in terms of fundamentals, automation and visualisation but resulting in design benefit. Model completion required to substantiate design benefit.*

Figure 4. "Categorisation of an enterprise models usefulness"

In terms of categories of figure 4 above the crucial question is how do we recognise something as a design benefit? In the context of our modelling activities it could mean that we come up with important findings which are only discovered through our modelling activities. Even if our model is wrong but if it leads the design team to a discovery that benefits their design we should be pleased with the modelling effort. On the other hand if the design team modelling is right but it does not lead to any tangible findings we should be disappointed!

Case study design group results show that through the case studies and TrAM the student design groups were actively engaged in applying reasoning and this theoretical framework to different business settings. The following students' reflections are extracts from student case study observation summaries:

- "Models may be wrong as they don't accurately reflect reality as it really is"
- "It is impossible to model the real world. Assumptions can be made but, real model parameters will also change sometimes in an unpredictable way"
- "The purpose of the model is to maximise the usefulness"
- "A model can be useful to help us see and make changes to the design"
- "Models are better used as a guide for understanding an enterprise"

These student reflections are all correct in terms of meeting the leaning objectives; they show that students have learned the usefulness of applying enterprise models through case studies as a design step. They indicate that student designers are able to explore and to become aware that building a model is a really useful design activity and design tool which has close parallels to industrial practices. Good industrial design practice is about re-use and refinement and being a reflective practitioner (Schon 1983). Exploring design limitations through a model or prototype at the same time being aware of the limitation of that model can be a crucial and very cost effective step to ensure that a design will perform as expected

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.

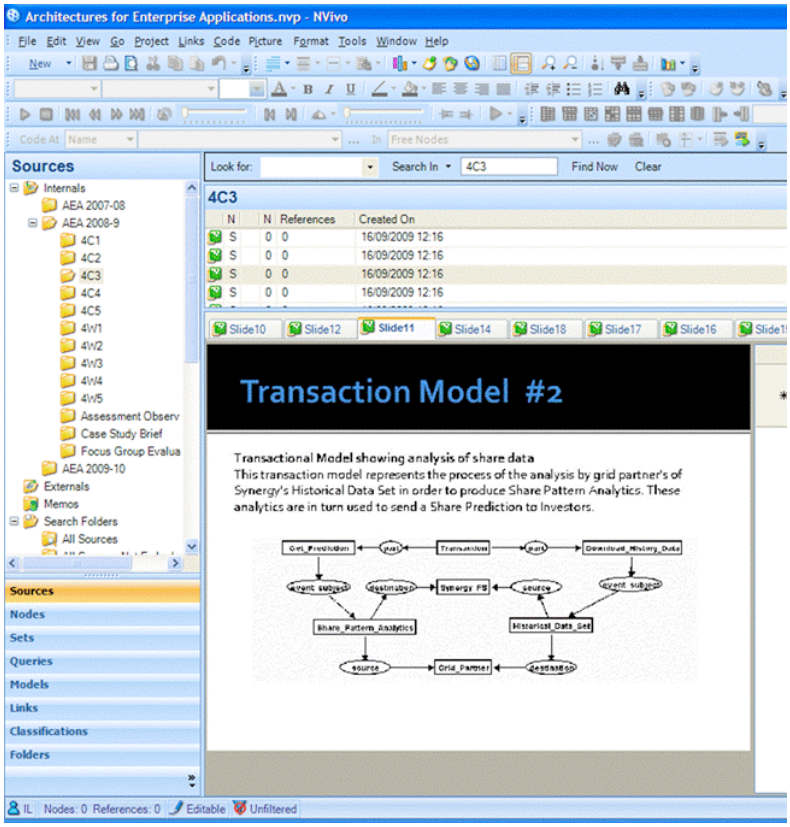

Figure 5a. Workspace area in NVivo showing a generic Transaction Model (TM)

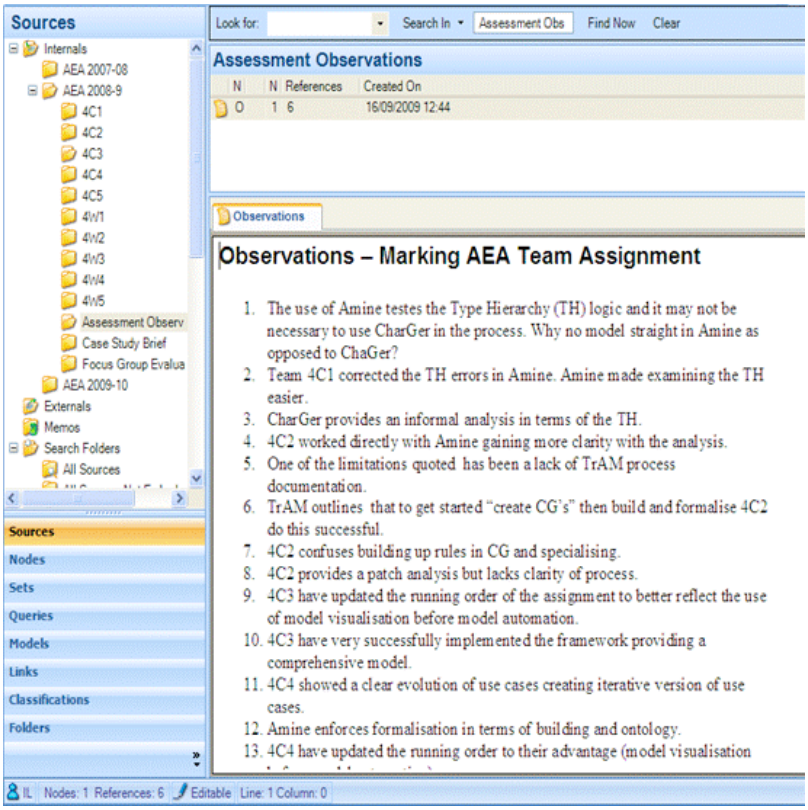

Figure 5b. Workspace are in NVivo linking in Observations

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.

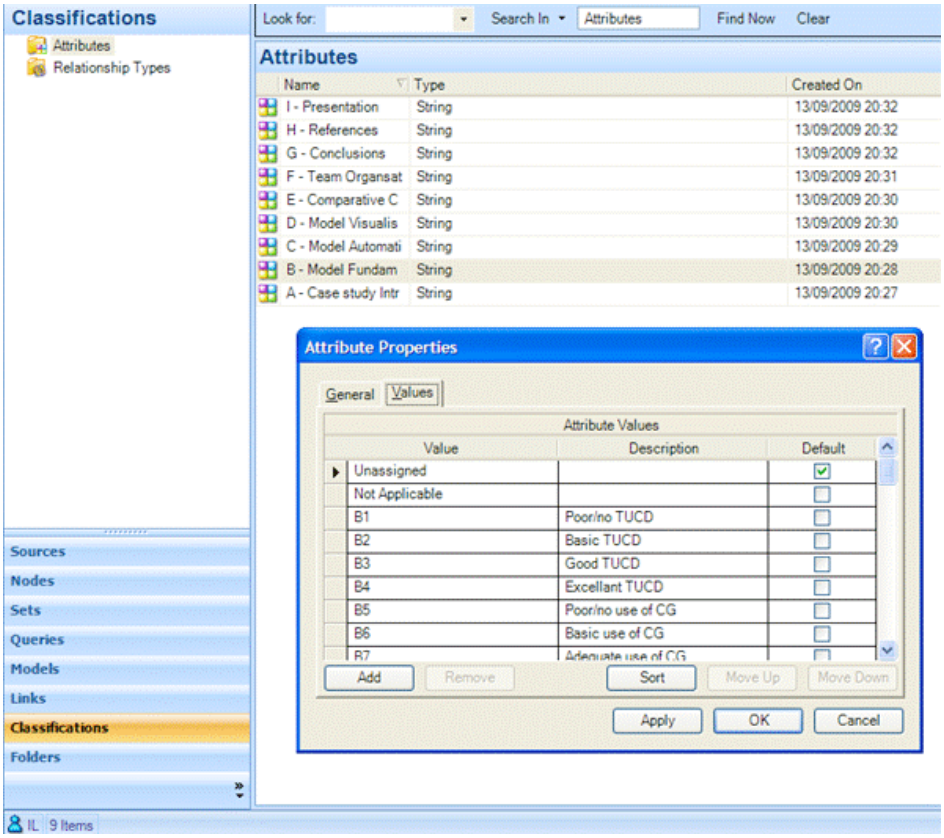

Figure 6. Classification assigning values for Model Fundamentals

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.

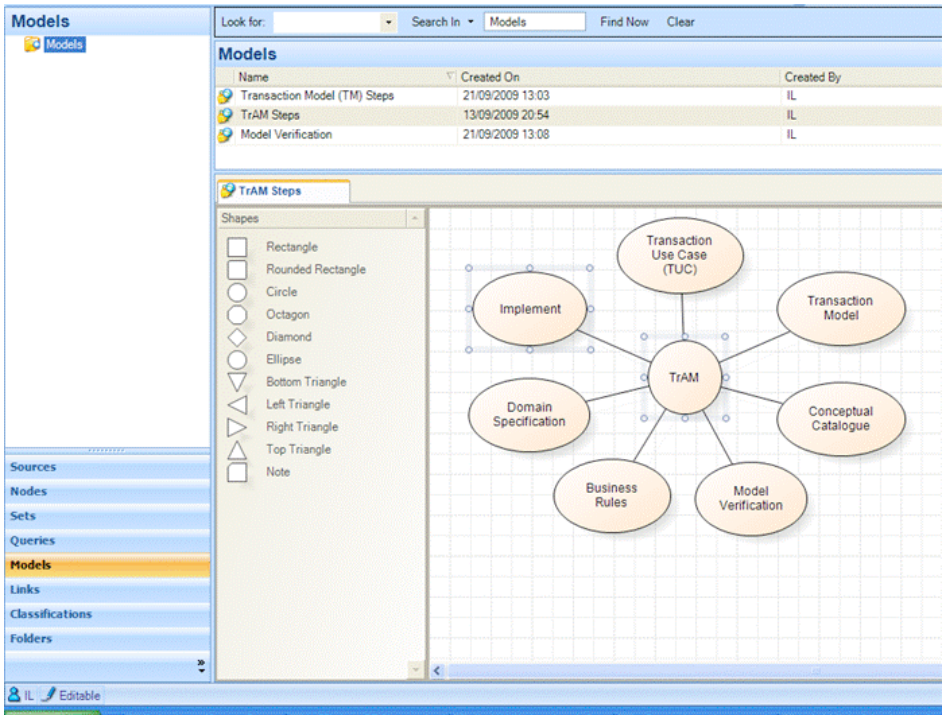

Figure 7. Outline Steps for a TrAM Framework in NVivo

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.

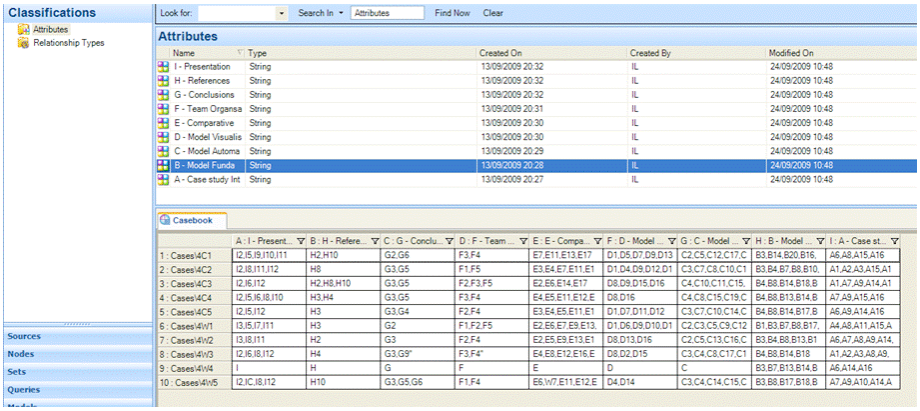

Figure 8. Casebook with Attribute Data for AEA

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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Disseminating good practice through Learner Autonomy and Enquiry Based Learning on a History programme

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Module Title: Making History 2

Level of module: Level 4 (First Year Undergraduate)

Module Title: Britain and the Great War

Level of module: Level 6 (Third Year Undergraduate)

Module Titles: Inventing British Democracy *and* Northern Soul

Level of module: Level 6 (Third Year Undergraduate)

Abstract

This case study examines the dissemination of Learner Autonomy (LA) and Enquiry Based Learning (EBL) across an undergraduate History programme. The 'seed' module, the Level 5 Historians & Research (H&R), was used as the model to extend LA/EBL both to incoming level 4 students and final year learners. Approximately 75 students take the H&R module, and the process is now rolled out to some 80 to 90 first year students and in the region (it will vary from year to year because of option choice) of 50-60 final year students.

Introduction

The undergraduate experience of LA requires 'careful scaffolding' if students are to become producers of meaning rather than passive consumers of knowledge (see Walkington, 2008). The decision to embed LA/EBL across a programme of study therefore required a systematic approach which addressed the following issues:

- LA is not reducible to independent study and is more securely located in the sphere of active learning where autonomy can progress and evolve in a stimulating environment (Savin-Baden, 2007).
- Careful consideration must be given to the design of assessment systems (see Section 6) so they are aligned to the students development as an autonomous learner (Booth & Hyland, 2000; Timmins, Vernon, Kinealy, 2005).
- The timing of implementation is a critical factor, and detailed discussion of LTA initiatives take place during key phases of the re-validation cycle and provide the opportunity and space to review and explore 'good practice'.

- To encourage the participation of younger members of staff/new lecturers in curriculum design which has specific LA/EBL focus. In short, investing in the future and therefore addressing the issue of sustainability.

Background

The History programme has an intake of about 110 students a year (80 single honours stream) and in aggregate there are approximately 280-300 students registered on the whole programme. The 'seed' module H&R which was introduced in 2000 (and was included in the original CETL bid) is taken by all level 2 single honours students. Subsequent curriculum developments in LA/EBL have followed both vertical and horizontal paths across the programme. For example, the level 4 compulsory module Making History 2 (85-90 students), at level 5 in addition to H& R the Imperial Economy (24), and at level 6, Britain and the Great War (40-65), Inventing British Democracy (25), and Northern Soul (27).

Rationale

The initial challenge was twofold:

1. To encourage students to take greater control over their own learning (Benson & Voller, 1997) in a core module focused on research and project work; and
2. To use the module as a 'seeding device' to enable the dissemination of LA/EBL more extensively across the History programme.

The intended benefits of the core module are associated with an approach to learning which invites learners to choose and develop their own research project, and to set their own aims, objectives and research questions. In other words, the learners themselves are asked to define the challenges/constraints and to set goals (Walliman, 2005). The rationale for the module is that research is not taught, but rather it is the learner who reflects on, and who searchers for the solutions to the challenges that confront any research project. The skills and capabilities are embedded through learning-by-doing, so that the learners acquire the capacity to l to act autonomously. Yet crucially important within this learning environment is also the recognition that it is collaborative both between learner and tutor, and between learners themselves. It is important to foster a partnership approach to learning. The rationale for the dissemination process was to capitalise on the 'good practice' of the core module in the context of a re-validation event and the appointment of two new members of staff.

The Approach

The Core Module

A key driver of the module is that students must choose and design their own research project; it is made clear at the outset that tutors do not provide one for them. Consequently, in the early weeks of the module it is essential to cultivate student confidence. Tutors were aware in the design stage of H & R that it would take students outside the comfort zone of

more conventional modules. (One student reflected in her final report: 'although the project provided a great opportunity to under take self-supported work, it was difficult to know where to start'.) The design and delivery called for robust 'scaffolding': how was this done and how successful has it been?

The mode of delivery was divided into two sections. In the first four weeks the focus is on collaborative learning, where students share responsibility in small groups (up to no more than four per group) and prepare for the transition to individual activity (Barker, Mclean & Roseman, 2000; Allen & Lloyd-Jones, 1999). At the end of week four students make their case for selecting their individual project, justify their choice and are allocated a tutor as mentor. Over the remaining eight weeks of the semester drop-in-sessions are available and feedback tutorials are provided on their first and second assignments (see section 6). In the critical first period (weeks 1 to 4) student groups foster collaborative learning, discussing between themselves and with tutors the feasibility of their chosen project, and sharing ideas and testing out potential research projects. In addition, there are practical exercises set and there is a group assessment element (see section 6). After week four students develop their own individual project focusing on design, challenge and reflection, which is, on the process of 'doing' a project rather than on producing a finished product. Students can use the opportunity of the drop-in-sessions to seek advice and support from tutors who are always available for consultation at set times. The four parameters which support the 'scaffolding' for the module are:

- Confidence: the cultivation of a learning environment that enables students to take greater control of their learning
- Collaboration: using group activity to foster the sharing of responsibility and to prepare for the transition to individual work
- Innovation: the student makes the case for a research project and justifies their choice
- Autonomy: students are weaned away from conventional sessions, are responsible for developing and reflecting on their project, but operate in a framework of support offered by tutors. It is important to stress that students are not required to attend drop-in-sessions; it is up to the student to decide whether to take-up the opportunity to use them.

Student responses to the module have been positive:

> *'Above all being more responsible and more accountable for my own work and level of commitment'*
> *'When first starting this module I thought thinking about research ideas and having to do an individual case study a daunting prospect, but...taking on this project has made me much more confident and positive about this kind of research'.*
> *'Working to be more involved in group activities will help me to contribute in group work in level 6'.*
> *'The nature of the module is independent learning and it has helped me in introducing my own questions and aims'.*

> *'To formulate objectives and research questions new skills were developed as I never previously had to take a topic, break it down to set my own objectives and form questions I intended to answer'*

The student responses suggest a twofold outcome: a growing student awareness and confidence in their responsibilities as learners; and a growing acceptance' by tutors in the student's capabilities as autonomous learners. Both processes are mutually re-enforcing and provide another example of how the scaffolding enables the development of learning as a partnership between learner and tutor. The opportunity for students to frame their own questions and be prepared to answer them is the development of a practice where they do take greater charge of their own learning.

Disseminating Good Practice

H&R acted as a 'seed' module enabling the dissemination of an EBL approach to LA to be embedded at other levels of the History programme. Some of the modules adopting this approach are briefly described below:

Making History 2: This is a core module for all level 4 single honours students in semester 2 (total numbers for 2008/9 academic year - 85 students). The aim of the module is to develop autonomous learning skills through students working on a group project related to an aspect of public history in the Sheffield region. The module handbook states: 'The tutors will be there to facilitate your work, not to tell you what to do, when and how to do it'. Lectures are provided in the first four weeks (following a similar template to the H&R module) and are then supplemented by a series of fortnightly seminars. The purpose of the latter is to ensure that project groups are working smoothly and that all group members are aware of the demands of team work. The module ran for the first time in the 2007/8 session and feedback from students have been positive.

Britain and the Great War: This level 6 module is in its third year of delivery and is modelled on an EBL approach where students are engaged in exercises in informal groups. For example, groups are invited to prepare short reports and briefing papers on various aspects of the economic, political and military dimensions of the war. As a student commented in his seminar log: The main task was for the group to act as 'a small sub-committee advising the War Cabinet. The purpose of the exercise was to view the decisions undertaken by the war time cabinet from their (students) perspective to reach an understanding as to why decisions are made…' This is an example of an EBL approach enhancing the development of deep learning and students gain understanding by meaningfully taking charge of their own learning (see Wenden, 1998). Student response to the module has been very favourable, comments on module questionnaires include: 'The layout of the seminars - structures and activities have been fantastic as they allow you to engage in the topics being discussed'. 'Seminars were much better than other modules - encouraged participation'. 'The quiz was a great introduction to the seminar and was carried out well by the group work and we had good discussions at the end'. 'Enjoyed the discussions because you find different views and perspectives on topics that differ to the ones you think of'. The external examiner in his

2007/8 report observed that the module required the 'students to reflect on their seminar work and structure what they had learnt'.

Inventing British Democracy and Northern Soul: These two modules were designed by two new young members of staff who were mentored by Roger Lloyd-Jones, and who also worked with Sally Bradley from the LTI using their approach to LA/EBL in curriculum design to apply for membership of the HEA. One tutor has already gained membership and the other was awarded a small project grant from the CPLA and has recently taken up the role of History group LTA co-ordinator. Both modules will start in semester 2 of 2008/9 and have attracted 24 and 27 students as their first intake.

Assessment

Critical to the successful design and implementation of modules adopting LA/EBL is that the approach must be aligned to the mode of assessment. As Boud has argued student decisions about what and how well they learn is informed by assessment (Boud, 2002; Booth, 2000) and one might add that asymmetrical alignment leads to a significant fall in student confidence.

Assessment and the H & R Module

In the H & R module a three tier assessment package is used: the first exercise is group based and students complete a number of tasks using on-line search engines from the module blackboard site. The exercise is designed to enhance learning by the group using its own initiative (Nicholson & Ellis, 2000) to search for historical sources and to produce a short report. The exercise is submitted in week 5 and tutors guarantee return and feedback by week 7. The second exercise is an individual research proposal which is designed to prepare students for planning and writing the final report - this is submitted in week 7 and students are asked to return proposals and provide feedback in week 9. Exercise 3 is the final report which invites students to comment on their learning experience, what they consider to be their positive achievements (see 5.2) and what they consider to be their less successful outcomes (these frequently refer to time management issues). Students are also asked to comment on what ways the project has changed since the proposal in week 7 and to explain why changes have been made.

The assessment package is not simply a 'test' of what the students have achieved but an opportunity for learners to demonstrate their ability to reflect on their own learning and plan ahead for their final year. As one student put it in the final report: 'This module has taught me how a dissertation is different from an essay, because it involves more independent study and unlike an essay is not based on a subject learnt about in lecture or seminar work.' The kind of study is dependent upon the student setting out the objectives of research'. The external examiner observed 'The assessment criteria were very appropriate' and 'provide 'a stimulating intellectual environment, and 'part of that is the support and feedback system'

New Modules

Assessment portfolios in the new modules using an EBL approach tend either to use a group presentation and an individual self-reflective report evaluating the learners contribution to the presentation (MH2 & Northern Soul) or seminar logs (Great War; Inventing British Democracy). Seminar logs introduce an element of choice into the assessment system, in both the Great War and Inventing Democracy modules. Students are able to select any 3 of the 5 thematic seminars to write up their log. The logs focus on what has been learnt in the seminar, how the activities have contributed to the learning process and how students have arrived at their conclusions or judgements. They also provide a different approach to assessment compared to the more traditional essay/examination format. In terms of evaluating student assessments, consideration is given more to reflection. For example, what is achieved in the seminar, how was the topic approached, how valuable were the group activities and discussions in facilitating learning; rather than focusing on content and narrative. In his 2008 report on the Great War module the external examiner reported: 'May I start by saying what an excellent form of assessment I think this is - it requires the students not only to attend seminars but engage in them actively, and reflect on learning. Exemplary test for graduate level skills'.

Summary and Conclusion

To successfully embed LA in programme curriculum it is essential to see the LTA approach as a partnership between tutor and student. Rather than independent learning LA, is more to do with interdependent learning where students can learn from each other. Equally important, and why this approach can be recommended, is that tutors gain the confidence to wean students away from over-directed teaching and assessment, which tends to turn students into passive recipients of knowledge. The outcome for the History programme at SHU over the last few years has been to disseminate good practice in the form of LA/EBL at all levels of the curriculum and there has been a progressive embedding of these initiatives. The core level 5 module H & R was used as an exemplar and the opportunity of the re-validation cycle and the appointment of new lecturers were capitalised to disseminate good practice across the programme. Tutors are encouraged by greater participation and activity in seminars (student responses), a significantly more varied assessment portfolio and this is reflected in student work and performance (external examiners). These initiatives have also been enhanced by significant investment in Blackboard (an LTA history group action plan for 2007/8) and this formed part of the 'scaffolding' so crucial for supporting the partnership between students and tutors. For tutors and students this has been an important journey, the embedding of LA/EBL has been challenging, thought-provoking, and risky, and like all interesting journeys the means are as significant as the end.

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Promoting and evaluating entrepreneurial learning: Assessing the effectiveness of an Enquiry-Based approach

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Module Title: Northern Leadership Academy programme

Level of module: Short, non-credit bearing module

Module Title: Entrepreneurial Marketing and Innovation

Level of module: Level 7 (MSc)

Abstract

This project was about innovative learning, teaching and assessment methods that enhance entrepreneurial learning by developing learning autonomy in managers within their work environment, and taking part in a short management programme. It was based on the premise that managers have complex and dynamic responsibilities and are therefore required to engage in a constant process of learning in order to develop their professional standards and meet their particular organisational objectives. This project aimed to develop autonomy in managers. 'Autonomy', in this context, refers to an ability to be responsible for determining the purpose, content, method of learning and delivering transformation to their organisations. To this end, this project sought to examine: (a) the role of learner autonomy in the enhancement of work-based, entrepreneurial learning and managerial skills development; (b) the use of enquiry-based learning and assessment in the development of learner autonomy in the context of entrepreneurial learning; and (c) the role of the teacher as facilitator.

Based on a qualitative study that involved both managers and full-time postgraduate students, this project explored the extent to which the enquiry-based learning approach was effective in promoting and evaluating entrepreneurial learning. Enquiry-based approaches where students engage in an essentially self-determined process of enquiry (Hutchings, 2005; Savin-Baden, 2007) together with their integrated assessment strategies empower learners to take more responsibility for their own learning thereby increasing their engagement in the learning process (Bandura, 1977; Feuerstein, 1991). The research that underpins this project emphasises on the entrepreneurial process and innovation; that is, the processes involved in developing market innovations rather than new venture creation. Assessment was also seen as an integral element to facilitate and drive student learning. This case study concludes by drawing upon the implications of the findings on curriculum planning, assessment design and feedback strategy.

Background

There were two courses involved in this project:

Northern Leadership Academy programme: This is a short, non-credit management development programme designed to engage managers who are looking to enhance their professional development. This programme is in its very early stage of its development and experimental in nature. A total of ten managers participated in this programme. These managers have diverse educational backgrounds. Some are university graduates (degree level or higher) and some have qualifications associated with professional bodies (e.g. Chartered Institute of Marketing).

Entrepreneurial Marketing and Innovation: This is a Level 7 module of the MSc International marketing course with 72 students. The educational aim for this module is to enhance students' entrepreneurial learning by progressively developing learning autonomy through an enquiry-based learning approach.

The approach to learning for both courses was primarily through a series of taught seminars, underpinned by an enquiry-based learning approach. Learning was enhanced by action learning sets in which students worked together in small groups to share knowledge and expertise with a view of enhancing their learning experience.

Rationale

The promotion and evaluation of entrepreneurial (and, by implication, intrapreneurial) learning is an acknowledged area of weakness in entrepreneurship education. A typical University setting is often not conducive to entrepreneurial learning as traditional learning and assessment methods, exemplified in practices such as didactic lectures and closed-book examinations. These learning and teaching methods do not promote entrepreneurship, primarily because entrepreneurship education requires students to develop new ways of thinking and new modes of behaviour (Heinonen and Poikkijoki, 2006). Traditional methods centre upon transmission approaches ('learning about') rather than experiential approaches ('learning for'). This calls for pedagogical approaches that encourage 'learning by doing' and provide opportunities for students to proactively manage their learning. In other words, the teacher needs to encourage students to reflect on their previous life and learning experiences, to see these experiences in a wider context, and make their own theoretical interpretations of them (Gibb, 2002). It is argued here that one such approach that allows students to do this is enquiry-based learning, in which students are expected to construct their own knowledge and understandings by engaging in supported processes of open enquiries (Kahn and Rourke, 2008).

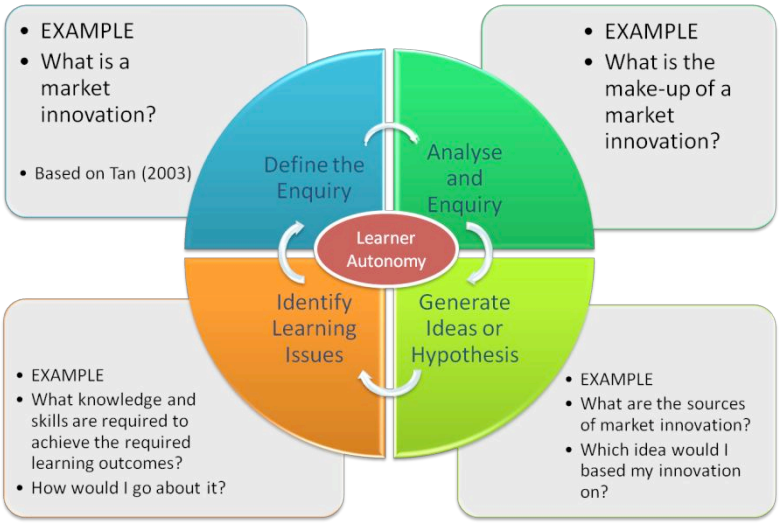
Enquiry-based learning is a term that describes any process of learning through enquiry. Learning is derived from interaction with an enquiry or problem scenario and the learning environment, through which cognitive dissonance is created. Knowledge evolves through collaborative processes of social negotiation and evaluation of the viability of the enquirer's

point of view (Tan, 2003). The emphasis is upon the importance of the participation of the learner in the formation of the purposes which direct his/her activities in the learning process (Dewey, 1963). In this sense, enquiry-based learning is about ensuring that students, where possible, are encouraged to acquire their knowledge by means of a process of active learning. By carrying out research and investigations into areas that they deem essential for a proper response to identified enquiries, students take ownership of that process of enquiry hence their own learning. It is proposed here, therefore, that the enquiry-based approach can better facilitate the acquisition of problem-solving, communication, teamwork and interpersonal skills and attributes synonymous with entrepreneurial learning.

Teaching Practice

The emphasis of this project was on the entrepreneurial process and innovation; that is, rather than new venture creation, the focus was on researching the processes involved in developing market innovations. Based roughly on Tan's (2003) approach, the curriculum adapted for this study used primarily real business problems and scenarios as anchors around which learners could achieve the learning outcomes through a process of actively working on self-determined, yet open enquiries. By presenting these real business problems/scenarios as focal points, learners were allowed to act as active problem-solvers, whereas teachers assumed a role of facilitators of the learning that took place in the course of solving a particular problem or issue.

Figure 1: Entrepreneurial Learning – An Enquiry-Based Approach



Students were presented with an open enquiry, which in this case was the creation of a market innovation. They were expected to formulate the topic of their chosen enquiry and to describe the scope of their engagement with it. They were then required to enquire, seek information from books and websites, and think about how to solve their immediate problems, and ultimately, develop a strategy that would help them launch a market

innovation in a chosen industry. This method of learning was aimed to trigger learning by placing the onus on the students to:

a) Define the enquiry (what is a market innovation?);
b) Analyse the enquiry (what is the make-up of a market innovation?);
c) Generate ideas or hypothesis (what are the sources of market innovation? Which idea would I base my innovation on?); and
d) Identify learning issues (what knowledge and skills are required to achieve the required learning outcomes? How would I go about doing it?) (see Figure 1).

After each learning session, students were required to work in a learning set of three to four people, and to discuss what they have learnt and how they would apply that learning into their enquiry based task. They were told to ask themselves questions, such as what they know about the topic of enquiry, what they need to know to solve the issue or problem at hand and what ideas come to mind as they discuss in groups.

Assessment

The assessment is an integral element in this pedagogy, as it is perceived to facilitate and drive student learning, and act as an important mechanism through which assessment 'of' and 'for' entrepreneurial learning is undertaken. Assessment influences the decisions students make about how as well as what they learn (Boud, 2002; Ramsden, 2003). It can shape how students view the curriculum, and make decisions about what to learn and how to approach their learning. As Boud (2002) suggests, "every act of assessment gives a message to students about what they should be learning and how they should go about it" (37). It is therefore essential that the assessment used give the right messages to students about what they should be learning.

The writing of personal learning logs in the form of a learning portfolio was an integral part of the module's assessment, and these learning logs provided important information about their learning as well as about the student's approach to managing that learning process. The learning portfolio was introduced to the students as an effective learning tool which enabled them to gain greater control of their learning. As the students deliberated on their chosen topic of enquiry, brainstorming and discussing collaboratively, they were expected to draw up their learning issues and how they sought to address them.

All learning portfolios were assessed at the end of the modules and were given a grade. Over the course of these modules, students were given opportunities to discuss their progress with their tutors, who provided constructive feedback (verbal and/or written, as appropriate). As part of the assessment, students were required to verbally present their initial innovation idea for a product or service on a poster. They received a grade and written feedback which helped them to refine their idea. The poster presentation was also used as a 'simulated' learning environment to help students develop the skills of 'pitching' their idea to potential investors. They were encouraged to 'document' and reflect on this as part of their learning journey.

Evaluation

The data used in evaluating the project relied on the qualitative analysis of written student reflections of learning and knowledge application, as well as two focus group discussions. Data was collected with an 'open mind' with no strong ties to any particular conceptual framework. Nevertheless, certain areas of focus were developed and adopted throughout the evaluation as a result of a process of negotiation between our own understanding and experiences, literature review and students' perspectives. To facilitate this, a series of codes are created to label, separate, compile and organise data. This process of coding had provided a simple, effective tool to 'drop' data into categories and sub-categories as they were collected in the field. A total of three categories were developed:

1. How enquiry-based learning promotes learning - focuses on the way that students respond to enquiry-based learning and how it promotes entrepreneurial learning;
2. The role of assessment for learning – focuses on students' reflection on how the assessment tasks help them to develop entrepreneurial learning;
3. Feedback for Learning – focuses on student's reflection on their engagement with feedback to enhance their progressive development and learning.

Discussion

How Enquiry-Based Learning Promotes Learning

The findings of this project strongly suggests that the enquiry-based learning approach adopted for the curriculum design and delivery of this module not only encouraged students to adopt a deep approach to learning, but also simulated the 'learning by doing' education process associated with entrepreneurial learning. The findings suggest that students do not necessarily see the relevance of theory to a real-world context. Instead, they value the opportunity to take ownership of the processes of enquiry; that is, the development of an innovation from idea to market. In this way, they were responsible for establishing the context, the space, and the environment within which their enquiry could best be simulated.

In addition to this, students also recognised how the pedagogical structure of this module enhanced their learning, as the process of self-inquiry helped the students to progressively develop autonomy in managing own learning. The notion of learner autonomy has been described as the learners' ability to take charge or control of their own learning (Benson, 2001 & 2006). Autonomy in an educational context is therefore predicated on the students' innate capacity to take control of their own learning, and their propensity to take charge of that learning in a supportive and enabling environment (Benson, 2001). This has to be within a structured pedagogical framework that would encourage active learning and motivating students to learn towards autonomy (Booth, 2008). Accordingly, it appears that the learning and teaching method and framework utilised in this project was successful in promoting active learning and learner autonomy.

The Role of Assessment for Learning

The assessment seemed to encourage students to engage in self-determined development and progress. There was a strong focus on the output as well as the process of their learning as a formative activity as well as a summative assessment. The use of learning portfolios in which students write learning logs had been effective to allow for individual exploration and reflective learning. Students appeared to value the assessment for its formative role in knowledge and personal development.

Feedback for Learning

Feedback is central to an enquiry-based learning environment. Without adequate feedback, as Hounsell et.al. (2007) observe, students are likely to underachieve, not fulfilling the best of which they are capable. Cross (1996) provides a vivid metaphor for learning without feedback, where it is likened to learning archery in a darkened room. In this metaphor it is simply not possible to hit the target (perform to a given standard) if you do not know where the target is (how well you are doing). Further feedback is critical in making it possible to hit the target consistently by providing information that can be used to improve performance and enhance attainment. The importance of feedback in enhancing learning is supported by clear evidence (Black and William, 1998; Gibbs and Simpson, 2005) that changes to assessment practice that strengthen the use of formative feedback produce significant and substantial learning gains.

Conclusion

The key findings from this study suggest that it is possible to create learning contexts to promote and evaluate entrepreneurial learning within an enquiry-based curriculum. The enquiry-based approach has encouraged students to engage in a process of self-determined enquiry, in which they learn to make deeper sense of what they are learning and are motivated to improve their knowledge to 'get the job done'. It supports the view that innovative approaches to entrepreneurial learning can help students to develop the knowledge, creativity and competences needed to manage their own enterprises.

Changing the way students are assessed holds the key to laying the foundations for effective enquiry-based learning. Embedding assessment for learning alongside assessment of learning within the curriculum constitute a shift of focus from knowledge acquisition, and its application to specific issues, to knowledge co-construction and problem-solving. This change in emphasis implies the adoption of a very different pedagogical approach to curriculum delivery.

Getting timely, regular feedback about the work-in-progress portfolio and having the opportunity to improve before final submission were seen by students as a truly learner-centre assessment for learning. Students stated that they did not just gain more knowledge about the subject matter but also developed professional skills. Through the use of portfolio

assessments, they were able to associate their existing knowledge and learning with real-life, professional contexts that enhance their skills and abilities in their field of study.

The findings suggest that portfolio can be a very useful learning (as well as assessment) tool to help students recognise the complexity of professional work practices and to enable 'learning by doing'. As Klenowski et.al. (2006) observe, portfolios enable "inquiry into learning by the learner through integration of understanding from active engagement in dialogue and collaboration with the tutor and other course-participants followed by reflection on these processes" (278). Furthermore, in the context of this project the use of portfolios quite clearly encouraged students to develop and use their capacity for autonomy in managing their own learning. Learner control implies a power shift both within and outside the classroom, with the tutor moving from a directing role to more of a facilitator in the learning process. The findings of this study suggest that this so-called 'power shift', given the right conditions, can result in the development of learning autonomy in students.

On reflection, it is important to acknowledge that this is a small-scale case study that took place within a specific institutional context in the UK. The comments made by students in the focus groups and portfolio entries represent a limited, one-dimensional perspective of their experiences within an enquiry-based learning curriculum. By undertaking a different approach to analysing the data, it may be that other underlying themes would have emerged. The interpretations from which we derived our findings may very well reflect the various backgrounds (e.g. educational, cultural and personal) of those students who participated in this study, and the ways in which they have previously experienced higher education. Similarly, these interpretations may also reflect our personal, professional, educational and cultural biases, which impact on our ways of going about interpreting and presenting enquiry-based learning.

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Overcoming the fear of figures: a Problem Based approach to Business Analysis

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Abstract

The subject of this case study is a first year module taken by all students on business, finance and accounting programmes at Sheffield Hallam University. The module, Business Analysis, covers quantitative analysis and information technology. The learning and teaching approach includes project work and other group activities all of which are based on issues which would arise in a retail company. A replica retail company is used to generate detailed scenarios and the data required for analysis. The effectiveness of this Problem Based Learning approach has been evaluated from a number of different perspectives. This paper reports on the findings of this evaluation.

Introduction

Students of business subjects often have problems with numbers. There are several reasons for this: fear (Joyce and Hassall, 2006), lack of knowledge and understanding of the principles of numerical manipulation, lack of confidence in applying these principles (Burlingame et al, 2002; Pokorny and Pokorny, 2005), rustiness from lack of use and not seeing the relevance.

The first year module in Business Analysis, delivered to all students of business, finance and accounting at Sheffield Hallam University, uses an approach which integrates the quantitative analysis with the IT. The module uses a problem based learning (PBL) approach (Dolmans et al, 2005), which is applied to issues and tasks firmly located in a business setting. The business setting is provided by a replica retail company having branches across the UK.

The major focus of the module is the interpretation of the results of an analysis rather than on theoretical aspects of conducting the analysis. The approach has met with some success in overcoming students' reluctance to engage with numerical aspects in their studies. We report here the results of our evaluation of the module over the last 6 years of running it.

Background and rationale

At Sheffield Hallam University prior to 2000, numerical and IT aspects were taught to business students through two independent modules; one on "business quants" and the other on IT, specifically Excel. Although these were successful in terms of pass rates,

students persistently reported they found the modules disconnected from the rest of the curriculum and irrelevant to their course and future careers. Studying these topics was seen as a necessary evil rather than adding value to the rest of their studies.

Many students became disengaged at an early stage and the resistance extended to subsequent modules in which numerical and analytical methods were used. Of the students who failed the module, a large number took several attempts before they either passed or withdrew from the course having failed these core modules.

In 2000, when the business programme was being redesigned as part of the regular updating cycle, we took the opportunity of creating a new module called Business Analysis, which combined the quantitative analysis and the IT. This was a radical redesign that addressed a number of the shortcomings of its predecessors. It aimed to: (1) make the relevance of the quantitative analysis in business more explicit, (2) start simple and develop confidence, (3) provide help and encouragement to overcome fear and resistance, and (4) locate the subject more centrally within the curriculum.

The perceived success of this module resulted, via subsequent updates of the Faculty's programmes, in all first year students who are studying courses in business, finance and accounting taking this 20 credit module in Business Analysis. In total a number of about 800 students take the module each year. These students have a wide variety of prior experiences in IT and Maths and many choose their degree subject in the belief that they will do very little, if any, numerical work.

In 2004 a proposal was submitted for the further development of the replica retail company, which is central to the Business Analysis module, into a resource that could be used across other areas of the business curriculum. This proposal was accepted and work has been going on for the last three years on the TIBER project (The Integrated Business Education Resource).[1]

The approach /methodology and method

The initial challenge was to make the quantitative analysis and IT more exciting and relevant to the students. In the previous scheme where the quants and IT were taught separately from one another, the pass rate was acceptable but the general student feedback was that the subjects were not interesting and their relevance to the rest of the curriculum was not clear. Additionally, tutors reported that while on work placement, students could not successfully undertake analysis at the levels required of them.

[1] TIBER project (The Integrated Business Education Resource) (http://teaching.shu.ac.uk/om/thebusiness/website/new_project). The project is funded by HEFCE's Fund for the Development of Teaching and Learning phase 5 (FDTL5). TIBER has a wider range than the original replica company, spanning part of the supply chain and including a number of features relating to the shopping centres in which the branches of the store are imagined to be located. Much of the research and evaluation that is reported in this paper arises from the TIBER project.

The objectives of the approach for a new Business Analysis module included the following:

- to integrate the quantitative analysis and IT so that calculations were done by the computer;
- to reduce the "mathematical" content i.e. simplify the theoretical aspects and remove the use of mathematical formulae;
- to adopt a project based learning approach, where activities are led by the needs of a business;
- to set the whole module within the context of a realistic company.

We explored various options for the realistic company that would form the backbone of the module. The nature of the analysis that was to be undertaken required access to detailed transactional data and it became clear that a commercial company would not allow such access to a group of around 800 people per year. We explored the idea of using a real business from within the University, the union shop for example, and even the idea of setting up a student run business for the purpose of generating the type of information and scenarios that would be analysed in the module. In the end we opted to build our own replica company and develop realistic (but not real) data and information.

We chose a department store operating branches in a number of towns and cities in England. The company was loosely based on real retailing companies including John Lewis and Fenwicks Ltd. We chose a retail company because of the students' familiarity with this sector (as shoppers or as part time employees) which would enable a speedy orientation with the issues and data.

Initially the tangible evidence of the replica company (which we called "the business") was a company website and a series of data files uploaded to the VLE site for the Business Analysis module. Subsequently, with the benefit of external funding which has supported the TIBER project, we have refined the website and added a company intranet website which holds the "commercially sensitive" detailed data and company information. Additionally we have extended the resource to include a logistics company and explicit links to shopping centres. These widen the scope of the resource in line with a wider remit to integrate the first year business curriculum. These websites are now freestanding so that they can be accessed from the VLEs of a number of different modules on the business programme.

For the Business Analysis module the resource (TIBER) supplies issues, problems and data on which to base the practice and assessment of the quantitative analysis and IT tools and methods. The pedagogic model on which the module is based is shown below:

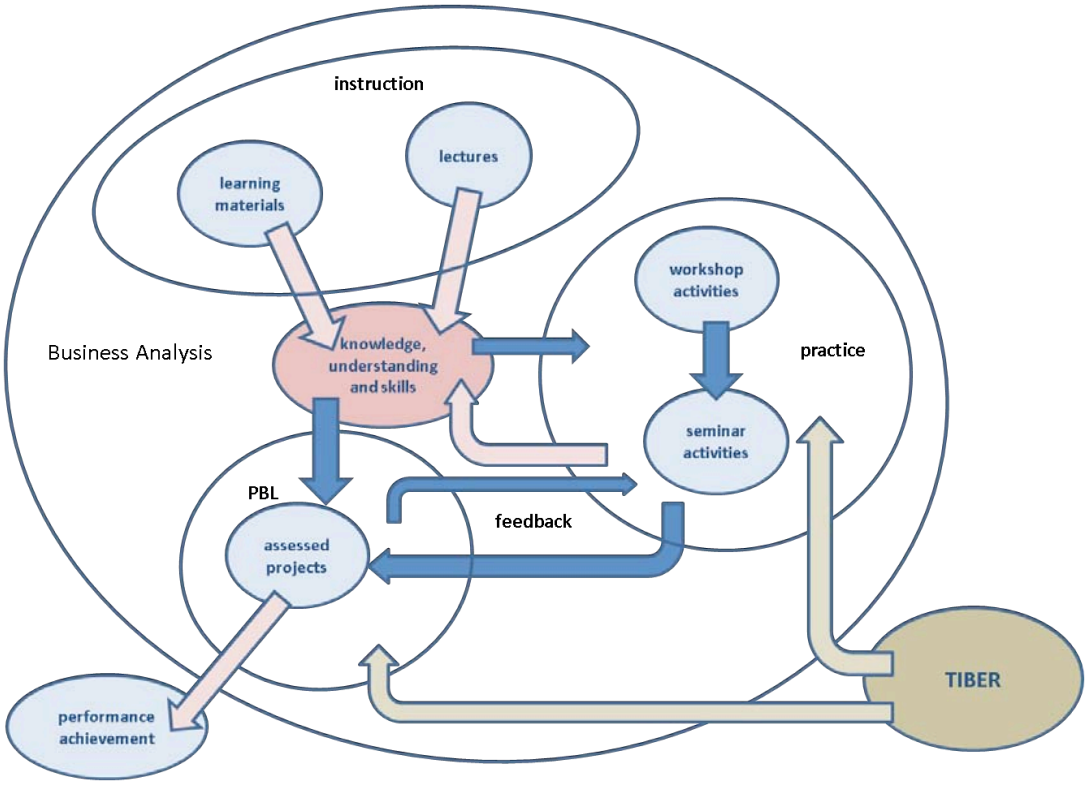


Figure 1: Pedagogic model for the Business Analysis module

The module is divided into 8 study blocks of two weeks each. The remainder of the teaching year is devoted to directed study and student project work. There are two major assessed projects, one in each semester, which provide a basis for the work that the students undertake in the study blocks.

The first project, covering topics from the first four study blocks, involves a team of 3 or 4 students presenting a report on the performance of their department in one of the branches of "the business". The report is via a poster and is a graphical representation of data and information, on both internal company performance and external market and competitor information. Students are allowed a five minute oral presentation to support their poster and have to answer questions on their findings.

The second project relates to a proposed business development within the company and requires students (working in pairs) to apply a range of analytical methods to both historic company data and future estimates of market and competitor interest. The focus is on financial modelling and introduces notions of sensitivity analysis. This project requires students to write a management report which also develops their report writing skills.

Students work on these projects over the whole semester. They learn the methods and undertake practice exercises during the associated study blocks. They also build up their project work incrementally and receive formative feedback on progress by undertaking a

number of small assessment tasks. Additionally, each study block has an associated on-line self assessment test so students can monitor their own development.

The topic of each study block is introduced through a lecture and is supported by written learning materials (bound together in the module handbook). The IT skills required for the study block are developed through a 90 minute computer laboratory session comprising directed practice exercises. Students are required to prepare the results of their computer laboratory work for the following week's seminar session. The seminar sessions provide the opportunity to discuss and explore the interpretation of the work students bring to the class.

Assessment

The module centres on its assessment. The in-module assessment (2 projects, small assessed tasks, on-line self assessment tests) is intended to keep up the students' momentum and engagement throughout the year. There is also an end of module exam which assesses a general understanding of principles and the ability to apply them.

During the 7 years of running the module, various changes have been made: the organisation of support materials has been rationalised; drop-in surgeries have been introduced; the number and frequency of assessed tasks have been changed. Many of these changes have been in response to student feedback on the module and what they like most and least about it.

Evaluation

The module has been evaluated in several ways:

Analysis of the student performance (through marks);

We have tracked the students' performance in the Business Analysis module (and its predecessor modules) over the last 9 years. The series starts in 1999/2000 with the predecessor scheme. In this series we have considered only the quantitative analysis module of the predecessor scheme as it was this that was causing the greater concern.

Figure 2 shows the average marks over the 9 year period.

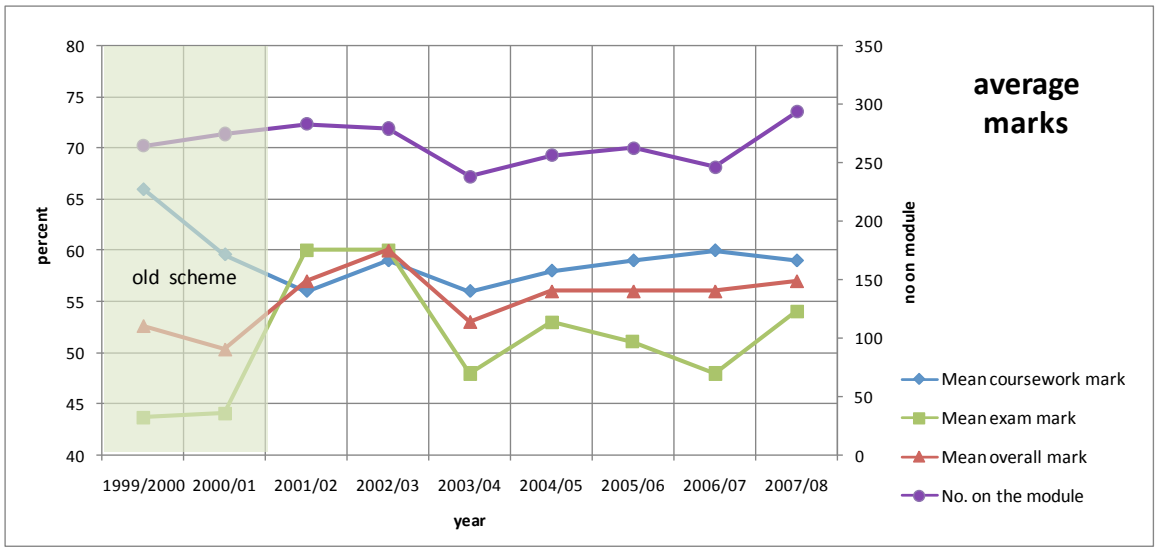


Figure 2: Average marks and numbers of students taking the module

The introduction of the new scheme in 2001/02 produced a dramatic increase in the mean overall mark for the module (red line). The mean exam mark (green line) shows a similar pattern, although the mean coursework mark (blue line) shows an immediate decline but with an increase in the following year. As with any new module, there were refinements in the nature and balance of the assessment and these undoubtedly had an effect on average marks. However, there is a dramatic fall in all three mean marks in 2003/04. These have stabilised since and have now reached levels exceeding those of the old scheme.

The dramatic falls in mean exam marks (in 2003/04 and 2006/07) coincide with reductions in numbers of students taking the module as shown by the purple line in the figure. The dips in these years indicate lower than usual recruitment levels, which may indicate a lower than usual standard of student entrant.

Figure 3 shows, for the same time period, the pass rates for students completing the module

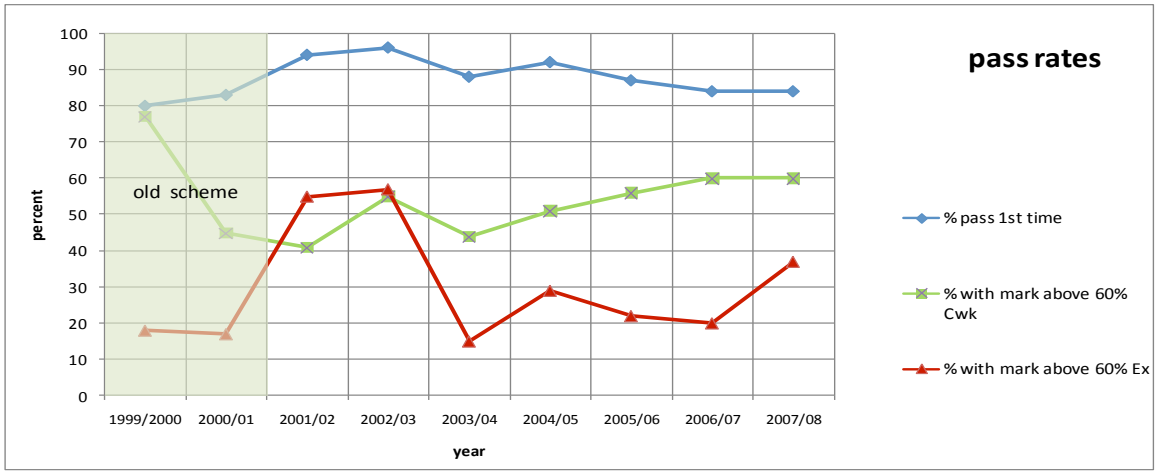


Figure 3: Pass rates and rates of good performance on the Business Analysis module

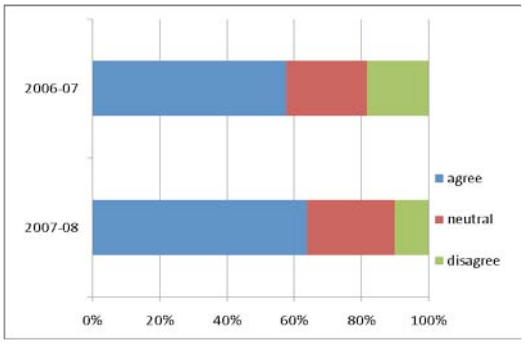
In comparing the percentage of first time passes over this period, it is necessary to take account of a change in assessment regulations which were introduced in 2005/06. This change removed internal compensation between coursework and exam marks, making it necessary to separately pass both the coursework and exam components at 40%. To make a comparison meaningful we have standardised the pass rates on the basis of the previous set of assessment regulations (with internal compensation).

The overall first time pass rate increases dramatically with the introduction of the new scheme and recovers from the dip in 2003/04 (where the numbers on the module fall) to a level above that before the new scheme was introduced.

The two other series shows how the proportion of good performers (obtaining more than a 60% mark in coursework and exam respectively) has changed. Coursework performance took a hit with the new scheme but has recovered; exam performance showed an immediate improvement and has slowly recovered from the dip in 2003/04.

As part of regular module review (through end of module questionnaires)

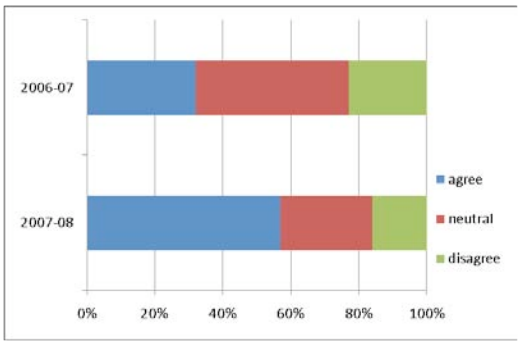
As part of regular module evaluation, questions relating to the resource have been included in the module evaluation questionnaire in each of the last two years. The statements relate to the replica company. The findings are shown below.



The number who see the replica company enhancing the relevance of the module to a business career has grown to a convincing majority.

This shows how the resource has brought relevance to this part of the curriculum

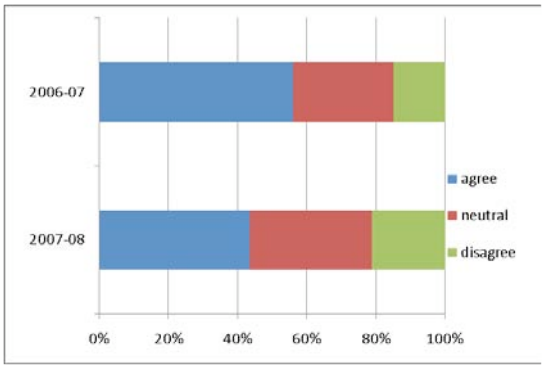
Figure 4: The use of the replica company helped me to understand the relevance of the module to a business career.



The number who agree that the replica company helps to see connections between the different business subjects has grown over the last two years to a substantial majority.

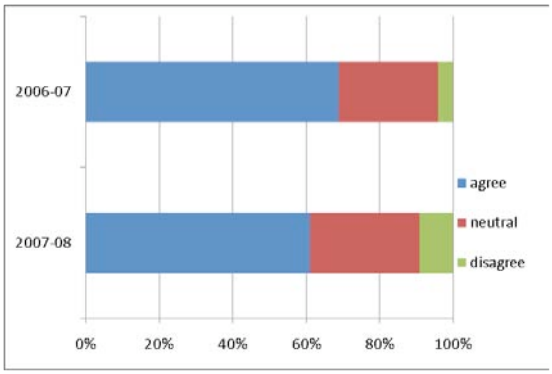
This supports the role of the resource in curriculum integration.

Figure 5: The use of the replica company helped me to see connections between the different subjects I have studied this year.



It seems that the replica company is seen as less realistic in 2007-08 than in the year before. This result could have been influenced by the introduction in 2007-08 of a critical appraisal of the company's web site undertaken as an exercise in the Financial and Information Management module. This exercise might have drawn attention to weaker aspects of the resource.

Figure 6: The replica company, the business, was convincingly realistic.



The percentage of students claiming to find the website difficult to navigate has increased in 2007-08 than in the year before. This may due to the exercise mentioned in the previous question.

Figure 7: The replica company's web sites were easy to navigate

As part of the funded TIBER project

As part of the evaluation of the TIBER project, a series of on-line questionnaire surveys has been undertaken. The design of the survey was informed by student focus group meetings and a series of interviews with staff within the Faculty. The findings reported below derive from the analysis of the on-line surveys.

Students study 6 modules in their first year. Five are mandatory. As the subject of one of the five mandatory modules was changed in 2007-08, only the four remaining modules have been included in this comparison.

If each module was equally disliked among the students, then we would expect 17% of the students to claim each module as their least liked. Figure 8 below shows over 40% of students like Business Analysis the least in the cohort 2005-06. By 2007-08, this has reduced to just over 30%, which is a still a long way from being a reasonable expected value, but is a significant improvement since the start of the project.

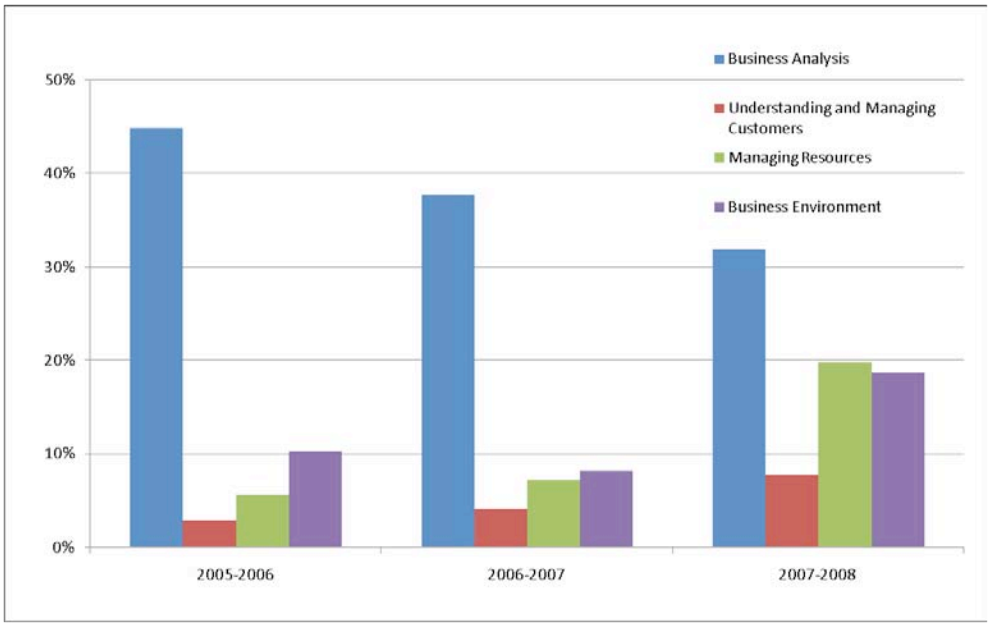


Figure 8: Which module do you like the least?

Figure 9 below shows the breakdown of the most liked modules over these three years.

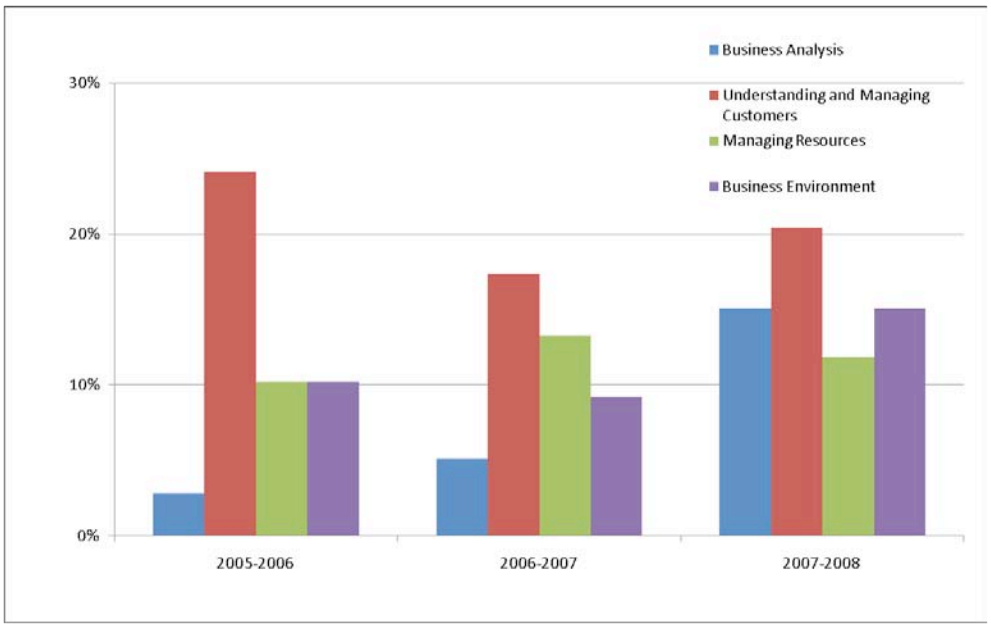
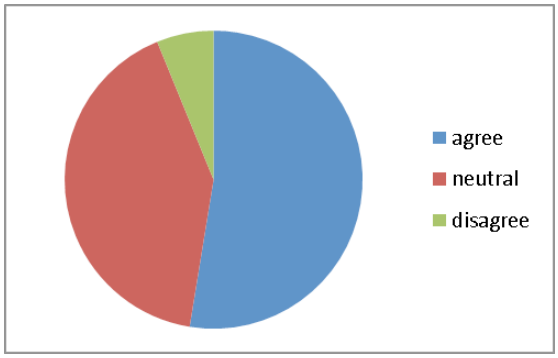


Figure 9: Which module do you like the most?

Again a proportion of about 17% would be expected for each module if each was equally liked. The chart below shows that only 4% of students claimed Business Analysis as their favourite. By 2007-08, this proportion had risen to over 15%, a level much more in line with expectations.

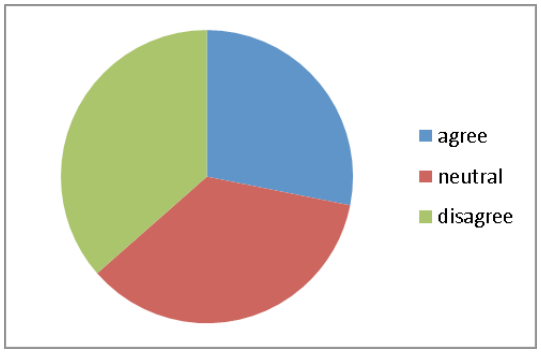
These results indicate that Business Analysis has become much more liked among the mandatory first year modules. Of course it could be that other modules have become less liked which is elevating the relative popularity of Business Analysis.

The last year (2007-08) of this series of surveys also asked questions about the resource and the way it was used across the first year curriculum.



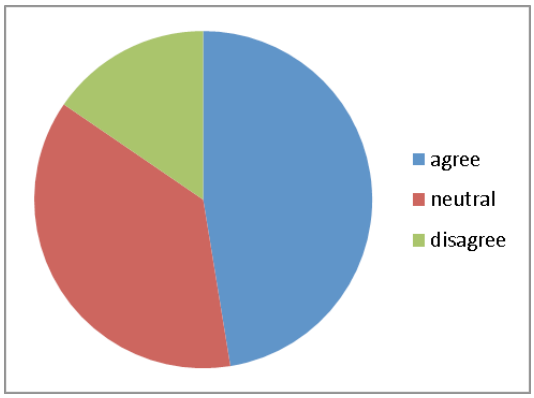
This aspect was included as focus groups had emphasised the importance of real companies. This comes across clearly in this breakdown.

Figure 10: Realism is important to me



A direct question on interest was asked and it is encouraging to see that a third of students agree that the use of the resource has increased their interest in the subject.

Figure 11: Use of resource increased my interest



A much more encouraging result here, where nearly half of the students agree that the use of the resource has convinced them of the importance of the skills they are learning.

Figure 12: Using the resource convinced me skills are important

These results show in general terms that the resource is well received by students and found to be useful in developing their skills. It is important to note that although a significant proportion agrees with these statements, a significant proportion are either neutral or disagree. This underlines the importance of recognising the differences in perception of such resources and the way they are received.

What does this have to do with learner autonomy?

The experience that we have described started out as a means to an end. We had a situation where disengaged students could not see the relevance of what they were studying and were being challenged to do things they were intellectually uncomfortable with. Learner autonomy was not such a key agenda item when our journey started as it is now. However, it became clear to us that what we were doing was strongly connected to the notion of developing learner autonomy in our students (Benson, P. & Voller, P., 1997).

Since those taking the module are first year students, they suffer from all of the problems of adjusting to university study: encountering a change in the approach to teaching and learning, having to manage their own time (spent both on study and on other activities). For many, the subject is familiar to them (although it may have been treated in a different way previously), but for others the subject matter will be new and unfamiliar. Previously many will have had a poor experience with numbers and may have chosen to study business because of this poor prior experiences with the "harder" maths based subjects. Nearly all of these students are embarking on a journey which starts with a period of transition from the familiar to the unfamiliar. This journey also involves the path to becoming an autonomous learner.

The pedagogic model underpinning this module includes notions of problem based learning (PBL) and assessment. As a pedagogic approach, PBL develops confidence and competence in facing a problem (a project) and achieving the required outcomes. The model relies on TIBER, a resource that presents information in a realistic and logically structured way. Appropriate use of the resource will encourage students to learn by discovery (action/activity based learning) within a semi-closed landscape.

The module's main aim is to facilitate students developing their information skills. The transfer of the responsibility for researching and processing the information to the student is phased through graded exercises. Navigation through the information landscape can start with highly "way-marked" exercises. In the first Business Analysis project, for example, students are given precise instructions as to what they should do and how to find the information they need to do it. The next stage in the transfer might be categorised as "map reading". So, for example, in the second Business Analysis project, students are given precise instructions on what analysis to do, but little guidance on how to find the information they need to do it. The full evaluation requires them to go outside of the replica environment and investigate real companies. The possibilities are then for "compass-bearing" activities in later stages of the programme. For example in the second year,

students will encounter much less well structured exercises in the follow on module to Business Analysis.

Further development

There are two areas in which the module could be developed further. Firstly, an expansion and refinement of the structure and content of the resource (the replica company) upon which the module relies as its underpinning context to the application of the Problem Based Learning approach.

Even though the externally funded project (TIBER) which supported the development of the resource has finished, data and information relating to the replica company continues to be updated on a regular basis. There is however potential for expanding the resource to incorporate relationships with companies supplying the retail company as well as improving the way in which the relationship between the company and the shopping centres is represented.

Secondly, here are opportunities for improving the realism of the projects which students undertake as part of their problem based learning in order to move up the spectrum of autonomy described above. In the students' second year follow on module, there is a development into "compass bearing" activities but, this could be improved.

There are also areas for further evaluation of the module and the approach. An evaluation at a later stage in the programme, for example in the placement year, would produce useful information on the longer term effect of the approach on the students' appreciation of business analysis methods and their confidence in applying them.

The Integrated Business Education Resource (TIBER) had a wider objective of integrating the first year business curriculum by providing a resource that can be used across the curriculum. So far the use of the resource in other modules has been limited. A further development would be the redesign of all modules in the first year to make greater use of the resource's potential through a PBL approach.

The division of the curriculum into subject based modules provides a challenge to curriculum integration. A more ambitious development would be the design and development of modules which cut across subject areas and provided students with problem based learning opportunities that develop their appreciation of business as a holistic enterprise.

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Developing Learner Autonomy in international and UK students at Sheffield Hallam University

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Abstract

This project aimed to find peer-support mechanisms that would enable international and UK students to develop autonomous learning skills and capabilities during the transition to a different cultural environment. While the starting point was an initial concept and the implementation of the classical TANDEM model (peer partnerships of one UK to one Chinese student), which promotes the development of long-standing one-to-one relationships, the project revealed that there should ideally be a network of relationships involving previous and subsequent cohorts of students. Such a system leads to beneficial UK/Chinese, UK/UK and Chinese/Chinese partnerships with the development of an "autonomous tandem" system (Calvert, 1999: 57-58) with a drop-in approach and a more ad hoc pairing/grouping rather than an insistence on longer term (and perhaps more artificially imposed) partnerships. The emerging approach is one that provides opportunities for self-regulation, and allows students to determine their own agendas based on tutor-led events. It is anticipated that this will allow students to develop from 're-active' toward 'pro-active' autonomy (Littlewood, 1999: 75). In addition to this, language teaching staff and second year students undertaking work-based projects as part of their BA (Hons) English Studies will support the emerging UK/Chinese club that has resulted from this project.

Background

The experience of staff working with international students reveals that a proportion of these students do not engage effectively with the learning opportunities on their courses, showing weaker language skills, lower levels of participation in seminar activities and a lack of meaningful contact with UK students. The same is true of UK students going abroad to study or work (Tang *et al.*, 2008). Engagement with learners from other cultures does not happen automatically hence the aim of the project to find enabling peer-support mechanisms between UK and Chinese students so they could tackle cultural transition in a more holistic way.

The rationale for the project drew on existing research in the areas of autonomy, peer-supported interactions, TANDEM learning, issues of cultural transition, academic and social integration, as well as the team's own experience of some of these aspects. Of particular interest in terms of autonomy were the concepts of 'relatedness' and 'pro-active' and 'reactive self-regulation'. Drawing on the work of R. M. Ryan, Littlewood (1999) discusses

autonomy (or self-regulation) and its relationship to 'relatedness' and suggests that autonomy develops most effectively in an interpersonal environment where learners relate to each other, thus supporting each other in their learning process. He makes a further useful distinction between proactive and reactive autonomy whereby the former, based on the work of Holec (1981), is defined as the learner taking charge of their own learning, determining objectives, methods and so forth, whilst in the latter the learner accepts and pursues actively and through their own initiative a goal that has been set for them.

Green (2007) quotes a range of studies which, whilst not quantifying the relationship between peer-assisted learning and a reduction in attrition rates, point to the fact that students put significant emphasis 'on making new friends and initiating and sustaining a good social life.' (8) She also states that

> *The first year undergraduate who arrives on campus with the objective of assimilating specialised formal curricula is, temporarily, devoid of a wider informal framework of rules, values and general understanding in which to fit their official learning. (1)*

This disjuncture will be even greater when crossing over to an entirely different culture. In this context, Gu (2009: 42-43) points out the phenomenon of "learning shock", which manifests itself as an experience of intensely unpleasant feelings and a deep psychological and emotional strain on learners who have to operate in a foreign learning environment.

TANDEM learning, with its supporting principles of reciprocity, responsibility and autonomy, has been in operation for a number of decades. Calvert (1999) defines it as:

> *A form of open learning whereby two people with different native languages work together in pairs in order:*
> - *to learn more about one another's character and culture;*
> - *to help one another improve their language skills, and often also*
> - *to exchange additional knowledge – for example, about their professional life. (56)*

Given the wealth of experience that already exists in the area of TANDEM and peer-supported learning the project team decided a facilitative approach in running the programme. This said, the course was also given structure through a number of staff-initiated events with suggestions of activities that the students could follow up together on their own, although they were also given the option to choose ones that suited them better. Each individual event was designed to offer opportunities for experiential learning, reflection on the activities that were undertaken, as well as subject specific learning and skills development.

Participating students

Students from three undergraduate areas were invited to take part in the project, namely from:

- the Graduate Diploma (Grad Dip) in Business and English, a pre-masters course (January 2009 intake: 35 Chinese students)
- the BA (Hons) International Business Studies with Chinese (BAIBL) (years 1 and 2: 8 students),
- Chinese 1 and 2 on the University Language Scheme (ULS) (26 students).

The Chinese students on the pre-masters course undertake a range of modules which include English, two modules in Business Skills and a number of other business modules. The overall aim of the course is to prepare students, who already have an undergraduate degree from their home country, to go on to a Masters level course either at SHU or elsewhere in the UK.

The students on the BA (Hons) International Business Studies with Chinese are typically home or EU students, and study a range of business modules as well *ab initio* Chinese language modules. They are required to spend their third year studying Chinese at the Beijing University of Chemical Technology (BUCT).

The students studying Chinese on the University Language Scheme come from a range of SHU courses and undertake Chinese as an option module. They are not required to go to China as part of their studies at SHU and often view the language module as enriching their main discipline.

Rationale

The purpose of the project was to identify effective peer-support mechanisms to enable international and UK students to develop further their levels of autonomy by working in tandem. This overarching goal was broken down into the following steps, namely:

- the identification of student and tutor views about the type of peer-supported arrangement they considered beneficial;
- the design of a set of peer-supported interactions;
- the evaluation of the student and tutor experience after the engagement in the process and the identification of successful elements, as well as the resulting resource implications;
- an exploration of embedding some/all of the student interactions within the assessment of their existing modules; and
- an assessment of the viability of a credit-bearing module accessible to UK and international students for roll-out to the university.

The expected benefits and outcomes for the participating students were:

- the acquisition of intercultural knowledge, understanding and skills, leading to a greater willingness to make contact with people from other cultures;
- the experience of "social" learning, including the development of greater interaction, negotiation, collaboration, and so forth; and
- the development of the students' ability to make decisions regarding their own learning, which in turn should enable them to engage more pro-actively with learning opportunities on their courses.

The approach

Based on the existing literature and the project team's own experience relating to the International Student Tandem learning at Sheffield Hallam University, it was decided that there would be an initial review of student and staff views an a pilot event with the purpose of establishing general goals and activities for the main events. The events were held at the university and were staff-led. However, the activities were informed by the learners, who were encouraged to develop the relationship with their partner further according to their own individual agendas. The team's expectations were that students would pass from reactive to proactive autonomy, increasingly taking charge of their own goals and sustaining mutually beneficial relationships.

The initial student questionnaire, distributed in October 2008 to all relevant student groups yielded 23 UK and 11 Chinese responses. The themes that emerged as of interest for mutual support centred on language, culture, surviving and enjoying daily life, making friends, study methods and working in China (cf. Appendix 1a for English and Chinese language versions of the questionnaire and a more detailed description of the results). Table 1 shows the distribution of themes highlighted by each student group. "Making friends" and "Study methods" appears more prevalent for Chinese students, whilst "Working in China" seems more important for some UK students. Language, culture and surviving daily life were considered as the most significant areas of interest by all groups.

TABLE 1: Distribution of themes

Group	1.Language	2. Culture	3. Surviving daily life	4. Making friends	5. Study method	6. Working in China
ULS 1	√	√	√	√		√
ULS 2	√	√	√			
BAIBL Level 4	√	√	√			√
BAIBL Level 5	√	√	√			
Grad Dip	√	√	√	√	√	

The questionnaire distributed to relevant teaching staff (cf. Appendix 1b) yielded four out of a possible eight responses. The themes that emerged echoed student views on issues of importance, with the exception of the explicit mention of the concept of autonomy by the tutors. The issues that staff considered of significant nature, and which the Tandem programme should address, were:

- *Language*: poor English-language skills, lack of oral confidence, not developing language skills out of class, concerns with entry language level being set too low at 4.5 IELTS (low intermediate) when the materials, lectures and assignments required a language skills level that equals to IELTS 6.0 - 7.0 (upper intermediate to advanced level);
- *Lack of understanding* of UK teaching methods, academic conventions, assessment culture (e.g. group work) among international students;
- *Lack of engagement* with UK lifestyle, socialising with English students; and
- *Lack of learner autonomy*.

A pilot event held in November 2008 was used to test a mixture of guided activities and other ways of students making contact and keeping in touch with each other. At the event, the UK/Chinese peer-supported TANDEM scheme was introduced and the earlier questionnaire results were shared, after which the students took part in a 'speed-dating' ice-breaker activity in order to get to know each other. Students then took part in paired/small group TANDEM activities, which gave them the opportunity to discuss their respective university environments ("What's your system like?"), life in Britain and China ("Living in Britain/living in China"), talk about their experience with university exams ("University Examinations") and compare notes about their tutors ("Them and Us") (see Appendix 2 for copies of the worksheets). For this exercise the students were paired by the project team and asked to give verbal feedback, on record, regarding the suitability of the topics and accompanying worksheets. Before everybody shared a buffet of English and Chinese food, the students were invited to continue meeting with their new contacts and take part in a competition, which involved designing a bilingual guide to the SHU campus and Sheffield City Centre. Students were expected to work in mixed UK/Chinese teams.

The 15 students who attended the pilot event fed back that they enjoyed all aspects of the event. Chinese students commented that this was a very good opportunity for them and in a number of recorded messages students expressed the wish for this type of event not to be a one-off but something that would continue. The reaction to the event can be seen in the following student quotes:

> *"It was helpful to compare both countries. I now have a better understanding of living in China. I was getting real answers." (UK student)*

> *"I want to know more about Philip. I hope we can keep in touch and then we can ask each other more and help each other." (Chinese student)*

"The questions were a good starting point, but we often went off at a tangent. We found we had lots in common." (UK student)

"I got a lot of information about Britain. I like her! I want to communicate further." (Chinese student)

The learning points for the project team included the following:

- Authentic interaction between Chinese and UK students provides a different perspective from books or tutors, i.e. answers are considered "real".
- There is interest in continued contact with peers and an appreciation of the help they can give each other.
- The activities were good as a stimulus to get started but students also found their own questions; the only activity that was not particularly liked by the Chinese students was "Them and Us", which invited the participants to compare notes on their teachers (possible fear of criticism getting back to the tutors);
- The pre-event task that had been set had been completed by two students only and no entries were received for the competition and none of the students had met up after the event. This was probably due to the Graduate Diploma students finishing their course by Christmas and then departing from Sheffield;
- The buffet of food was very much appreciated, especially by the Chinese students, and the two-hour format worked reasonably well;
- There was a need to be flexible in terms of pairing/grouping students as UK and Chinese student numbers were not equal.

The First Event

Following the positive feedback, the project team then organised three semester 2 events. The first of the semester 2 events was attended by 18 students. Students were asked to sign learning contracts with each other, in which they agreed on set dates for further meetings. Students were then asked to present the individual programmes to the rest of the group (done by Chinese students in English with tutoring from UK students). The event also included an opportunity for the UK students to practise their Chinese language skills (see the booklet in Appendix 3). The programme for the event consequently included:

1. Welcome
2. Explanation of the peer-supported Chinese/UK TANDEM programme
3. Working out of individual programmes
4. Peanut challenge (game)
5. Chinese language practice
6. Food

The feedback from the event was overwhelmingly positive. Here are some of the student responses:

Overall enjoyment:

"I enjoyed everything."
"That is a wonderful change for us."
"It's a good opportunity."

Meeting others and engaging in activities together:

"Today I have enjoyed meeting Chinese students and the activities we did."
"Today I have enjoyed meeting new people and practising my Chinese."
"Today I have enjoyed the new friends and practise English well."
"I have enjoyed the challenges and meeting new people."

Peanut challenge:

"I have enjoyed the peanut challenge!" (6 responses)

Reflecting on the feedback, the project team recognised:

- The need to balance out the time spent on English and Chinese to allow equal attention;
- The importance of playing games for group dynamics and pure enjoyment; and
- The importance of allowing both student groups to have the perceived locus of control (i.e. for students to be able to take on the tutor role in an area where they are the "experts", i.e. Chinese students vis-à-vis teaching the UK students Chinese, UK students helping Chinese students to prepare their presentation).

The Subsequent Events

The second event, which was attended by 15 students and took place in March 2009, followed the same pattern as the first event. It included Chinese language practice, the playing of Pictionary, and a session on cultural differences. Food was shared at the end of the meeting. The learning points previously mentioned were confirmed. We asked students for feedback on the activities we had been using, by telling us what they would like us to stop, start and continue to do. The responses indicated that they were happy with all the existing activities and did not want us to stop any of them. Suggestions for further activities included watching Chinese and English movies, practising writing Chinese characters and cooking English food.

This feedback broadly supported the team's approach to the structure and dynamics of the way events were organised. Games, language/communication and food continued to be rated highly by the students, reflecting the social nature of this kind of learning practice.

The third event in April 2009 concentrated on the topic of food and involved activities both in Chinese and English describing typical foods (English and Chinese), ordering food in a Chinese restaurant (Chinese) and playing a memory game based on food cards. The evening was concluded by going to a Chinese noodle bar to have authentic Chinese food.

Evaluation and discussion

The evaluation included three questionnaires, two to participating students, and one to those who had chosen not to take part. In addition there were two focus group discussions with the Graduate Diploma students (see Appendix 5 for focus group format and questionnaires). Following this there was a project team meeting at which the results were shared, discussed and future developments agreed.

Before looking at the results it will be useful to have a closer look at the attendance at the events. Table 3 shows that all the BAIBL students attended at least one event compared with about 34% of the Chinese students. The lowest attendance rate was by the ULS students. It is also worth noting that four students attended all events, nine students attended two and nine attended one. This means there was a floating membership. Attendance dropped off for the last event due to the fact that students on the Graduate Diploma had just finished a major piece of work on their course and the Easter break was in sight. Timing and participation in the scheme will be discussed below as part of the overall reflection on the feedback we received.

TABLE 2: Pool of students and attendance

Course	Potential number	Actual number
BAIBL Level 4 and 5	8	8
Graduate Diploma	35	12
ULS 1 Chinese	12	1
ULS 2 Chinese	14	1

Two focus groups were conducted with the Graduate Diploma students. The UK students did not participate in this activity. As outlined in Appendix 5 the students worked in groups of 4 - 6 and prioritised nine tips or pieces of advice for fellow Chinese students who were planning to come to Sheffield to study. As the focus groups were held during a normal seminar, there was also a group of African students (from Libya, Nigeria and the Sudan) who were included. After agreeing on their priorities students presented their tips to the rest of the class. See Appendix 6 for the detailed tips given by the different groups. The discussion here will concentrate on the Chinese students but it is worth mentioning that the three African students showed quite a different orientation, listing what they thought were the best skills and aptitudes to adopt once at university.

The Chinese students' discussions revolved around a number of themes, namely:

- preparing for the sojourn in Britain (look at relevant websites, practise your British English);
- secure your accommodation, sort out money/bank and police matters;
- bring your own medicines, spare glasses (NHS system very different to China);
- be safe don't put yourself in dangerous situations;
- learn to cook/bring rice cooker;
- make contact with friends from own country and new friends with UK/international students;
- get to know the local culture and join activities.

Reflecting on the students' views it becomes obvious that their concerns are very much about living independently and safely, relying on things (e.g. medicine, rice cookers) and people (e.g. other Chinese students) they understand but also looking for contact with UK/international students and the local culture. They appear to inhabit a world with roots in their homeland and tentative shoots reaching out to new contacts and environments. An issue that was surprising to the tutors was the preoccupation with personal safety, especially as far as girls were concerned, and the advice of not going out after 10 pm. In response to questions about contacts with students from the same country of origin, first year UK students mentioned that it was useful for them to meet up with the second years on their course as part of the Tandem events.

Questionnaire 1 was completed by UK and Chinese students. The Chinese students had the option of completing the questionnaire in Chinese. The following provides a summary of the detailed Chinese and UK responses that were received and are contrasted in Appendix 7.

Communication emerged as the most useful aspect of the TANDEM programme. Students found it beneficial to meet and practise English or Chinese with native speakers and to learn more about each others' culture and lives. Talking with each other, the activities, sharing experiences, their partner and meeting up outside of university helped them to improve their understanding of UK/Chinese culture.

In terms of improving their understanding of the UK/Chinese Higher Education system, the UK students identified the tasks and asking questions of their Chinese partners as the most helpful. The Chinese responses concentrated on the use of making local friends and having a partner whilst two of them cited the "process/activities of the events" as the most helpful aspect.

Students supporting each other is a key element of the TANDEM programme and for the UK students this involved two main areas, the first one being the realisation that they could communicate in Chinese and were able to use their skills in a real context. Secondly, they appear to have gained an insight into how to support an international student, e.g. socially:

> *"I think them just having an English friend made them feel more comfortable."*
> *"Took them around to a few pubs that they had never been to before."*

or in terms of university work:

> *"I helped her with a presentation. She was very grateful. She corrects my Chinese when I pronounce it wrong."*

The Chinese students mention the encouragement given to each other with language work. One response relates to becoming more confident:

> *"While listening to the person speaking I keep eye contact to build up confidence."*

The UK students felt that communicating in Chinese was a challenge, especially as they were at a basic level. One student reported a timing issue as the event clashed with his football activities.

The Chinese students cited speaking English as challenging but one Chinese student felt that "The whole event is very relaxed and a happy environment." The playing of games emerged as the most enjoyable part of the TANDEM programme for both student groups. One Chinese student said that "through the game we know each other," whilst a UK student thought that games were enjoyable "because they were fun and people behaved naturally and didn't concentrate on speaking the target language." Other aspects mentioned were meeting new people and helping each other.

Given the opportunity to do the programme again students expressed a wish to have more events, in the university and outside, creating more talking (and writing) opportunities, and playing more games. As far as the tutors' role in helping to build confidence was concerned there were quite different responses. The Chinese students emphasised encouragement, praise and positive feedback from tutors to build confidence, whilst the UK students were looking for help with finding a placement, more information about the business world in China and more homework. Apart from one Chinese student who had gone shopping with their partner and had cooked together and one who had plans to go travelling, none of the other respondents had met outside the events. In contrast four of the UK students had met with their partners. They had helped each other with university work, gone ice-skating and shopping to Meadowhall and gone to the pub or for lunch.

With regards to the responses, two aspects were particularly surprising to the team. The first one was the number of times games were mentioned by the Chinese students (cf. responses to questions 1, 2, 5, 6 and 7) and the second relates to tutor support, where the Chinese students were almost unanimous in their request for positive feedback and re-assurance from the tutor. However, this did not feature at all in the UK students' responses. Furthermore, from the answers it was not clear whether the Chinese students were referring to their tutors in the UK or China.

The UK and Chinese student responses to Questionnaire 2 are collated in Appendix 8. When contrasting the UK and Chinese responses it becomes evident that the Chinese students evaluated all sections more positively, never awarding less than a 3, i.e. an adequate rating, even if this led to some contradicting statements, as with statements 8 (I would have liked more freedom during this tandem programme) and 9 (I would have liked more direction during this tandem programme). 84% of the Chinese respondents agree with statement 8 whilst 100% also agree with statement 9. Taking the results at face value it appears that the UK/Chinese relationships were not working entirely smoothly and with the same positive results for each party. Some of the bigger discrepancies relate to the following statements:

- "I felt it was easy to set up meetings with my tandem partner."

  100% of the Chinese students agreed with this in contrast to the UK students where only 22% felt this way.

- "I would have liked more direction during the tandem programme."

  The responses from the two groups are at opposite ends of the scale, with UK students disagreeing, whilst all Chinese students agree.

- "I feel better able to communicate with others in the foreign language."

  UK students agree less with this statement than their Chinese counterparts.

One explanation for the more positive feedback from the Chinese students may well be due again to an aversion to criticise formally and publicly.

Questionnaire 3 was addressed to Chinese students who had not attended the TANDEM programme. The questionnaire and the collated student responses can be seen in Appendix 9. Ten students responded. Eight out of ten said that they had considered going to the tandem events because it would be a way of making friends, improving their English and understanding British culture. One student was not sure and one said that they were not interested.

The reasons why they didn't attend fell into the following categories (number of responses in brackets):

- Not enough time because of work pressure on course/busy (3)
- I live far from the university (2)
- I didn't think I would enjoy the event (2)
- I felt shy (1)
- Timing of the event (1)
- Lack of fluency (1)

After the students had responded to questions 1 and 2 they were shown what activities had been undertaken at events and asked whether, knowing more about the programme, they felt they would now attend. Here are their responses (frequencies in brackets):

- If time allows, yes (3)
- Maybe (2)
- Yes (4)
- No, I won't go. I don't like games. (1)

One of the students felt they would attend because "this activity is very meaningful and it definitely build a friendship bridge between Chinese students and English students."

Project Findings and Recommendations

Following the summative evaluation there was a project team meeting to discuss the outcomes and the future development of the peer-supported tandem scheme. The overall consensus was that the voluntary nature of the attendance had been both a strength as well as a weakness of the programme. The students that engaged were the more pro-active and motivated ones, thus contributing to the success of the events. As can be seen from the non-attendees' responses, feeling shy is one of the reasons for not joining in as are the perceived nature of the event, the timing, and also distance to student accommodation, the latter two probably linking in with fears about the safety of going home after the event (cf. the outcomes of the focus group discussions). Whilst there are certain aspects that could be altered relatively easily to make taking part in the programme more attractive, e.g. related to the timing of the event or asking students to travel together to allay safety fears, basic attitudes are more difficult to influence. One technique the team are considering is to ask students who are already participating, to advertise subsequent events as their voices tend to hold more sway within their peer groups than do those of tutors.

Although difficult to quantify the impact on the student learning experience appears to have been positive for those that attended. A number of student responses referred to the fact that they were learning from each other while supporting each other. The majority also felt that they had learnt more about each others' culture. However, the UK students appeared to be more critical about the benefit they derived in terms of being prepared for China and there were measurable discrepancies in how they viewed their partnerships, for example with reference to the ease of setting up meetings, or the degree of direction given by the tutor. Moreover, some students had continued to meet outside the tutor-led events, whilst others had not. The team feel that this is an area that needs to be looked at closely and developed as part of the tutor-led events. We will be seeking the students' own views about how to encourage continual contact between events.

From a professional perspective in facilitating this programme, the discussions which took place between UK and Chinese tutors were extremely useful as they helped to appreciate some of the fundamental differences in the way things are perceived depending on the cultural background and a great deal of intercultural learning took place within the project

team. Anybody designing and embarking on similar projects will need to factor in time to take account of the need for clarifying meanings within the team. We found that saying the same words did not always equate with having the same meaning and where we expected to find different viewpoints we were at times surprised about the similarity in approaches.

Further developments

The team have agreed on the following principles for next year's UK/Chinese TANDEM scheme:

- Establishment of a UK/Chinese club, which allows UK/Chinese, Chinese/Chinese and UK/UK student interactions, following the format of an 'autonomous' tandem model that allows more ad hoc pairing but encourages longer-term relationships;
- Inclusion of the exchange students from BUCT, Beijing, China, who will be studying at SHU during 2009/10, and thus providing a direct link for the students on the International Business and Chinese course;
- Organisation of tutor-led events that aim to facilitate initial student contact and provide models for useful personal/academic interactions taking into account the students' own agendas (developing pro-active autonomy through re-active engagement;
- Embedding of TANDEM activities in student learning support and assessment, e.g. UK students will need to work with Chinese students to complete their assessed portfolio work for their Chinese modules;
- Involvement of the Chinese language assistant, Chinese and UK staff as well as from students from the Faculty of Development and Society, who will use this activity as the basis of work-based learning projects;
- Feedback to languages colleagues who are in the process of devising a more general accredited module on intercultural learning involving a range of nationalities.

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Student Audio Notes Project: lessons learnt from students about their autonomous use of MP3 recorders to enhance their learning

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Abstract

Ongoing and successful development work around the design and delivery of audio feedback and audio lecture note-making at Sheffield Hallam University, together with an awareness of how digital audio might be used to empower disabled students, led to the proposal for the Student Audio Notes project. The idea of digital audio-enhanced learner autonomy had emerged from earlier work by the authors which had suggested that feedback could be more meaningful if the learner takes responsibility for gathering it and feeding it forward into their studies and indeed, later, into their employment. This learner responsibility provided an important focus for The Student Audio Notes Project (SANP): a year-long investigation into how students might use MP3 recording devices to enrich their own experiences of learning. SANP gave out MP3 recorders to participating students and aimed to encourage and challenge these students to explore how the devices could be used so that good practice might emerge and be shared. It was hoped that they would identify and record any encounters involving verbalised communication that they felt helpful in deepening and reflecting upon their learning. In this way the act of audio recording would ideally become an essential, ever-present, autonomous learning habit for them.

A strand of this investigation sought to find out, in particular, whether the recording of digital audio by disabled students could bring benefits to disabled learners. As the study by Healey et al. (2006) showed, 51% of disabled students (n=276) responded well to tutor support aimed at improving the standard of their academic work, as opposed to the 43% of non-disabled students (n=272). It was expected, therefore, that student's use of audio note-making would result in similar beneficial impacts. When note-making systems are used effectively, as previous research by Intons-Peterson and Fournier (1986) has also shown, note-making can increase memory encoding in the learner and so enhance their ability to recall the information later. Therefore, it was hoped that SANP would show how audio note-making could be effective in empowering students with disabilities.

Findings from SANP demonstrate that all participating students discovered benefits from using recording devices and that they found it useful to capture a range of formal, semi-formal and informal situations. These findings raise questions for further research and support and some recommendations are made to ensure such activity is properly undertaken and supported.

Introduction

The recording of face-to-face student-tutor feedback conversations by the tutor and their subsequent distribution back to the student has been shown to be an effective and attractive method of encouraging greater formative engagement with learning (Nortcliffe and Middleton, 2007). Audio, in this approach, provides the opportunity to capture an otherwise ephemeral experience and increases the extent to which students are able to feed forward conversational outcomes into their learning without seeking further clarification and confirmation from the academic.

However, this model is difficult to operate amongst large cohorts and can significantly add to the academic workload due to the generation and distribution of the audio recordings, and can be constrained by the academic's view of what a feedback learning resource should be for their students (Nortcliffe and Middleton, 2008). 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). If recordings are not made available quickly the formative affect of learning conversations decreases with the passing of time, with the conversation becoming a vague memory (Waterfield et al., 2006). However, this is true for all students, whether they are disabled or not.

One of the aims of Higher Education is to help students to become autonomous learners (Race, 2001). However, learner autonomy is contentious in some quarters where there are concerns that it may engender inequality for disabled students (Goodley, 2007). For example, dyslexic students are dependent upon their tutors and third parties to review their material more than once (Madriaga, 2007). Under the Special Educational Needs and Disability Act 2001 every educational establishment is required to make reasonable adjustment in providing equivalent access to the curriculum. Some stakeholders may interpret reasonable adjustment as being an "academic crutch" for disabled students, even to the extent that it actually hinders the development of additional student skills that enable them to cope with their disability. As Riddick (2003) observed, students who didn't declare their learning disability were able to develop effective coping strategies. Higher Education needs to enable students to develop a range of transferable skills for self-support and so give them the ability to work with minimum supervision (Race, 2001).

However, when audio notes are produced by the academic, learner control is removed and the potential meaning and effect on learning is likely to be diffused too. Recordings made and distributed by academics in the form of audio lecture notes and formative conversations have been shown to increase learner autonomy (Fidler et al., 2006). In this study, student memory was refreshed when the recordings were played back, re-engaging them cognitively. It would seem logical, therefore, to give students the responsibility of making their own audio 'notes', including the responsibility to gather audio feedback. Such a shift may offer a more learner-centred and autonomous approach to the selection, generation and management of audio learning resources, thereby instilling greater meaning and a sense of ownership over the learning process.

Methodology

Student volunteers were sought from across Sheffield Hallam University. Each student was supplied with a simple-to-use MP3 recording device with a built in microphone and 4GB memory, costing approximately £30. A total of 52 students signed up for the Student Audio Notes Project. Students were encouraged to take more responsibility for their learning by generating their own personalised learning recordings; to do this, they were invited to record interventions that they felt would be useful, whether those interventions were formal, semi-formal or informal encounters.

Student volunteers came forward from Sheffield Hallam University degree programmes as diverse as Psychology, Fine Art and Computing. A day was set aside so that they could drop in to collect their audio recorder and to receive guidance on how to use it. They also discussed how and where they might use it, being encouraged to record any verbalised learning opportunity involving interactions with peers, tutors, and placement supervisors, as well as making personal notes.

During the brief induction meeting the students were also briefed on recording etiquette. Specifically, students were advised to ask permission of those who they wished to record and to explain to them why they thought making the recording would be useful. They were advised to reassure respondents and participants that the audio recordings would only be used to assist their learning and would not be shared 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, 2009). The students were also advised to respect the wishes of staff and their fellow students if they were not happy to be recorded. Each student was required to sign a project protocol agreement that defined their role in the project and the appropriate use of the audio device during their studies.

The students were further supported throughout the project via email and the Virtual Learning Environment (VLE), where an online project organization 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.

Evaluation

A mix of quantitative and qualitative research methods were employed to capture the students' varied experiences. Some students were interviewed about their expectations of the project at induction; online surveys were conducted after the first semester of the project and again at the end of the project. Also, many students took part in mid-project review focus group discussions and end of project focus groups. Results from all activities were fed back to all participants through the VLE site at the earliest opportunity so that knowledge could be shared to further impact 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. However, initial perceptions of the project were that it would increase their learning:

Student A: *"Supervised final year project, recording the chats with my supervisors."*

Student B: *"In group work I sometimes forget other people's ideas. It would be good to go back and remember them."*

Student C: *"I have seen other students actually recording lectures and thought that looked like a really good idea ...to have it all and to be able to go back to whenever you want to and also for feedback from the lecturer. Sometimes it is hard to take it all in and remember it all."*

Student D: *"I have found I learn by listening more than anything else. Also light bulb moments, I always forget things I think of, so if I can record it I will remember it better."*

Student E: *"I have been asked to interview industrial professionals towards my research project, so obviously having a recording device for interview purposes is ideal."*

Student F: *"I have had a Dictaphone before. Never been sure how to use it or how to make the most it though I meant to learn new techniques for how to use it …better notes for my lectures."*

Student G: *"I used to record my lectures last year …students in my group benefited from it by borrowing them from me and re-listening to what I recorded. [The Student Audio Notes project] gives me the opportunity to feedback on how I use the device and at the same time discuss my own ideas [for using the device]. I thought it would open my mind more."*

Student H: *"I thought it would be very interesting to see how taking audio notes would help people learn."*

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 (see Table 1) indicate that the majority of the students intended to use the device for one purpose, i.e. recording of lectures.

Table 1: Initial Survey Results

Student Response (31 out 50 using MP3 devices to capture learning conversations)	Students Usage of MP3 creative devices
68%	Lecture
52%	Personal audio notes
42%	Peer conversations
35%	Tutor feedback
6%	Work placement
3%	Interviewing

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 students' own initial perceptions of the project. Typically personal audio notes involve the use of the device as an external memory aid to capture personal actions and thoughts, ideas for assessment, and observations to support their reflections on learning.

The survey results, as reported by Nortcliffe *et al.* (2009), 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. Concurring with the findings of Rossiter *et al.* (2009), the majority of the students agreed or strongly agreed that they found the recordings useful and that they had helped to improve their learning:

"Mainly recording lectures and assignment workshops. I have found this device extremely useful as it is much better than recording notes by hand only, and eradicates the problems I have with bad handwriting."

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 student's free comments in the survey,

> *"...listen to them routinely... dig them out whenever I need to refresh my memory, or need to recall something for the assignments."*
>
> *"They definitely come in handy when studying for exams. I was listening to one or two lectures a night, every night for about three weeks before my exams."*
>
> *"[I listen] when I need to look something up that I have made a recording that is related to the topic."*
>
> *"[I listen] of an evening or at night when I am preparing for lectures and seminars and going over notes."*

Mid-project focus group

The first focus groups took the form of semi-structured conversations, an approach that is outlined in Cohen *et al.* (2000). This involved interviews with nine students from the project, who talked about their experience in pairs or individually. 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. There were more creative and constructive uses beyond the initial idea of simply recording lectures; however, this approach is still the most common application. A number of students indicated they were now recording feedback and personal notes:

> *"I have used it lot more last semester than this semester, because it was useful for my essays when we had lectures on essays …it was useful then ...but this semester I used it twice …I sort of forgot about it for first two to three weeks …I used it with a lecturer after the lecture, on one to one."*
>
> *"I used it in numerous different ways, in the first semester …I recorded lectures …bits I needed to record that I thought I would not understand …then I used it to listen to oppose to my music …to try revise a subject."*
>
> *"I am using my phone recorder and it is much better …I make recordings once to twice a week. [I record] lectures …group meetings, maybe supervisor for project."*
>
> *"It meets the needs [for] why I got it in the first place… I record things as opposed to them falling straight back out of my head."*
>
> *"Mainly in lectures, I haven't used it for other things… I do realise it has potential to be used for other stuff."*
>
> *"[I use it for] group meetings and discussions, random thoughts I record quite a lot."*

Second survey

16 students completed the second survey at the end of the academic year out of 50 students enrolled on the Student Audio Notes Project Blackboard site. The highlights of the survey (see Table 2) illustrate that the majority believed that using the audio device in their studies has been beneficial to their learning and that they would recommend its use to other students as a way to enhance their learning. However, the students' response to whether it helped them become more independent in their learning was mixed, and the rationale of those who felt that it had helped them to become more autonomous as learners was that:

> *"I can refer back to the recording for information rather than asking others."*
>
> *"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 vice 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."*
>
> *"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."*
>
> *"I wouldn't say it has made me more independent as I already try to do that, but I do think it helped distinguish important points, such as artists' names, dates etc that I could add to my journals."*

Table 2: Highlights of the Second Survey

Survey Questions	Student Response (16 out 50 using MP3
Has the audio been helpful to you and your	56% Agree or Strongly Agree
Have the audio recordings helped you to	56% Agree or Strongly Agree
Have the audio recordings helped you to	37.5% Neither Agree or Disagree
Has audio recording helped you to gain a	44% Agree or Strongly Agree
Have you remembered to use the device	44% Agree or Strongly Agree
Has it become a habit to regularly use the	37.5% Agree or Strongly Agree
Has audio recording helped you to reflect on	37.5% Agree or Strongly Agree
As a result of being involved in this project,	75% Agree or Strongly Agree

The response to questions concerning the device's impact on deepening their learning was mixed. However, the majority agreed or strongly agreed that the use of the device had helped in this way. This is explained as follows:

> *"The notes I took highlighted things I had never realised before."*
>
> *"As well as helping me to clear up some areas I was previously unsure about, it's also helped to reinforce those parts after listening to them multiple times."*
>
> *"I analyse my studies from a more professional view point. Whether this was brought on by the audio recordings or just my progression of learning and maturity I cannot be sure."*
>
> *"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!"*

The final survey indicates that use of MP3 devices had a wide impact on their learning (Table 3), feedback being the commonest approach identified. Feedback is critical to student learning and in supporting their ongoing progress (Gibbs and Simpson, 2004), and therefore any method that encourages student engagement with the feedback cycle is positive.

Table 3: Impact on students studies

Student Response (16 out 50 on how using MP3 devices has changed their approach to their studies and learning)	Changes to students' studies and learning as result of using of MP3 creative devices.
37.50%	Studies
25.00%	Assessment
25.00%	Learning
25.00%	Understanding
25.00%	Interviewing

31.25%	attention in class (lecture/tutorial/workshop/laboratory/etc)
18.75%	project supervision
31.25%	working with others
25.00%	Ideas
25.00%	Skills
50.00%	Feedback
37.50%	Presentation
12.50%	learning with others
6.25%	Abilities
6.25%	Confidence
18.75%	Performance
12.50%	Communication
6.25%	Placement
6.25%	placement/employment preparation

Final Focus Group

A focus group approach was again used, and involved three students from the project. The discussion between students revealed that they had discovered even more practical

applications for the device in order to support their learning and its potential for further personal development in the working practice:

> *"I've used it for seminars, group work and lectures as well. And I used it on my placement as a kind of diary record... It's useful with your supervisor because your supervisor will tell you stuff and you're not having to write stuff down all the time. You've actually got a record of it without having to [interrupt the conversation]."*

It was also observed that audio recordings can have different effects on the learner as they re-access them over time:

> *"I use it for little groups when we're doing group work seminars, meetings with my supervisor. I find it really useful for revising. I record my [written] notes and then listen back to it again and again and again."*

> *"I've gone back and listened to things and it's made more sense because I understand things better. Maybe as I've got a bit more experience."*

This suggests that audio devices not only support their immediate learning needs, but have the potential to continue to make an impact in supporting the individual's professional development where audio notes can be used as a tool for reflective practice and for logging Continuous Practice Development (CPD) activities:

> *"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 CPD."*

Practical applications in learning could be useful in professional life too, for example:

> *"[I'm working with] patients. It's useful with your supervisor because your supervisor will tell you stuff and you're not having to write stuff down all the time. You've actually got a record of it without having to [interrupt the conversation]."*

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

Conclusions and project reflection

A central question for this project was concerned with the extent to which our students were ready to exploit the devices they own in making audio notes, in their many forms, so that they can effectively learn from them. The evidence generated during the project indicates that students increasingly own devices that are capable of making recordings of lectures, conversations and personal reflections, and that the ubiquity of this technology is

likely to develop, especially through mobile phone ownership. Such audio devices can provide continued access to valuable formal, semi-formal and informal learning opportunities, and the challenge now is to disseminate the positive experiences of the student partners in this project to all students who could benefit from engaging with these technologies. 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 of audio recording.

It was remarkable, and this should be stressed, that all students discovered greater benefits for themselves from using the audio devices. It can also be suggested that recording lectures might be only the tip of the iceberg in relation to how they might exploit audio.

The success of this project would suggest that listening to an event a second time enables the students to reflect upon what was said and to rectify any misconceptions or mishearing; as well as being able to reconsider and reconnect with the information. For some students the act of recording helped them to become reflective learners as it helped them appreciate the significance of interventions from peers and tutors.

The audio recorders were discrete and highly mobile, arguably becoming a 21st century 'pen' for some learners who began to make notes in situations that hitherto had been ephemeral. This is demonstrated in the use of the device by the students on work placement who explored how it could enhance their professional abilities and CPD.

Students recommend regularly using the audio device and carrying it at all times, saying they would replace it if they lost it,

> *"Yes, it's been valuable and I would replace it. I can use it for practice once I get a job."*

> *"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."*

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

Some Further Recommendations

There appears to be a lack of literature on the use of audio recorders by students, including the practice of taking recorders into lectures. In order for the benefits that have been revealed through this study to have wider impact we recommend that,

- Academics encourage students to make notes using their own recorders e.g. MP3 recorders or mobile phones with voice memo technology in flight mode;
- Students ask permission to record feedback conversations with tutors and peers so they can be more attentive at the time and reflective later;

- Students listen back to the notes they make, reflecting on and developing the information they have captured, perhaps in written form;
- Students share their notes responsibly with others on their course so that the recordings are used as a focal point for further conversation, but do not share their recordings with people beyond their course;
- Students copy their recordings from their mobile devices to avoid loss, backing up their recordings, especially in the absence of written notes;
- Students rename their files systematically and meaningfully;
- Students resist editing their recordings unless doing so helps them to actively engage with what was said. Editing can add a significant layer of work to the practice;
- Academics are open to lectures, seminars, tutorials and other conversations they have with their students being recorded;
- Academics challenge their students to regularly review their recordings and share them with their fellow learners;
- Institutions are supportive of audio note making practice;
- Institutions are proactive in extending network storage capacity so that students can safely manage their digital media artefacts.

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Promoting Learner Autonomy through Enquiry Based Learning, Role Play and the use of "students as consultants, tutors as clients"

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Abstract

This case study evaluates the extensive use of autonomy in "The European Challenge" which simulates the re-location of the European Headquarters of a US based corporation of 350 employees. The project examines the integration of business issues and real estate location, building selection and evaluation and space planning and design.

This ambitious multi-disciplinary project brings together over 80 students in pan European teams from 8 countries to engage in one of the most demanding projects delivered in Europe. The case study focuses on two aspects of the project:

- the use of the Blackboard virtual learning environment (VLE) to foster autonomous learning; and
- the setting up of students as consultants, tutors as clients as a learning approach.

Using control groups, the European Challenge is compared with other projects using statistical monitoring and evaluation tools within the VLE, triangulated against student focus groups, to evaluate the autonomous learning potential of the project

Overview of the European Challenge project

Historical background

The "European Challenge" is the author's second major international project. In 1997, the "Vancouver Challenge", a virtual development exercise for students and practitioners was a great success, being runner up in the global EMMA (Education Multi Media Awards). This inspired real estate faculty members of Hanzehogeschool, Groningen to commission a new challenge, this time with a corporate real estate focus. This has grown and now includes a variety of Universities across Europe including the European Business School, Kingston, Sheffield Hallam, Warsaw School of Economics, Dublin Institute of Technology, The Technical University of Slovakia, The Institute of Construction, Copenhagen and Johns Hopkins Washington DC. In 1996 additional partners in Germany, Finland and Slovenia joined the project. The European Challenge project involves both final year undergraduate and postgraduate students (Johns Hopkins) working together on a complex consultancy

project simulating the relocation of a 350 person financial services organisation to a new Headquarters building in Europe. Between 6 and 8 students from Sheffield Hallam join the project each year.

The project is partly funded by the European Union, who fund the travel and accommodation costs of the 80+ students and 10+staff, and partly by CETL funding.

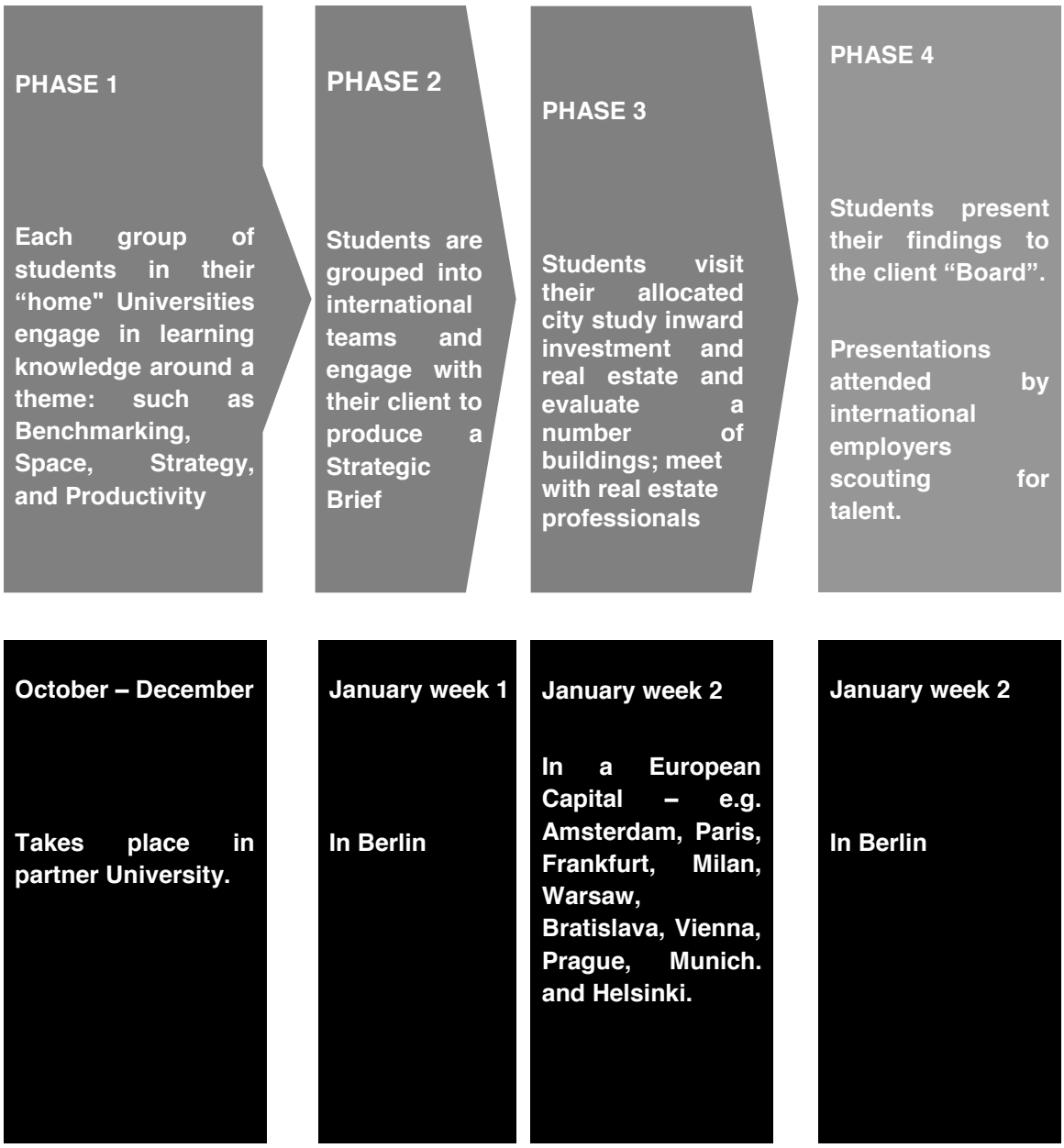
Necessity

The project recognises the growing significance of corporate real estate, the interface between business and real estate and changing client expectations. Real estate professions need to operate with high grade consulting skills, and this project develops such skills.

Operation

The structure and schedule of the project is illustrated graphically in Figure 1 on the following page. In the first semester students work in their home University teams, researching one of eight knowledge themes which underpin the practical project. They work autonomously using Blackboard and on the first formal day of the project they present their themes to the whole group, provide a briefing paper and up-load key resources they have found to the Blackboard virtual learning environment. The students are then formed into multi-national, inter-professional teams acting as consultants to the client. Whilst respecting student autonomy in the selection of teams, knowledge is managed by embedding the themes within each group, demanding that there is no more than one student from each University in a team and thereby restricting autonomy in self selection of groups. Our experience has also found that selecting teams based on Belbin (2003) scores and Hofstede (2001) profiles creates more stable dynamics. The students become consultants to each other and experts in their knowledge themes. Consultancy hours facilitate student to student learning and support. Tutors only act as facilitators, providing guidance and support but no traditional teaching.

Figure 1.



The second stage of the project requires the students to prepare a "strategic brief" defining the needs of the organisation, its priorities, culture, adjacency preferences and expectations. Alongside comprehensive written material such as business plans, mission and vision statements; board meetings and client meetings using extensive role play with tutors acting as Board members ensures that the soft people management issues are thoroughly engaged with. Designed in tensions between the Board members replicate real life consultancy. At the end of the first week the students fly out to one of 11 major cities including Bratislava, Paris, Geneva and Brussels to evaluate the strengths and weaknesses of the location and find a suitable building using an objective matching technique to score the building location, attributes and specification against the organisational demands as set out in the strategic brief. Active involvement by Inward Investment agencies and local real estate consultants add to the realism of the experience.

Returning to Berlin for the second week the students are required to present a City template – profiling the cities in a consistent format, which requires both desk research and field investigation. It covers aspects such as business and personal costs, residential property availability, schools and access by air, rail and car. They also produce a detailed building appraisal; a space layout which preserves adjacencies identified in the strategic brief and on the final day a presentation to the "Board of Directors". Above all they must convince the Board that their solution will support the ambitious productivity improvements sought by the company.

On the final day the 11 groups present to the "board of directors" and the tutors from each participating university. The top three are then asked to repeat their presentation and to present to ALL staff, students and a jury, which includes invited professionals and HR managers.

Rationale

The Challenge project is a good example of Enquiry Based Learning (EBL) in which the problem – the relocation of the case study company, drives the learning. EBL emphasises the development of curricula around complex problems set within a context. In the Challenge this is the changing role of the real estate professional as consultant and the growing awareness of the linkages between business and real estate.

The Challenge project has reference to leading best practice in EBL design emphasising the support dimension which Juwah (2002) presents in the form of "scaffolding" (presented on the following page in Figure 2). This scaffolding should be applied to all projects, although the individual make up of the scaffolding will be dictated by the context, subject and nature of the project.

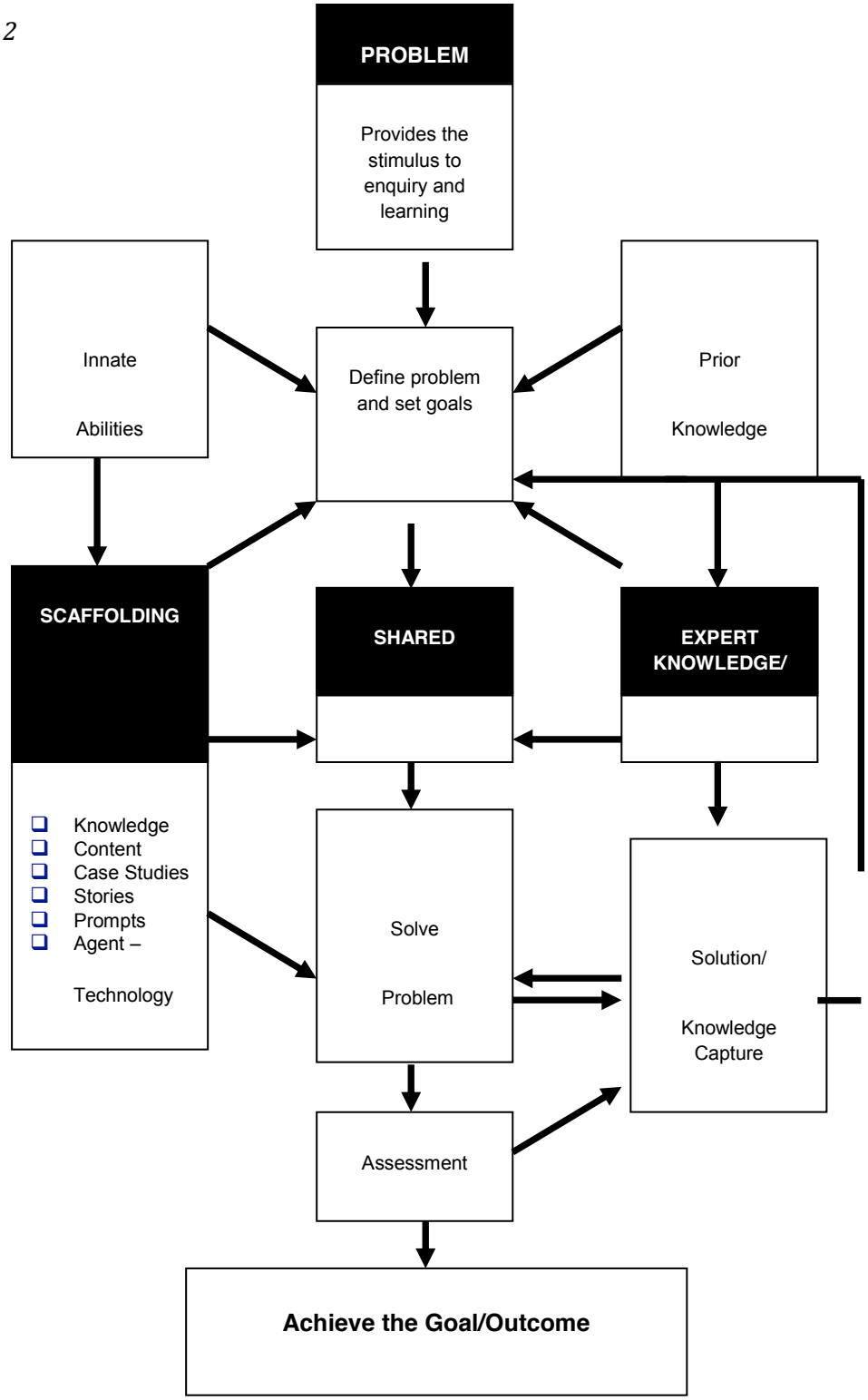
In the European Challenge this scaffolding involves:

- the knowledge and expertise of tutors;
- context setting and instructional content up-loaded to the Blackboard VLE;
- case studies/information up-loaded to the VLE and presented at the opening conference;
- stories from tutors, students and the "executives of the client company" and from real life practice - two of the participating tutors are engaged in this type of activity for real;
- prompts from the tutors acting as the executives of the client company; and
- technology – the Blackboard VLE to drive learning and facilitate communication for groups who are scattered across Europe.

The defining characteristics of the approach are that students define the learning issues, are responsible for searching appropriate sources of information and decide what is researched to address the problem. This reflects a problem based learning (PBL) approach to learning

through enquiry. n the substantial literature about PBL reference is constantly made to it being a vehicle to drive autonomous learning; this is considered in the next section.

Figure 2



Autonomous Learning in the European Challenge

The European Challenge embraces the fundamental principle of learner autonomy as 'taking charge of one's learning' Holec, (1981:3). Whilst all students follow a well crafted brief, how they manage the learning is largely left to them as both a team and as individuals. The Blackboard learning environment facilitates a range of learning opportunities for which they must take control and set the pace and agenda for learning.

Learner autonomy as learner control has origins in language study- an emphasis on learning management, and cognitive processes to build metacognitive knowledge. The European Challenge tries to expand this perspective. We reviewed how to conceptualise learner autonomy and arrived at the following four elements:

- integration of knowledge and learning, Boyer (1990) scholarship of integration/application with students creating a variety of original approaches within and between disciplines.
- use of local, national and international contexts that enable students to evaluate and participate in activity in the wider world, Peters (2004) and Brown (2002);
- supporting students through transitions so they take control of their learning experiences; and
- Putting pedagogic innovation at the heart of the learning experience.

Finally we believe these elements should be blended and recognise that knowledge workers require skills of networking, self-realisation and knowledge management. The Challenge builds these elements into the design of the project by:

Networking – the project creates many relationships in pan European project teams; relationships between students from the same country / University; diverse tutor relationships including role play, mentor, supervisor and local support and networking with professionals working in a team's allocated European city. The Blackboard vle provides a valuable networking system.

Self Realisation – Belbin team role analysis and comprehensive role play encourages reflection and self realisation of the student's strengths and weaknesses in managing their learning. Autonomy in how to manage communication and working processes to complete the tasks encourages personal reflection and an evaluation of their team roles and management styles.

Knowledge Management – the project requires students to create their own micro "learning organisation" and to convert tacit to explicit knowledge needed as described by Nonaka (1994) in creating a knowledge management framework. Again the Blackboard vle facilitates this process.

Syndicated knowledge sharing

When preparing for the challenge students work on an allocated knowledge theme. Whilst they are given guidance and a range of initial texts and references to work from, it is their responsibility to build a contemporary, focused knowledge base for their component of the challenge. An element of peer pressure and institutional pride drives high engagement, after all when they first arrive in Berlin they are still in their University teams and will be presenting their theme to students from many other countries. In addition, the fact that they in turn will become the "experts" for that knowledge theme, drives motivation and engagement without intervention from tutors. Students are required to prepare for the first day in Berlin:

- an A0 sized poster for a poster conference
- a briefing paper for circulation
- a minimum of THREE new appropriate and useful resources uploaded to Blackboard

The success of this approach, through the creation and sharing of a contemporary knowledge platform from which the project can be operated, resonates with the work of Cohen & Levinthal (1990) "absorptive capacity has been demonstrated in studies that show that a person's learning rate is determined by the breadth and depth of his or her prior knowledge." The more objects, patterns and concepts in one's memory, the more rapidly one acquires and uses new concepts (Bower and Milgard, 1981).

Evaluation

The evaluation examined two components:

1. autonomy measured in terms of the use of Blackboard
2. student feedback through focus groups with specific reference to the students as consultants, tutors as clients" philosophy

Blackboard is used in the European Challenge to provide:

tutor defined resources
Briefing documents and essential project information
Learning materials – such as context setting papers; country specific information and open learning material about the processes and techniques participants will be using.
Web links to major articles, papers and consultants' reports

Project announcements and message boards.
communications tools
e-mail tools
discussion forums, wiki's and blogs for interaction between supervisors and role play executives of their client organisation.
File sharing and group interaction tools
autonomous learning tools
A separate Blackboard site for each group gives them a level of autonomy to design and implement communication and other learning tools in a way which meets their individual and team learning needs.
Virtual Classrooms and Virtual Meetings
Team announcements and message boards.
Discussion forums, wikis and blogs for autonomous interaction between teams.

Basis of the evaluation

The Blackboard vle also provides a comprehensive set of tools which monitor its use and allow a detailed evaluation of how students have engaged in the project, used the resources provided (and therefore the level of communication), and of the degree of interaction and autonomy achieved within the project.

In this analysis the European Challenge students have been compared against a group undertaking the project but only as a classroom based activity (with no City visits and teams constructed only of students from one nationality) and a UK project group using Blackboard as part of a final year undergraduate project.

Engagement by students

In evaluation of the European Challenge we examined the Blackboard statistics for the European Challenge project against a control group engaged in a similarly weighted assignment using a more traditional approach, delivered through blackboard. Each project had the same number of ECTS and contact hours.

Interrogation of the Blackboard course statistics reveals amazing levels of engagement by the European Challenge groups. One team of seven allocated to Madrid as their potential location produced an astonishing 5511 hits on the site during the 12 week semester period (see Table 4 for a breakdown of hits). Examination of the detailed usage shows an even spread of usage by students and represents an average of 76 hits per week per student.

Table 4

Blackboard Statistics: Total Number of Accesses per Area		
Area Name	Hits	Percent
Announcements	1734	31.46
Course Information	204	3.70
Staff Information	164	2.96
Course Documents	3171	57.53
Assignments	134	2.43
Books	104	1.88
Total	5511	100

This compares with a total of only 489 total hits for the comparable "control" group of six students following a Blackboard enabled project of the same credits and duration in the final year of an undergraduate programme in the UK.

Autonomy is also embedded in the way in which freedom and flexibility of the use of Blackboard has been embraced by the providing University – the Hanzehogeschool,

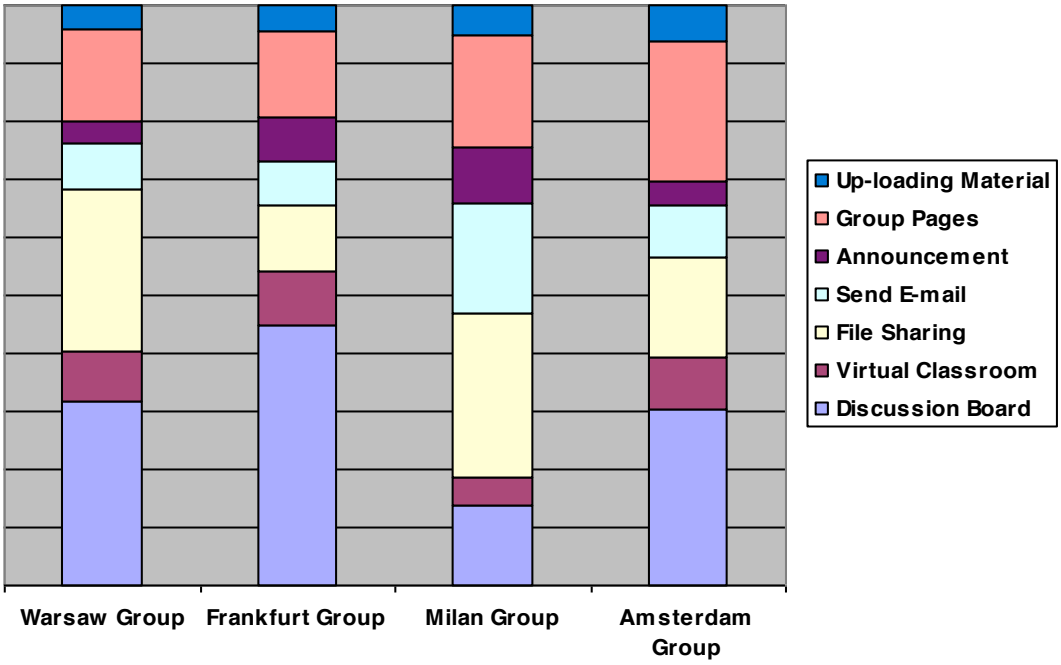
Groningen, The Netherlands, allowing students greater access and control than is common in many UK institutions.

Analysis of student autonomy is still being evaluated in detail. However, initial outputs show unprecedented levels of student autonomy as measured by the diversity of usage of the tools and resources provided to students by the Blackboard vle. Each student team was given its own Blackboard site and was encouraged to develop its style, format and management of the site in an autonomous setting.

Initial results show a wide diversity in the use and development of the sites with standard deviations showing a wide variety of usage of the various components. Simple analysis of the usage indicates that some groups preferred a series of discussion boards around specific topics and virtual meetings in an informal and fairly unstructured format, whereas other groups were highly structured requiring formal virtual meetings at set times every week and a formal minutes and agenda system.

Simple graphical analysis of each team's use of the communications facilities is set out in Figure 5 below. This shows the diversity of engagement and supports the view that high levels of student autonomy were achieved.

Figure 5 . A proxy variable for autonomy (note that all groups were given identical resources and briefing information as to how to use the facilities).



Graphical comparison of 4 out of the 7 groups engaged in the Challenge in 2006 to illustrate the variety of ways in which students used the communication tools given to them in their group Blackboard facility.

Initial comparisons with the control groups working in one country and not given the same amount of control over their resources show fewer interactions, less motivation and inferior outcomes to those given high degrees of autonomy over how they manage the project over a 12- week semester.

Student Feedback through focus groups with specific reference to the "students as consultants, tutors as clients" philosophy

Student feedback has been consistently positive throughout the three years and the enthusiasm of students grows stronger. In particular, students relish the empowerment and liberation of the "students as consultants, tutors as clients" approach. The following statements from focus group sessions illustrates this:

> *"You're asked to engage with the concepts that are put forward and figure things out for yourself and I found that to be, I found that a lot more exciting than sitting there watching a PowerPoint slide that's just spoon-feeding you information that you know you've got to go away and learn it, like a parrot basically, and then deliver it in an exam, this is a lot more practical, and felt like it was linked a lot more closely to the real world than a lot of the modules".*
>
> *"It's worked really well, especially after being on placement (where you've) been asked to be a professional for a whole year and then getting back to university...with this course you're still being asked to apply that professional approach to your work. In doing that... I've got more out of this".*
>
> *"Berlin especially has given me more confidence because it applies other subjects, it's given me the confidence when I start my graduate job to use what I've learnt, because we've actually applied it during this project, I now feel more confident applying it to my actual job".*
>
> *"A lot of it does get embedded in your mind because you're working so intensely and because you're engaging, you're so engaged with it and you're not just reading stuff and trying to remember it you're actually being asked to figure things out...you feel like you're...going your own way. It's your work completely... and that definitely helped me to remember everything".*
>
> *"Working as a consultant was great we had so much responsibility and a very difficult client to manage - I can remember at one point getting quite shot down by Nick (Nunnington) in his role as CEO for asking quite a stupid question which you only learn from making but I'm glad that I made that mistake in Berlin cause it's certainly not one that I'll be making again".*
>
> *"in this project I was seeing, hearing, doing all the time, we learnt of each other, the tutors in and out of role, constantly, almost 24/7. It didn't feel like learning."*

> *"I have never worked so hard and I ask myself why . . . we all wanted to learn because we were challenged not only with the subject matter which was really up to date . . . but also by each other we needed to manage the project and each other to complete the task . .. we all wanted to do well and show our client what we could do . . . the tutors were not tutors anymore, they really became the client and gave us a really hard time . . . but that's what it's like in the real world."*

The author's reflections on the students' comments are that they validate the approach and actually exceed the original aims and objectives of the project. For example, comments such as "it did not feel like learning" suggests that immersion in the intensity and realism of the project works effectively to dispel the artificiality of many traditional learning activities. It is also encouraging to see how students reflect upon both the impact and longevity of the learning when compared to traditional teaching and assessment where much of the study is not retained. With the Challenge this "embedding in the mind" is confirmed by students who confirm how much they remember several years after the project and how useful it is in the workplace. Finally, it is especially gratifying to see how the project can actually change students' behaviour, in some cases really forcing them to take leadership and responsibility and in others to open their eyes to employability possibilities they had not ever thought about.

Conclusions and Further Development

The academic team managing the European Challenge is proud of the outcomes, the warm reception by students and sponsors and the valuable lessons learnt for future implementation of the project in Europe and beyond.

The team believes that the project meets the changing paradigms in both the profession and in education and it provides a model of best practice for adoption and evaluation by other Institutions. The project emphasises and integrates significant research being undertaken into the interface between business and real estate.

The team is pleased that the project has been recognised in the UK by the ACBEE initiative (Accelerating Change in Built Environment Education) as a case study of Excellence. This initiative is supported by, amongst others, The Centre for Education in the Built Environment and the Learning Teaching and Support Network (the latter now known as the Higher Education Academy).

We also believe that the Blackboard VLE developed as an integral part of the "scaffolding", needed to support students working at a distance and in an autonomous setting, has proved to be an invaluable tool for both implementation and evaluation of the Challenge. The unprecedented usage of both the learning resources and the communication tools compared to control courses is confirmation that distance is no longer a barrier to learning and that high levels of motivation can be achieved where students are in control of their learning.

A fascinating additional study would be to analyse the formality of working against the make up of the teams to identify if cultural typologies of different nations influence the autonomy of use of the Blackboard resources.

In summary, in this context, autonomy is concerned with setting up a dynamic and stimulating setting which motivates and fosters self directed approaches, or what the team describes as facilitated autonomy. The approach recognises that investment in autonomous learning is front loaded with considerable time and energy being devoted to creating a realistic and exciting problem or set of problems to engage with, ensuring appropriate prior knowledge is made available and creating comprehensive "scaffolding" which supports the learner to achieve the desired outcome. Facilitated autonomy is an approach where student and tutor choice is designed in and students have control over their learning environment. For example, the use of a virtual learning environment, where the way in which it is used is not dictated by the Institution.

Facilitated autonomy should be complex and multi faceted, providing a problem that stimulates engagement; exposing learners to different perspectives, using practitioners' stories; role play; and deliberate provocation to stimulate deeper learning. All of this facilitation drives autonomy in the European Challenge and the team believes is the source of its extremely successful operation.

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Media literacy skills for discovering, evaluating and re-using visual and sound resources

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Abstract

Digital and visual literacies are now recognised as core skills for undergraduates. However, it is also recognised that students need support in developing those skills, partly because they do not always have them before they start university, and partly because they show a lack of awareness in key issues such as copyright compliance. To enable student autonomy in the area of visual communication we designed an online resource called VIA (Video Image and Audio). This report describes the project which involved a design phase and an evaluation phase in which undergraduates, postgraduates and Information Advisers participated. We received useful feedback to improve the resource, and overall, the VIA resource was well accepted by all stakeholders.

Background

We live in an increasingly media rich society and students are entering the University with an expectation of accessing and reusing media resources in their work. They are used to having film, TV, radio and images at their fingertips particularly via the internet. However, students tend to be naive and inexperienced in how to discover quality resources and the factors to consider when critically evaluating and reusing them. The instinctive approach is to undertake a Google search, and copy and reuse any resources which match the subject requirement without regard to provenance, copyright and technical limitations.

Approach to learning

In general, students exercise autonomy when they become engaged in all aspects of the learning process – planning, implementing and evaluating (e.g. Little 2003; Scharle and Szabo 2000; Thanasoulas 2000). The VIA resource can be used flexibly in helping students plan and evaluate their use of visual and audio materials by raising questions such as: what purpose do the visual/audio materials fulfil? Do they comply with copyright legislation? VIA also offers advice regarding implementation (image ratio, file size), although this is secondary to the key purpose which is to enable students to handle visual and audio

materials correctly and confidently. We envisage learning with VIA to be a 'constructive process that involves actively seeking meaning from (or even imposing meaning on) events' (Thanasoulas 2000).

Intended benefit

The aim in designing the VIA resource was to support learner autonomy, that is, self-direction and engagement in learning, in relation to the use of visual and audio media in coursework – and beyond, in students' professional lives. VIA can be considered transdisciplinary in the sense that its potential audience encompasses all SHU students. It was conceived to be used by students from all disciplines as well as Advisors in the Learning Centre or Student Support in order to guide students needing help with the visual and audio aspect of coursework. We also envisaged that lecturers would use it as a reference or as a teaching tool, while recognising that they may want to use additional materials to focus more specifically on the issues arising in some disciplines (e.g. use of visual artefacts in the visual arts or media studies, visualisation of data in the sciences or business studies). The VIA resource can be integrated in the design of autonomous learning experiences which neither let students flounder nor attempt to guide them rigidly, but instead 'allow them to struggle to construct a self in relation to a discipline or a profession' (Wilcox 1996:174).

Rationale

Purpose and goal of the VIA project

The aim of the project is to develop student understanding and awareness of finding, critically evaluating, selecting and reusing (in terms of legal compliance) videos, images and sound. We developed VIA to raise student awareness of the key skills which distinguish a 'media literate' student. We wanted learners to "develop a sense of responsibility and also, encourage learners to take an active part in making decisions about their learning" (Scharle and Szabo 2000: 4), which here relates to the use of audio and visual material.

Our research question was: does the VIA resource address student needs? And further: what could we do to improve it, based on student feedback? We tested the VIA resource with three groups of people:

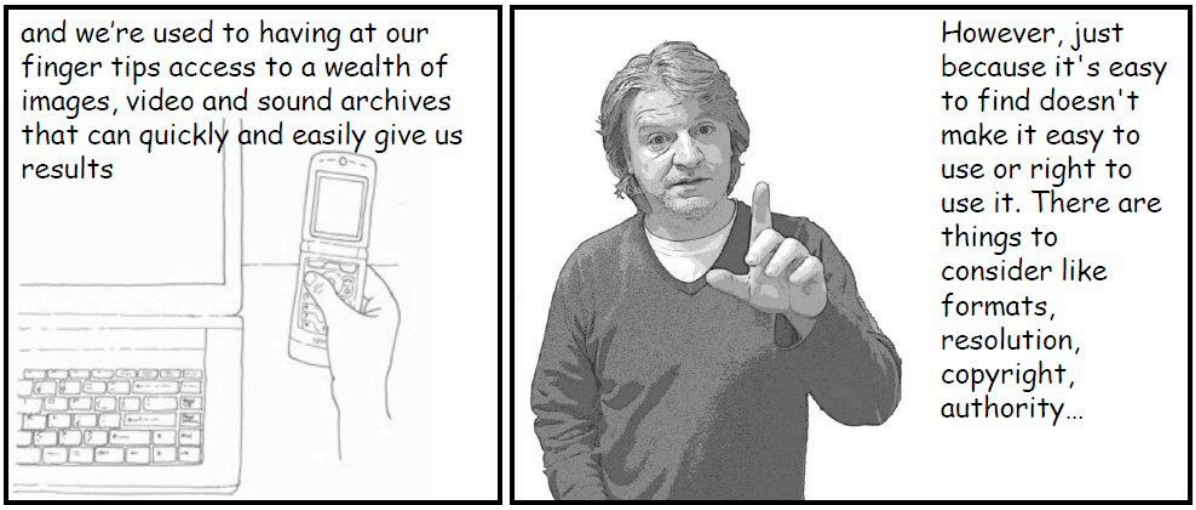
- undergraduates selected randomly for a focus group;
- a specific group of postgraduate e-learners taking a Visual Communication module; and
- Information Advisers in the Learning Centre.

Resource limitations meant that, regrettably, we could not involve academic staff in the study. In any case the focus of the study was on students' digital/visual literacies and involved first and foremost a mapping of what these might be. A second phase of the project would be to conduct a multi-case study about the VIA resource in teaching; this would develop the initial case study presented here.

The VIA concept

At the outset we agreed to utilise good quality resources that already existed. Several excellent tools have been developed by authoritative bodies like the JISC and Digital Media (formally TASI). There seemed little point in reinventing the wheel, and we felt that it was far better to capitalise on appropriate materials which had been developed with more resources and expertise than were available to us. We used our expertise to link to these resources at appropriate stages and tailor them into a unique package to address the specific needs of SHU students, particularly though not exclusively those of undergraduates. Given the nature of the resource we decided to present VIA in a visual way, adopting a comic book style rather than using blocks of text.

Figure 1. A sample page from the 'Click' resource



We used examples of external sources of video, sound and image materials which have good provenance and have appropriate rights cleared. Original materials were also designed. For maximum flexibility, we used PowerPoint, so that the final product could be printed or consulted electronically as a PDF file.

Evaluation approach

The evaluation was located in the interpretive paradigm, and took the form of a case study using a hybrid approach to data collection, to ensure optimal validity. The aim for deploying a mixed-method strategy was essentially 'complementarity, or examining overlapping and different facets of a phenomenon' (Tashakkori and Teddlie 1998:43).

Undergraduate focus groups (in two phases)

Ten students volunteered to participate in the evaluation. The group covered a range of disciplines and levels of study, as shown in the table below.

Table 4: composition of the undergraduate focus group

Course	Year	No. of students
BA Hons Planning Studies	2	4
BSc Business Modelling and Management	4	1
BSc Business and ICT	1	1
BSc IT Management	1	1
BA Business and HRM	4	1
MSc IT	1	1
MSc Pharmacology	1	1

At the time of volunteering they were unaware of the nature of the activity. At the beginning of Phase 1 of the focus group, students were given a brief introduction with the minimum of information as to the purpose of the focus group. They undertook an activity which required them to find 'visual material' to enhance what was presented as the first page of a formally assessed assignment on cycling helmets. They were also asked to make a note of what they did. The students then undertook a very short self assessment of their IT and media literacy skills.

Phase 2 stared with giving students an explanation of the purpose of the focus group (using and evaluating VIA). The students then worked through VIA and then repeated the activity, again making a note of the steps they took.

Figure 13: Students working with VIA (phase 2)

To complete phase 2, students were divided into two groups for a discussion about what they had learnt, the usability of the material and the content of the material.

Online heuristic evaluation by Master's students

Students enrolled on the MA Professional Communication programme were invited to evaluate the VIA resource, as part of their studies on the 'Visual Communication' module. Seven students agreed to contribute (four women and three men) to the evaluation.

Their task was to select a visual analysis tool (e.g. Kostelnick and Roberts 1998; Rose 2007) and use it heuristically to comment on the appropriateness of the VIA resource for a student audience. Heuristic evaluation is a method of assessing design quality in the user interface of software applications or websites (Dumas and Redish 1999; Nielsen and Mack 1994). It is carried out by several evaluators who, in parallel, assess the interface using a set of principles (or 'heuristics'). Several evaluators are needed because a single evaluator cannot identify all possible problems. Each evaluator works alone, evaluating the interface against a list of heuristics, normally well established principles. Findings are aggregated, to identify the commonality and severity of the problems they have identified. In the case of our study, MA students took on the role of evaluators, and reported their conclusions in a discussion on the Blackboard site that supported their studies.

Online interviews with Information Advisers

The third group of people who evaluated the VIA resource were Information Advisers. These are information professionals who are either based in a faculty team, working closely with teaching staff to tailor information skills sessions to meet the needs of the specific cohort of students, or based in a functional team ensuring services, systems, and processes best meet teaching and learning needs. Each year they deliver approximately 1,500 hours of information literacy sessions, across all levels from Level 4 to postgraduate.

Table 5: composition of the Information Advisers' panel

Team	Number of Information Advisers
Head of Academic Services	1
ACES Faculty team	1
Health and Wellbeing Faculty Team	2
Sheffield Business School Team	1
Systems Team	1
Virtual Learning Centre Team	2

Information Advisers were asked to evaluate VIA and provide feedback on the scope of the content, its value as a tool for developing media literacy skills, and also the overall look, feel and navigability of the resource.

Findings and discussion

Overall

On balance, feedback was positive. We received useful suggestions for improvements, such as: consistency in the use of the comic metaphor, replacement of idioms, addition of branding and ownership, more use of colour to aid navigation, value of some reference links. Comments on the resource name prompted us to give a more meaningful title, so that 'Click, copy, create' became 'VIA' (Video, Images and Audio).

Undergraduate perspectives

The students assessed their IT skills as either good or very good. Nine of the ten students had been asked to insert images into their coursework, and had on other occasions chosen to do so on their own initiative in order to enhance their work.

In phase 1 of the focus group, all students chose to search for a graphic and their approach was to use Google. Issues such as copyright, referencing and technical information were not addressed.

In phase 2, after using VIA, students selected from the wider range of resources which they had been introduced to. In their commentaries on the second attempt:

- one student mentioned that is “not right to copy and paste information”;
- one student took on board technical information about size, colour, and distortion; and
- one student used “academic resource” in their list of search words for Google.

The second attempts also included some form of referencing for the image, either immediately under the picture or at the end of the document.

In summary all students were positive and offered comments such as “not bad”, “like it the way it is”. They liked the look though most would have liked colour to be used, finding the grey “unattractive”. Navigation was easy, but it was difficult to go back or to remember how far back something was. They liked the friendly language used and one commented positively on the “use of the man who seems to be explaining things”. The amount of context was “about right”, but the mention of semiotics put students off even though they understood the point of tailoring a message to an audience. The importance of sourcing and acknowledging the source was clearly recognised.

Feedback from the undergraduate focus group was used to amend VIA before the next phase of the evaluation by MA students.

MA students' perspectives

Of the three groups of participants, this was the most negative overall – perhaps because they were asked to evaluate VIA as an artefact, rather than as a tool to support their learning. Also, they worked with a visual analysis grid, which encouraged critical evaluation.

Overall, the product was deemed well targeted at its audience and the visual delivery was essentially appropriate. For most students, the combination of visuals and text was seen as a particular strength: "The text and the images complement each other very well throughout the document" (Student P). Yet this was not everyone's preference: Student J thought the resource could be presented more succinctly as a series of bullet points, especially for mature students. While Student P agreed about the length, she believed that "a mixture of text and pictures" was appropriate.

The most commonly discussed feature was the use of an "anchor man": this was mostly seen as a success factor because he "leads the user throughout the entire document... [and] contributes to ethos as he establishes a "visual connection" with the audience/user" (Student C); his "posture and gestures... reinforce what the text is stating or asking" (Student P). However, Student J (an older learner) felt the anchor man's presence "insulted his intelligence".

The MA students identified a number of areas where revisions could be made:

- The 'iPhone' format should either be discarded in the first two pages, or kept throughout the 54 pages (Students S and J)
- navigation was perceived as somewhat problematic, notably across the different chapters and with the 'home page'; however, the navigation icons "are immediately recognisable as they are the same icons commonly found on videos, computers, etc" (Student P)
- typographic choices needed to be more limited, to create consistency across the VIA resource, but the choice of Comic Sans MS was seen as "juvenile" (Student S and J) or apposite because it "establishes a 'colloquial' tone to the document which is in line with the target audience" (Student C)
- the use of the SHU logo needs to be more carefully considered
- format issues were also considered; notably, Student C suggested to "give the user the choice to either select a Flash format with real video and sound extracts, or a static HTML format which would include a downloadable PDF at the end in case the user needs to print it out or send it via email" – a view supported by other students.

Information Advisers' perspectives

Overall, Information Advisers thought the content was comprehensive with the right level of information and detail; the comic style approach had unanimous appeal. One said that "the links to external resources are good too and provide a different approach and further

information if you need to follow it." The Adviser who supports the Arts area said she would use it within her literacy sessions, and others said they would find it useful to refer lecturers and students to should the need arise. Another Adviser said "the knowledge contained within the resources is very useful for me."

As in the other two sets of participants, opinion was divided in some aspects. For example, whilst one Adviser favoured the predominantly black and white approach with colour only used to add impact, the others thought more use of colour would improve the resource. One person said navigation was easy, but several people commented that they couldn't navigate to specific sections (clearly they hadn't realised that it is possible to do so from the 'menu' on the opening screen).

Conclusions

The Project Team remained focused throughout the project, worked well together and produced a valuable resource within the budgetary constraints. In the early planning stages there was a temptation for enthusiasm to push the boundaries of the project; the scope had to be redefined to a realistic level for the time and resources available. Even so, we underestimated the time need for the production. In trying to be all encompassing the end product may not have as great an impact as it would if it had been targeted at a specific subject group and had greater depth. Overall the VIA resource was well received by the three user groups involved, in the sense that the resource helped develop awareness of media resource use. A number of presentational issues were noted (and acted upon) but these did not deter from the main messages.

Further Development

Keeping VIA up-to-date is essential. Whilst the basic principles will remain true, external links to useful 'tools' and sources of reusable materials will need to be reviewed and updated over time. This work will be undertaken by the Media Materials and Copyright Team and can easily be done as the resource has been developed in an editable format. However, the impact and value of VIA will only be realised if the resource is widely available. Learning and Information Services are currently working on an Information Literacy Strategy and as part of that project are looking to bring together the full range of resources and learning objects which have been developed to enable the development of literacy skills. VIA will be included in that portfolio and thereby made widely available to the SHU community.

Further reading

Purdy, L., Quinn, S., Dujardin, A.-F., and Cunliffe-Charlesworth, H. (2009) Click copy, create; media literacy skills for discovering, evaluating and reusing sound and visual resources. Sheffield Hallam University CETL event, Sheffield 17 July 2009

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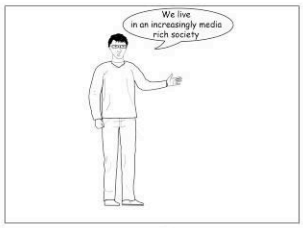
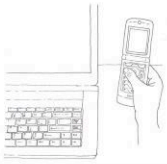
Click, copy, create: discovering, evaluating and reusing sound and visual resources.

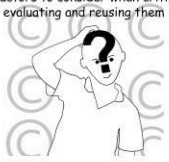


Students on entering university have an expectation of accessing and re-using media resources.

They are used to having film, TV, radio and images at their fingertips



Students tend to be naive and inexperienced in how to discover quality resources and the factors to consider when critically evaluating and reusing them



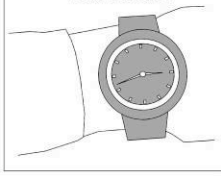
The aim of this project is to produce a resource to develop student understanding and awareness of finding, critically evaluating and re-using (in terms of legal compliance) media resources.

The outcome hopefully will be students who are more **MEDIA LITERATE**.

So what is going well...

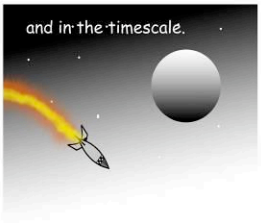
We have an abundance of ideas

The project is on schedule

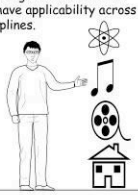


What are the challenges?

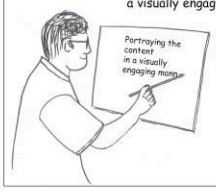
Setting boundaries for the resource



Providing a resource which will have applicability across disciplines.

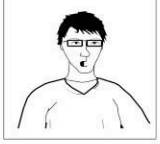


Portraying the content in a visually engaging manner.

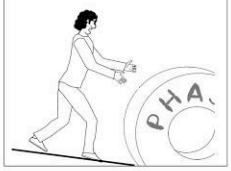


To not re-invent the wheel but to LINK to appropriate resources which already exist.

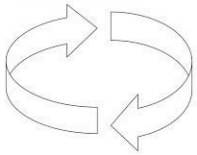
Future plans



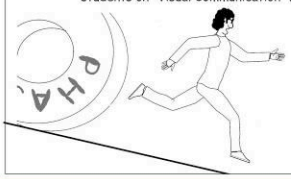
January '09 Rollout Phase 1 of the evaluation.



Feedbaack will inform further developments.



April -June '09 Phase 2 of the evaluation will be with postgraduate students on 'Visual Communication' module.



What are our support needs? Staff and students willing to participate in the evaluation.

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CLICK, COPY, CREATE:

media literacy skills for discovering, evaluating and reusing sound and visual resources.

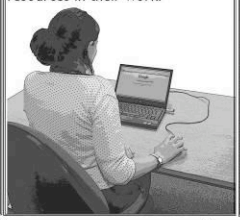
Linda Purdy, SLS
Anne-Florence Dujardin, ACES
Simon Quinn, SLS
Hilary Cunliffe-Charlesworth, ACES

Click, Copy, Create.

The story so far...

We live in an increasingly media rich society...

and students are entering the University with an expectation of accessing and reusing media resources in their work.

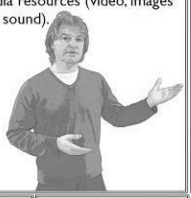


They are used to having film, TV, radio and images at their fingertips.

Students tend to be naive and inexperienced in how to discover quality resources and the factors to consider when critically evaluating and reusing them.

Their instinctive approach is to undertake a Google search, and copy and reuse any resources which match the subject requirement without regard to provenance, copyright and technical limitations.

The aim of the project was to develop student understanding and awareness of finding, critically evaluating and reusing (in terms of legal compliance) media resources (video, images and sound).



The objective was to produce a resource / package to raise awareness of the key skills which distinguish a 'media literate' student. (It also needed to be easily editable).

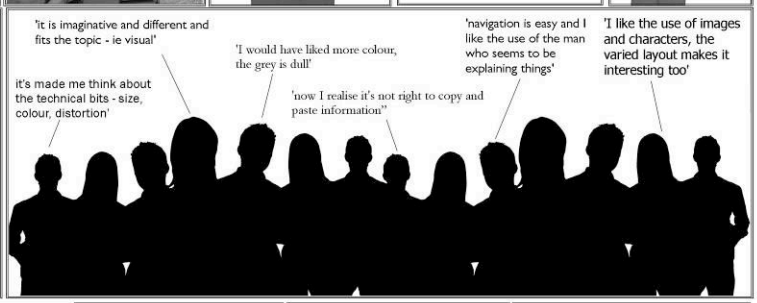
The intention was to highlight these skills, and to utilise and link to good quality resources (which already exist) by providing a framework and context.

The resource was evaluated in three ways. Firstly there was a focus group, comprising a random group of students who undertook an activity pre and post use of 'Click, copy, create', enabling evaluation of it as a learning resource.

Secondly Distance Learning MA students on the 'Visual Communications' module evaluated it as a visual resource.

Finally Information Advisers, who deliver information literacy sessions, provided feedback on the value of the resource as a vehicle for 'media literacy' awareness raising.

The feedback from the undergraduate and Information Advisers was generally very positive. Users said:



Feedback from the DL students who evaluated it as a visual resource has prompted a re-think of the layout .

For example to make it clearer what the resource is about we've changed the name to...

Video, images and audio

Finding and using video, images and audio in your coursework.

So what have we learnt?

Well, that the response has justified the need for such a resource...

and despite our best efforts we can't cover everything in detail.

So future development will try to fill in the gaps and to go into more detail in the areas we have just touched upon.

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Autonomy through collaboration: Reflections on wiki-based collaborative seminars and a novel assessment in a Psychology Module

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Abstract

"Just as you cannot do much carpentry with your bare hands, you cannot do much thinking with your bare brain." Dahlbom & Jenlert (quoted in Dennett, 2000, p.1)

This paper describes an attempt to support the development of learner autonomy by assessing students' ability to write a review of a current psychology article. Students were given practice in this task by writing a collaborative review using Blackboard's wiki tool. Questionnaire and interviews suggest that although the assessment was generally deemed to be a success, participation in the wiki task was low. It is suggested that low participation could be due to a combination of it being an unfamiliar technology, the perception that the task was of low value, a difficulty coordinating action within groups and a concern that other non-participating students would gain benefit from the work of participants.

Introduction

The development of autonomous learners with its requirement that learners (and professionals) are able to respond appropriately to novel situations and problems is central to many recent educational theories (e.g. Schon, 1983; 1987, Lave & Wenger, 1991; Wenger, 1998). However at the same time there is some disagreement as to exactly how one should define autonomy in terms of its underlying skills and abilities. Benson & Voller (1997) discuss five different ways in which 'learner autonomy' is used:

- it describes situations in which learners study entirely on their own;
- it describes a set of skills which can be learned and applied in self-directed learning;
- it describes some innate capacity which is suppressed by formal education;
- it describes learners having responsibility for their own learning; and
- it describes learners' right to determine the direction of their own learning.

Rather than attempt to produce a verbal definition in terms of cognitive skills I felt it productive to define autonomy—if 'define' is the right word—in terms of the kinds of activity I would like students to be able to perform having completed a course or module. While skills and abilities doubtless underlie discipline-specific knowledge, it is only in performance that we can decide whether we have truly achieved competence. The great

Australian cricketer Donald Bradman was once asked how he felt about those critics who believed he had a faulty batting technique. He replied that they were entitled to their beliefs just as he was equally entitled to keep scoring centuries. In other words, what matters is not what skills you have (or do not have) but how well you perform when it matters.

Given that this intervention was in the field of psychology the preoccupation was with what should a psychology student be able to do when they have finished their degree and, once we have arrived at a conclusion, then we should endeavour to help them to learn to do whatever it is well. My answer to the question was that they should be able to take an academic psychology paper be able to evaluate it, discuss whether it achieves the goals it sets itself (does the evidence support the claims made by its author(s) for example), placing it within the appropriate theoretical debate (perhaps by bringing in other studies) and suggesting further research where appropriate (with perhaps a sketch of how this might be achieved). This is not an exhaustive list. There are also more socially orientated goals. For example, they should be able to collaborate on doing the above with other colleagues, be able to present their ideas verbally in order to convince others of their position and be able to defend their conclusions against critics. These social elements are beyond the scope of the assessment used here but I will reflect upon some of the social aspects of the collaborative component of the wiki task. One final point. Although I have focused on discipline-specific knowledge, it should be obvious that many of the activities described above constitute valuable 'generic' skills and could be seen as important for employability.

Rationale

Quite often in curriculum design it seems that developers begin with a set of materials or skills that are deemed central to the discipline and then work forwards making decisions as to how these should be presented to the students by selecting the delivery platform and then, finally, the assessment. The platform and assessment are frequently determined by tradition or expectation. For example, one finds that face-to-face lectures are used heavily in delivery and essays (either coursework or exam) are used in the assessment, irrespective of whether these are the most appropriate given the subject matter and nature of the learning population. Perhaps a better approach is to work backwards. Decide what you would like students to be able to do at the end of a module of course; develop an assessment that measures whether this goal has been achieved then develop the delivery to support the assessment. Making explicit the relationship between delivery, goal and assessment is important if our goal is promote learner engagement. Research on the allocation of study time to test items reveals that students spend more time learning more profitable items when studying for a subsequent test (Metcalfe, 2002; Reader and Payne, 2007; Son and Metcalfe, 2000; Thiede and Dunlosky, 1999) in short, participants serve to maximize the value of the interaction in terms of whatever currency is desired. If students are value maximizers this suggests that participation and engagement in learning activities such as seminars will be determined by the extent to which the activity supports the learner's goals, in this case assessment grades. If students do not perceive seminars (or other activities) as supporting this goal then low participation/engagement will be the rational response (see Reader, 2007 for some empirical support for this position). Of course students are not solely

motivated by external factors such as grades and assessment; intrinsic motivations such as personal gratification, interest in the topic and so on are also likely to be important factors. It is known, for example, that intrinsic motivating factors such as increasing students' ownership of the learning activity can have a significant effect on student engagement (Brookfield, 1987).

Unfortunately due to time and resource constraints it was not possible to fully redesign the module in question in the way described, instead a partial redesign took place. The assessment was to review a paper and seminars were redesigned in order to support this assessment activity, delivery was by lectures with small modification of content to reflect the new assessment. Rather than face- to-face seminars in which students complete a number of tasks, one seminar activity was used and this was to be completed across the semester. Seminars were conducted on-line and the task was for students to practice their reviewing skills using the blackboard wiki tool. Tutors would provide written feedback on the nascent review students were then free to make modifications which they could again submit for feedback. The process could iterate as many times over the first semester as students felt necessary. Wikis were used because group members could contribute without necessarily being in the same place and the history list provided by all wikis could allow students to see how their review had developed and improved as comments were taken on board. Students reviewed the practice paper is group of around four. The reason for this is twofold. First, for each student to create his or her own wiki review would have been unmanageable with 220 students on the module. Second, it was thought that students could help each other out in the reviewing task, learning from each other and fostering, perhaps, a 'community of enquiry' (Lave & Wenger, 1991; Scardamalia & Bereiter, 1994; Wenger, 1998; Buysse, Sparkman, & Wesley, 2003).

It is worth spending a few moments to consider the relationship between learner autonomy and learning communities. The use of the word 'autonomy' suggests someone operating alone without requiring the help and support of others. Closer examination, however, reveals this to be illusory. To be a truly autonomous should presuppose the fact that the individual learner can work as effectively in a group as alone requiring the development of important life-skills such as those of negotiation, delegation, conflict resolution, the ability to motivate others as well as the ability to simultaneously play the role of learner and teacher.

Background

The approach was trialled on Abnormal Psychology, a level 5 module consisting mainly of psychology undergraduates plus some join honours students and some option students. Two-hundred-and-twenty students participated in this module.

Method

The first part was simple: the activity was to review a paper so this was set as the assessment for the module. Four recent journal articles were chosen all between 4,000 and

6,000 words all relevant to different topics within the module and all available on-line. An important criterion for the articles was that there should be no readily available review available on-line or through other means. Students had to write a maximum of seven pages on this review not including references. In order for students to practice writing reviews (this was the first time most students had done this) the following were provided.

- A document presented on Blackboard that explained how to write a review written by me. This contained specific advice (e.g. 'identity the key claims the author is making', 'what evidence does the author present in support of these claims', 'do you think the evidence really supports the claims' and so on).
- A collection of reviews for students to access, including some of my own.
- A Q&A blog on Blackboard where students could ask questions about the process of review writing to be answered by tutors.
- A Q&A lecture dedicated to the review close to assessment time, which provided the basis of an FAQ again on Blackboard.

Students were given the opportunity to write a practice review on a paper unconnected with the assessment ('On being sane in insane places' by David Rosenhan). Students were asked to get into groups of four and each was assigned a wiki space on Blackboard.

Evaluation

Four sources of information were used in order to assess the effectiveness of this intervention (1) participation rates and engagement in the wiki activity, (2) other observations (e.g. participation in Q&As, emails and the assessment lecture), (3) a questionnaire on the approach and (4) semi-structured interviews with some students who participated in the module.

The questionnaire asked a number of questions asking (1) to what extent students participated in the wiki task, (2) reasons for using (or not using) this facility, (3) perceptions of the assessment, although this was available for all students on-line, only 38 students (out of a maximum of 220) completed the questionnaire. The questionnaire contained statements rated on a seven-point Likert scale (strongly disagree to strongly agree)

Ten students participated in the interview which followed up some of the questions asked in the questionnaire.

The wiki task

Participation in the wiki task was disappointing given that it was specifically designed to increase participation rate and engagement by increasing the relevance of seminar activity to the assessment goals. There were 50 groups in total (therefore potentially 50 wiki reviews) yet only 19 groups completed anything like a proper review (all of which received feedback from tutors). Further, of these 19 only 10 groups revised their review and received

a second round of feedback. Only 3 of these groups went through to a third round of feedback and none went to a fourth round (partly because assessment time was at this point imminent).

Table 1 summarises the responses given to why respondents did not participate or engage fully in the task:

Statement	Percentage respondents choosing this response as most important
I didn't see the task of a particularly high priority due to it not being assessed	33%
I had difficulty organising members of my group	18%
I didn't want to place the review on a public forum where other students could read my work	14%
I had problems using the software	11%
Other (e.g. illness, work commitments, etc)	24%

Table 1: The percentage of respondents choosing each reason as the most important.

Interviews generally confirmed these results. For example, interviewee 2 gave the following explanation:

> *I know that you kept saying that it [the wiki task] was relevant to the coursework, and I'm sure it was. But, you know, the assessment seemed a long way away [from when they were supposed to be completing the wiki] and there was stuff that needed to be done at that time that was assessed. That stuff just took priority.*

Assessed activities, it seems, always take priority. Further, this indicates a well-understood psychological phenomenon called 'future discounting' (Frederick & Loewenstein & O'Donoghue, 2002): people value a reward less the further away in time it is. At the time students were supposed to be using the wiki the assessment was over two months away.

In terms of the second most popular answer interviewee 6 said the following:

> *My group, I mean I know them all quite well, but they had stuff on at the time and getting them to actually do anything was quite difficult. I did write some stuff myself but when none of the others bothered I just gave up.*

On making the reviews available to other students, interviewee 1 had this to say.

> *There are people out there who do nothing. Some of them turn up to seminars and all they do is write down the answers that the tutor or other students give. Why should I put effort in in order for them to read what I've written. [INTERVIEWER: do you object to sharing your work then?] I don't mind sharing with others if they share with me. Quite a few of us feel that we are being used by lecturers to teach other students, who just sit back and take without giving a thing. And they'll probably get good degrees at the end of it.*

I explored the notion of exploitation by free riders in Reader (2007) which can undermine the whole idea of 'communities of enquiry'. Unless some mechanism is employed to reduce students feeling that others are profiting at their expense, some students will simply refuse to cooperate. This is an important point. As educators we sometimes assume that collaboration and ideas sharing 'just happen' at our behest. These data suggest that full collaboration and sharing might need special conditions to work effectively, including some method for dealing with free riders whether they are real or perceived. One way this could be done is by marks being allocated to individual students partly based on how much they have contributed. This is comparatively easy using wiki technology where each person's individual contribution to the document is recorded. Another way of doing this is to educate students in how to work in groups including delegation skills and how to deal with free riders. We might also permit students to levy sanctions of some kind against those who are perceived as not pulling their weight, although this does raise the possibility of undesirable conflict. Working in groups and dealing with the various problems of negotiation, delegation and free riding is in addition an important employability skill, and more attention should be devoted to encouraging students to work effectively in groups.

Finally many saw that wiki task as insufficient, 68% stated that they would have rather had face-to-face sessions as well (interviewee 3):

> *I just didn't feel supported. Abnormal psychology is really interesting and I really wanted to discuss some of these ideas with tutors. Discussing with other students is OK, but what do they know?*

As peer learning (Anderson & Boud, 1996) is becoming increasingly popular, but we must recognise that, as well as the problems of free riding and non-participation described above, there is also the problem of knowledge reliability. If a student perceives knowledge as being potentially unreliable – for example it came from another student – it could well lead to their paying it little heed. Alternatively, paying attention to incorrect information could have an even more deleterious effect to an individual's learning. We in psychology – in common, no doubt, with many other departments – spend considerable time warning students about taking information posted on the Internet too seriously, while at the same time encouraging them to learn from each other! This is, of course, a misunderstanding of what peer learning is, but it is all too easy – as the above quotation demonstrates – for students to gain the impression that peer learning involves students acquiring imperfect content from each other rather than their learning the processes of negotiation, delegation, information search and so on.

The assessment task

The assessment task was more successful, although not all students liked it; 66% of students said that they would have preferred an essay. However student approval is not the only measure of effectiveness, despite this relatively low rating the majority of students (71%) believed that they had learned more as a result of writing the review than they would have done had they been assessed by a standard essay. Interviewee 5 said the following.

> *It was difficult. But I think that at the end of it I really learned something. With essays you know what you've got to do, what you've got to read and so on. With this I felt a bit lost at times but I did feel I learned a lot as a result.*

However, Interviewee 3 gave a different response:

> *I hated it. It was really hard. I've never done this before and I didn't know what I was doing most of the time. [INTERVIEWER: did you ask anyone for help?] Yeah and that was useful. But when you hand an essay in you kind of know what you're going to get because you've done it before. With this I had no idea if it would even pass [it got a 2:1 in fact] which is stressful.*

The questionnaire confirmed this stress (78% said that they found it harder than if it had been an essay) as, perhaps, did attendance at the revision session. I have run these before and rarely get more than about 20 or 30 students from a cohort of this size (especially when, as this was, the session was organised at a non-standard time). In total around 130 students attended the revision session I met about 30 students for one-on-one discussions (when usually I get one or two students) and received over 120 emails concerning the assessment. Students, it seems, were out of their comfort zone. Of course merely making students feel uncomfortable about the assessment task should not be taken as necessarily positive, one can imagine all manner of unfamiliar and unpleasant forms of assessment that are pedagogically valueless, the point is whether it was a useful learning experience. Although there is no objective data to answer this question, as was noted above, the majority felt that they had learned more. Finally one might ask why the task was seen to be so difficult; what is the difference between writing a review and an essay? There seem to be at least two differences. First was the unfamiliarity of the format. Most Level 5 students have a clear idea of the structure required for an essay, but they are less clear about what goes into a review. Second, and perhaps more pedagogically meaningful, writing a review requires students to have an in-depth understanding of the paper and the literature that it builds upon. It might also require that they use citation searches to find subsequent articles that build up (or critique) the target article. In short, successful review writing requires that students engage with the ideas and arguments presented in academic texts. In contrast, when answering traditional essay questions students can frequently find potted summaries of theoretical positions and critiques relevant to the question in textbooks and on the World Wide Web which makes their task easier. The approach of writing reviews as an assessment activity is probably inappropriate at Level 4, but at Levels 5 and (especially) 6 it represents a useful

pedagogical tool to both assess knowledge and develop the critical faculties necessary for employment and future study.

Discussion

Participation is compromised by perceived value of the task.

We tried to add value to the wiki task my making its completion conspicuously support the assessment task. To a large extent the low participation rates indicates a partial failure in this goal. An obvious solution to this problem is to assess the wiki task, but do we want to go down the road of assessing everything with the concomitant increase in workload on students and staff alike. On the other hand, shouldn't good work be rewarded?

Don't overestimate the technical knowledge of the "internet generation"

It was surprising how few students knew what a wiki was. Most had heard of and used Wikipedia, but didn't realise that a wiki is a collaborative, editable web document. There were some problems familiarising students with the software. In retrospect face to face sessions teaching students how to use the software might have been beneficial.

Information sharing and other cooperative transactions are not always easy to foster

Educationalists sometimes seem the think that students will simply work with other students and share their ideas and research at the behest of the educator. The results from this study (and others see Reader, 2007) suggest that this might not be the case. If students believe that others are profiting by their hard work then they might not participate or keep their best ideas to themselves. Solving this problem is not easy. Research suggests that assigning each individual with a clearer role within the wiki task might have helped (Kraut, 2003). An easier way of solving this might have been for wikis to be populated by individuals not groups and for these to be private to the creator and tutor rather than available to everyone. The problem here is that 220 individual wikis would have been unmanageable and that it removes one of the points of the exercise: that people can learn from each other.

From this perspective the idea of a community of enquiry in education might be somewhat idealistic if some students conspicuously fail to pull their weight. It might be possible, but it would require special conditions to be present if all students contribute equally and maximally.

Does it matter that students hated the coursework?

My perception was that the coursework was beneficial to the students as it made them think more deeply about the subject matter than simply writing an essay – many of which can be quite superficial. Although students thought they learned from this task, many of them

disliked it (see above). Personally I would rather a learning exercise be beneficial rather than popular, but maybe if the assessment task had been differently supported it might have been beneficial and more popular.

Blackboard's tools could be better

Blackboard's wiki tool has much of the functionality that you would expect from this type of software but accessing the wiki isn't straightforward. If a student wants to check whether another student has contributed to their joint wiki, or wants to check whether a tutor has commented he or she needs to go through a time consuming and effortful process. They must log onto Blackboard (which can take some time), access the appropriate module, click on the wiki tool, click on their seminar group and then click on their individual group. At busy times this can take over a minute. After a few checks to find that no-one has contributed, it would not be surprising if students stopped checking. In short access needs to be faster with, ideally, the students being informed – either by email, RSS or other facility – that someone has contributed. The Blackboard wiki tool also doesn't support discussion. There are discussion lists but these are located elsewhere in the Blackboard environment meaning more mouseclicks and more wasted time as the user navigates from wiki to discussion tool and back. The interface of Wikipedia is more conducive to supporting discussion as to what should, and shouldn't, be included in the wiki itself. One can flip from the emerging wiki document to the discussion simply by a single mouse-click on the tabs at the top of the page. An educational tool such as the open source Elgg permits users to engage more easily in collaborative discussion while creating a wiki, it also contains other Web 2.0 facilities such as the ability to add and communicate with 'friends', better integration of other media within the wiki (such as video and audio) and other facilities such as instant messaging, document sharing and so on.

Conclusions: lessons learned

As I mentioned above, I have deliberately shied away from trying to define autonomy in any concrete way, rather I have considered what psychology students should be able to do and what kinds of activities might support them in this goal. I have one further reflection on autonomy and it is that the word seems to evoke a mental image of someone doing something on their own. It should not be overlooked, however, that part of being autonomous is to work successfully as part of a group, to be driven by others when necessary but also to reflect upon your particular role within the group, the direction in which the group is heading and the contributions of the other members. Part of the message of this article is that we need to explore ways in which collaboration and cooperation among learners can be facilitated so that the students can reap the benefits of group work and appreciate its importance both in terms of discipline-specific knowledge and the generic skills seen as so important by potential employers.

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Improving Maths self-confidence and Maths thinking skills

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Abstract

The current project aims to increase level 4 psychology students' self-confidence at maths and their ability to think about basic mathematical concepts. The aim was to achieve this through the use of study guides which explained basic mathematics concepts along with exercises to enable students to practice thinking about these concepts. These additional resources were designed to be delivered to students via the Blackboard virtual learning environment.

Two cohorts of students have recently completed a set of baseline measurements, including measures of enjoyment of mathematics, maths self-confidence, and statistics anxiety. Additionally students completed an assessment of their mathematical abilities in six key areas. The first two of the study guides and associated assessments were released to one cohort of students, with some positive feedback on their utility.

Introduction

It has become increasingly apparent that students undertaking the BSc Psychology often struggle with the statistics component of the course. Research Methods and Statistics teaching forms a core area of the British Psychological Society (BPS) accredited psychology awards. As a result, all students wishing to gain a BPS degree are required to undertake introductory courses in statistics. However, students often come to the course lacking confidence in their mathematical ability and hence feel considerable anxiety and stress as a result of undertaking the research methods modules.

There is a growing literature concerning statistics anxiety which has been defined by Onwegbuzie *et al.* (1997) as an anxiety when encountering statistics in any form at any level. It has been proposed by Cruise & Wilkins (1980) that statistics anxiety has six components, namely worth of statistics, interpretation anxiety, test and class anxiety, computational self-concept, fear of asking for help, and fear of statistics teachers. This model of statistics anxiety was recently supported by the modelling analyses reported by Hanna, Shevlin and Dempster (2005). Onwegbuzie and Wilson (2003) have provided a good review of the factors related to statistics anxiety. They highlight research by Zeidner (1991) which showed that key factors related to statistics anxiety were prior experience of mathematics teaching as well as maths self-confidence. Onwuegbuzie & Wilson (2003) have also suggested that prior experience of mathematics was important in predicting levels of statistics anxiety, and thus engagement with learning in statistics modules. On a related note, some recent research by Mulhern and Wylie (2005) has demonstrated that students starting

psychology undergraduate courses are often ill-equipped to deal with the statistical component of the course. In their study they examined the students' mathematical abilities in six key areas, including estimation, interpreting graphs, probabilities, proportions, calculations and algebra. They found that the students from a variety of UK higher education institutions particularly lacked skills relevant to understanding probability, proportions and numerical estimation. It is apparent that if the students see themselves as lacking in key mathematical skills, then this is likely to have a significant impact upon their statistics anxiety, and their confidence when confronted with the statistics component of their undergraduate courses.

One of the main recommendations from the work of researchers like Onwuegbuzie is that we need to pay close attention to how we design statistics courses to ensure that we do not exacerbate students' levels of statistics anxiety. One specific recommendation is to avoid asking students to calculate statistics by hand. Farbey & Roberts (1981) have shown that students who are required to calculate statistics by hand experience high levels of anxiety, and this is particularly the case for difficult statistical problems. Interestingly, Seabrook (2006) has demonstrated that students who undertake courses which do not require hand calculations attain higher levels of skills in statistical analyses than students who are required to do hand calculations. They also had higher attainment levels.

It should be noted that the research methods training provided to undergraduate BSc Psychology students at Sheffield Hallam University does not involve hand calculations as the aim is for students to gain a conceptual understanding of the statistical techniques covered. However, there are still very high levels of statistics anxiety among our students and this has an impact upon their willingness to engage with the materials and activities presented in the laboratory classes. It is with this in mind that the current project was designed to provide students with positive mathematics experiences, and to try to improve their self-confidence in dealing with mathematical concepts.

Aims and objectives

The aim of the project was to develop online resources to help improve maths self-confidence skills in dealing with mathematical concepts. In order to do this the plan was to develop:

- Online study guides
- Online self-test assessments
- Online feedback discussion board

The online resources were made available through the level 4 research methods and statistics module Blackboard site (see Figure 1 for example).

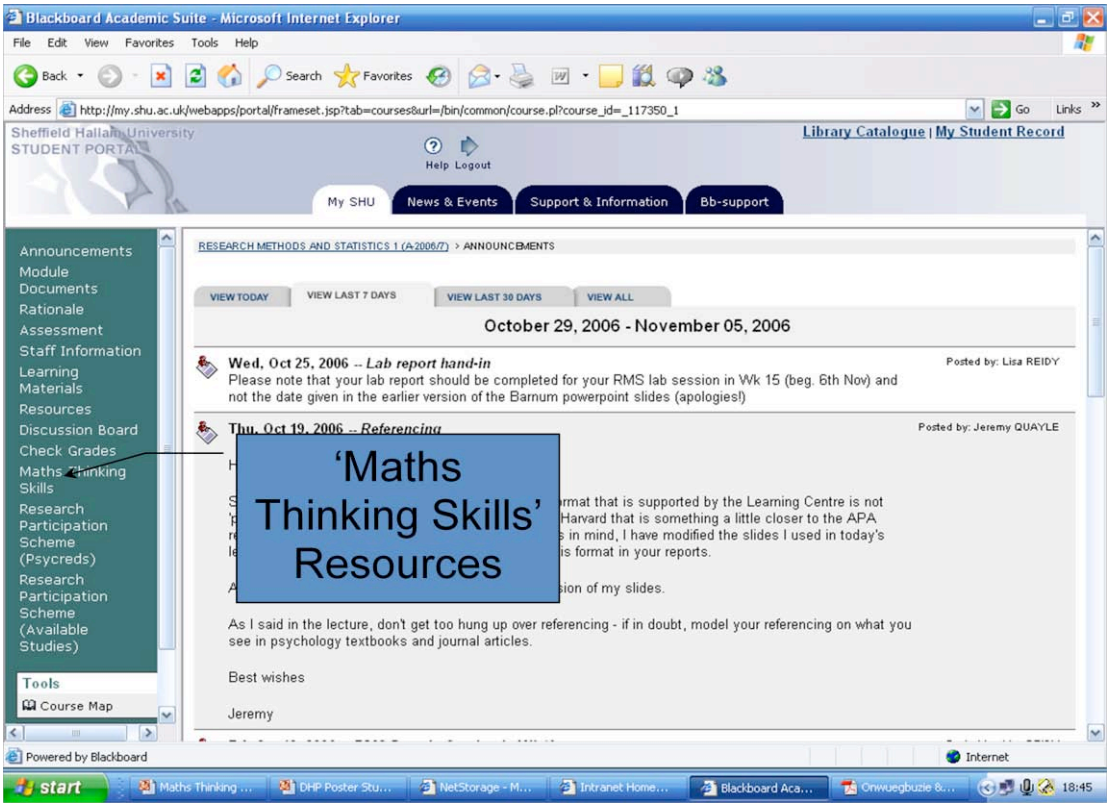

Figure 1. Screenshot illustrating the availability of the student resources via Blackboard.

Method

At the start of the academic year students were provided with an overview of the resources as well as an online guide to their use. The students were also asked to complete a maths skills test along with some psychometric measures of their mathematics anxiety, maths self-confidence and the general levels of anxiety (trait anxiety). These were to be baseline measures implemented in order to appropriately evaluate the usefulness of the online resources provided for the students.

The study guides were designed to provide students with a basic overview of key mathematical concepts. For example, the first study guide covers some very basic characteristics of numbers. The intention here is not to teach students anything new about number theory but to refresh their memory's for what they had previously learnt and to help them practice thinking about these basic mathematical concepts. As students progressed through the year more study guides were released to link in with the statistical concepts being covered as part of the core statistics module.

It was intended that there would be a number of self-assessments delivered via Blackboard where students can test their understanding of the concepts introduced in each guide. The self-assessment tasks were designed to enable students to undertake them as many times as necessary. The aim was to get the students to think actively about the mathematical concepts. The difficulty levels of the assessments are tailored to ensure that the students

experience success rather than failure. The intention with these self-assessment was to help students appreciate the mathematics skills that they have and to gradually build their confidence.

Built in to the project design were specific means of providing evaluation of the effectiveness of the study guides and accompanying only assessments. At the start of the semester students completed a number of self-report measures. Given the project aimed to improve self-confidence in dealing with mathematical concepts it was important to measure these abilities prior to students being given any statistics teaching and before release of the new study guides. Thus, in the first week of teaching (in the first year) the following variables were measured:

- Maths Skills Test (based upon work by Mulhern & Wylie, 2005). This consists of 18 questions measuring six key mathematical skills identified by Mulhern & Wylie. The questions are designed to measure Calculations, Proportions, Algebra, Probability, Interpreting Graphs, and Estimation.
- Mathematics & Technology Attitudes Scale (MTAS, Pierce *et al*., 2007). The MTAS is a 20 items questionnaire measuring a number of aspects of attitudes to mathematics. The subscale of interest for the current project is the one measuring mathematics self-confidence. This consists of four items rated on a 5-point Likert scale ranging from 'Strongly disagree to Strongly agree'. The minimum score on this scale is 4 and the maximum is 20. High scores on this questionnaire indicate high levels of mathematics self-confidence.
- Statistics Anxiety Ratings Scale (STARS, Cruise & Wilkins 1980). The STARS is a 51 items questionnaire measuring six components of statistics anxiety. There is a growing literature which suggests that statistics anxiety is a major barrier to learning in undergraduate research methods and statistics courses and thus it is intended to determine the degree to which the use of the study guides has a positive impact on levels of reported statistics anxiety.

Enjoyment of maths as measured by a 100mm visual analogue scale. The anchors for this scale were ‘I hate maths’ and ‘I love maths’. This item on the battery of questionnaires was inserted as a matter or interest to see if there are any relationships with other variables in the study.

It was proposed that students would be reassessed on these measures at the end of their first year to establish any differences between baseline and year end. Analyses would have also investigated the possibility that any reductions in anxiety, or increases in self-confidence in mathematics are related to engagement with the study guides.

A facility was also provided for students to feedback to the tutor regarding the study guides. A discussion board was set up in Blackboard to enable students to post anonymous feedback about the resources that they have used. This allowed for continuous evaluation of the utility of the resources from the student perspective. It was also designed to provide valuable suggestions as to the most effective means of improving the resources.

Assessment and Teaching Practice

It was intended that the impact of the additional materials on student attainment would be evaluated through analyses of those who utilised the resources compared to those who did not. In any such analyses there would need to be some means of controlling for prior levels of self-confidence in mathematics and also prior levels of skill in mathematics as indicated by scores on the maths skills test. This should allow for some evaluation of the impact upon learning of the study guides. In this analysis use could also be made of the data collected in the current year when the baseline measures were taken but the study guides were not released. We should be able to compare the impact on assessment this year compared to that next year and this would allow us greater confidence in conclusions we may draw concerning the impact of the study guides themselves.

Current Status of the Project

Unfortunately, the project has not moved along as quickly as would have been expected. Currently one cohort of students have been evaluated in terms of the baseline data and have had access to two of the study guides. It was intended that six study guides be developed and made available to students. The project is thus still only in the initial stages and there is not really enough progress for a thorough evaluation of the impact of the study guides. The analyses presented here thus should be treated with some caution given its very preliminary nature.

Preliminary Evaluation

Preliminary analysis of some baseline data has been undertaken but this has not progressed very far at this stage.

The analyses of the responses to the Maths Skill Test suggested that the cohort of students were weakest in the performance for the probability questions and the proportions questions. In addition, they struggled somewhat on the third of the algebra questions. These findings are remarkably consistent with those of published by Mulhern and Wylie (2005). The findings from this initial cohort of students are illustrated in Figure 2.

It is quite clear from these analyses that students come to their statistics training at undergraduate level with some considerable weaknesses in terms of the mathematical skills. This is particularly evident when we consider their ability to understand probabilities. This is a critical finding given the central role probability plays in statistical reasoning.

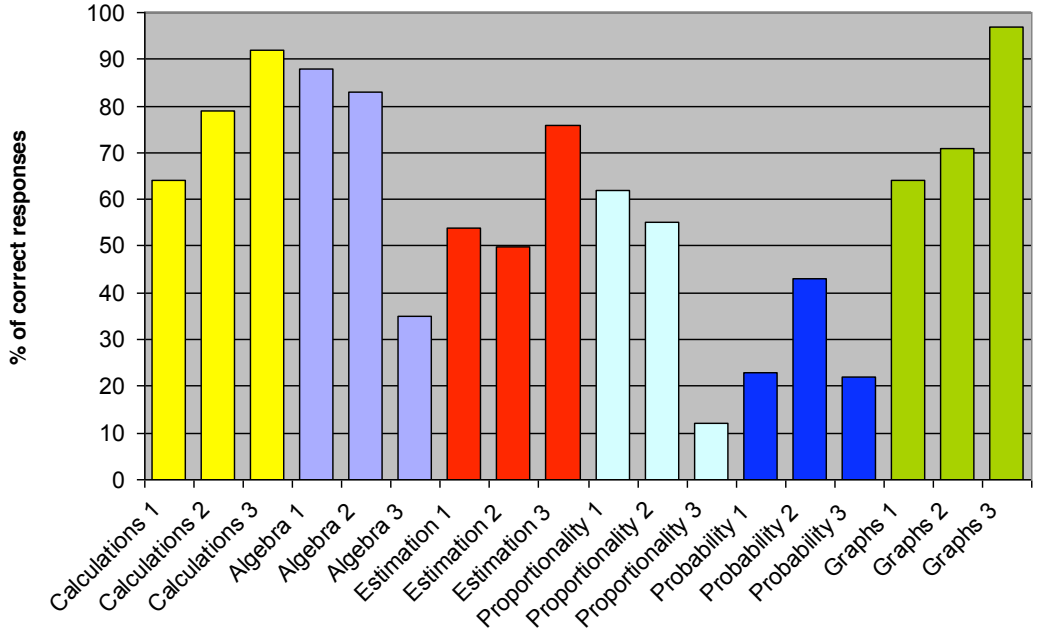

Figure 2. Percentage of correct responses for each item on the Maths Skills Test

It is also interesting to note that the students reported only moderate levels of self-confidence in mathematics ability. The mean for the self-confidence in mathematics sub-scale of the TMAS was 11.55 (sd = 3.29), which according to the guidelines from the authors of the questionnaire (Pierce et al., 2007) would represent moderate to low levels of self-confidence (see Figure 3 below). There would thus be quite a bit of scope for helping students at the bottom of the scale of self-confidence.

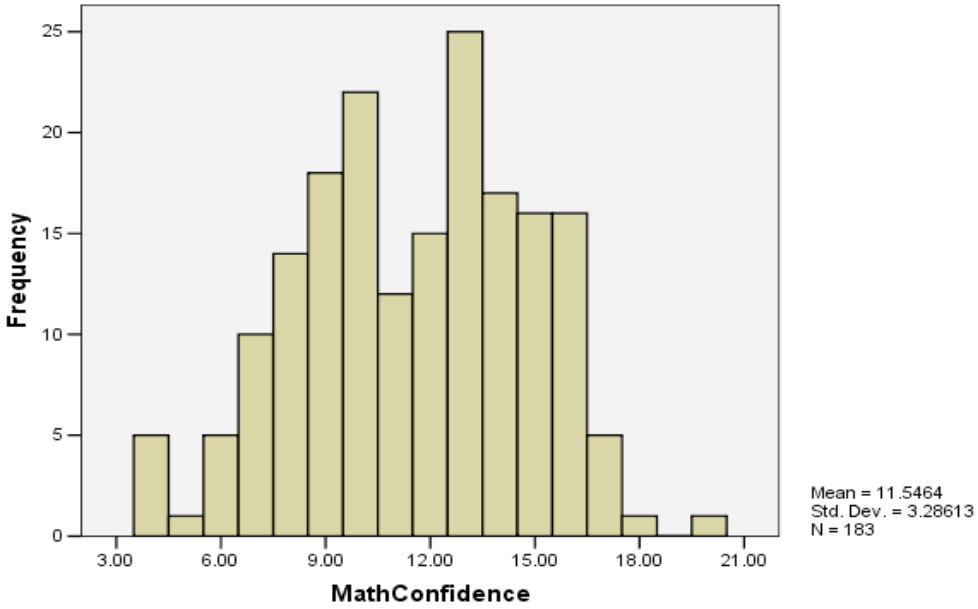

Figure 3. Distribution of scores for Maths Self-Confidence

The means and standard deviations for responses to the maths enjoyment scale and the six subscales of the STARS questionnaire are presented in Table 1. These show that…

Table 1. The means and standard deviations for the maths enjoyment scale and the subscales of the Statistics Anxiety Ratings Scale (STARS).

		STARS subscales					
Scale	Enjoyment of maths	Test and Class anxiety	Interpretation anxiety	Fear of asking for help	Worth of statistics	Computational self-concept	Fear of statistics teachers
Mean	37.40	25.58	30.25	8.30	37.64	18.80	10.60
SD	22.47	5.98	7.26	3.10	9.89	5.83	3.55

The mean for enjoyment of maths suggests that the students generally had only low to moderate levels of enjoyment of maths. The visual analogue scale was 10 cm long and the mean mark was 37.4 mm from the 'I hate maths' anchor, perhaps suggesting that the students disliked maths more than they enjoyed it.

In terms of the STARS subscales a comparison with previous research (Hanna et al., 2008) suggests that the current cohort scores are similar to other UK undergraduate psychology students on test and class anxiety, interpretation anxiety and the fear of asking for help. However, this cohort scored considerably lower than the large sample examined by Hanna et al. (2008) in terms of worth of statistics, computational self-concept and fear of statistics teachers.

Conclusions

It is rather disappointing that the project has not moved on from the initial stages of the development and implementation of the first study guides. As suggested above the intention was to generate at least six study guides to be released at specific intervals during the students first year of study. Currently only two of the study guides have been written and made available to students. It was also envisaged that a follow-up assessment of the students would occur towards the end of the teaching year to assess changes in self-confidence in mathematics, statistics anxiety and the six key areas of analytical skills in mathematics. Given the limited progress made on developing the study guides this follow-up assessment has not taken place.

Despite the limited progress on the project the initial verbal feedback from students has been positive and it is anticipated that other work commitments will now allow a full implementation of the study guides and associated resources in the next academic year. This will allow for a much fuller evaluation of the project which will then guide future developments. It was interesting that a considerable number of students (approaching 30%) accessed the first year study guides. It is evident that the students are demonstrating here a

notable level of learner autonomy. When introducing the project to the students they were informed of the purpose of the resources and that they were to use these as and when they felt they needed help. It was also made clear to students that there was no content directly relevant to the statistics modules in these study guides. The degree of uptake of the initial resources by students suggests that the students are actively thinking about their numerical skills and actively doing something to support their own learning. The fact that many students used the initial study guides suggests that they are happy to use appropriate resources to enhance their abilities to undertake the study of core material for the modules. This is a very promising finding from the perspective of promoting learner autonomy. It should be noted, however, there is no evidence to suggest that students accessing the study guides in Blackboard are engaging with it in any meaningful way.

One of the positive outcomes from being involved with the project is realisation that there is considerable interest in supporting students in their numerical and mathematical developments across the higher education sector. I have been fortunate to be in communication with researchers/lecturers in other institutions who are developing resources along similar lines to those being generated in this project (e.g. the Centre for Excellence in Mathematics and Statistics Support based at the Loughborough University and Coventry University). Perhaps the key difference here at Sheffield Hallam University is that the guides currently being developed are more basic than those that have been developed elsewhere. The emphasis of the current project is on reactivating mathematical/numerical concepts which students have previously mastered but may have forgotten or which through practice may have become non-conscious. Thus the aim has been to illustrate to students how much they already know and make the links between this knowledge and their methods/statistics course more explicit, thereby improving the students' self-confidence.

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Developing Learner Autonomy through the production of a Public History Resource

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Module Title: Northern Soul: Constructions of Regional Identity in the North of England, 1850-1980

Level of module: History Level 6 (Third Year Undergraduate)

Support team: Keith Radley (Learning and Teaching Institute), Richard Mather (Learning and Teaching Institute), John Tanner (Barnsley Museums)

Abstract:

In this project, level six history students on the optional module 'Northern Soul: Constructions of Regional Identity in the North of England, 1850-1980' were asked to create their own standalone public history resource. They were required to incorporate a multimedia element and to work with primary sources in some form. The project was supported by workshop sessions and involved members of Learning and Teaching Institute (LTI) staff as well as a public history professional (John Tanner of Barnsley Museums). The intention was to encourage student autonomy, to facilitate 'deep' learning through creativity, cater for different learning styles, and to enhance self-confidence as well as employability.

Background and rationale:

As a new lecturer I was keen to develop skills incorporating digital communication technologies, in keeping with SHU's Digital Fluency agenda. Using media resources, I wanted to encourage an autonomous student learning approach which would enhance subject knowledge as well as individual self-esteem and employability. Through discussions with Keith Radley (LTI) there were clear connections with his 'Inspirational Learning' methodology, which was already being developed in other subject areas and faculties. The pedagogy behind the project was also influenced by a similar project at UCLAN in which history students successfully created their own community history resource.

Teaching Practice

Organisation:

The module ran over 12 weeks in the second semester, with 29 students enrolled. There was a one hour lecture for all students, and they were then split into two seminar groups, each one and a half hours long. Essentially, the module was divided in half, with the first 6 weeks devoted to the 'taught' part and the second devoted to the development of student projects. There was a museum visit in week 7, which was intended to allow students to

engage with public histories of working life in the north, before attempting their own projects.

Content and teaching practice:

Lectures: The lectures in the first six weeks aimed to give students a broad overview of the key themes of the module, which would both inform the content of their first piece of assessment (an essay) but which would also give them a solid foundation from which to develop their own group projects. Lectures included an interactive element to encourage students to engage in a collaborative active learning process, rather than passive observation. For example, in the first week, they were asked to physically move to an area of the room designated as either 'north', 'south' or 'midlands', leading to a discussion of how they identified themselves as individuals. This proved an excellent way of getting students involved and invested in the module content, as they related the course topic to their existing perceptions of self and regional identity.

Seminars: Topics introduced in lectures were explored further in the seminar sessions from weeks 1-6. The students were asked to provide primary sources (such as images of northern landscapes) as discussion material, albeit supplemented by material from the tutor to ensure that all key aspects of the topic were covered. They then discussed these in small groups before we reconvened as a full seminar group to discuss. They used worksheets as guidance, which typically asked each group to focus on a different question. I asked students to rearrange the tables and chairs so that the group was in a square/ rectangle (or a circle where space permitted), rather than in rows. This was effective in stimulating group discussion, and I moved around so as to try not to be the focal point of the discussion. I also used questions to encourage students to elaborate on their answers. The seminars scored very highly in student evaluations of the module, with many students citing these as the most effective part of the course in developing their understanding of the module content.

Workshops: The seminars from week 8-12 were a chance for students to get together with their team members. I did, however, include some more structured activities. Following a lecture on 'The Language of Television' which focused on how to present visual material to audiences, students were asked to practice constructing their own 'storyboard' for a short film. They then spent some time brainstorming project ideas, with tutors on hand to facilitate discussion of how these could best be realised in a multi-media format. The following week, we visited the Graves Gallery and Local Studies Library, where students researched the availability of sources to support their projects. In week 10, there was a discussion of regeneration and public history, to follow a lecture on this topic by John Tanner (from Barnsley Museums Service). The students were also given an opportunity to share work in progress with the seminar group, and to gain useful feedback from their peers. Week 11 was held in the Adsetts Centre, where groups were able to borrow laptops and work on their projects with support from the module team. The intention was to break out of the classroom setting and students used the opportunity for technical troubleshooting. The final week was a last-minute drop-in, which was relatively poorly attended (it was the day before dissertation hand-in!).

Public History Project and Peer Collaboration: The first lecture introduced the assessment for the module, and Keith Radley explained to students how they might want to use film for their public history project. I then outlined some of the key concepts of the module. In the initial seminars, I asked the students to arrange themselves into project teams and to choose a name for their team. This was intended to give the groups a sense of collective identity and ownership of the project, as well as encouraging them to start thinking about possible projects and approaches from an early stage. Groups were encouraged to collaborate in bringing materials to seminars, although this had limited success.

The group projects really took shape from week 7, supported by lecture sessions on 'the language of television', managing large files, regeneration and drop-in support. As described above, the seminar sessions were a time for students to work on their project and give updates to the rest of the group, as well as to receive any technical support necessary.

Different Learning Environments: The end of the tutor-facilitated sessions culminated with a trip to the National Coal Mining Museum of England in Wakefield. This trip was funded by the CETL grant and thus was free to all students. For many students, this was a great experience, particularly going underground with a former miner as a guide. One commented that he would now have a completely different understanding of the film, Kes, on which he had written his first essay. We were able to meet with one of the curators, who gave a very interesting talk on the shift from a 'Yorkshire' to a national mining museum. One student used this opportunity to arrange further volunteer experience at the museum. I did not take a very hands-on approach once we reached the museum, although I did provide handouts with questions to fill in. On reflection, I needed to find some time – and space - during the day to get everyone together. As the mining trip had to be done in two groups, it was difficult to get everyone together again before the curator's talk and although I had hoped to do this on the coach, it was difficult to do so effectively.

I would certainly plan to include a museum trip in the future but I would want to use this more effectively to get students to engage with the 'public history' element of the assessment and the module overall. For anyone planning to take students off-site, there are a number of considerations – mainly relating to health and safety. A lot of time was spent collecting in permissions forms etc. and getting forms signed off by managers. These forms are not easy to find – it's best to start on the faculty intranet.

Virtual Learning Environments: Group work was supported by dedicated group spaces on Blackboard. However, my impression was that these were not very widely used. I did see one entry on a group discussion board, but with no reply. The limitations of the university email system and VLE may well have something to do with this, and students preferred to use their own methods of communication (such as mobile phones or other email accounts). However, to make spaces such as discussion boards work, I would need to incorporate them more clearly into the module – perhaps setting an initial question for group discussion, with some marks attached. I am not convinced of the necessity to do so, however, if students are successfully managing their communications by other means.

Assessment

The assessment for the module was 100% coursework as follows:

- Essay (40%) due in week 5
- Group Project (30%) due in week 13
- Individual Project Report (30%) due in week 14.

The intention was to give 60% overall to the public history project, but limiting the percentage given to the group mark (which is often the cause of dispute and tension among students). However, I will certainly rethink the weighting for next year. The essay comes early in the module and was therefore a challenge for many students (yet has the highest individual weighting). As an aside, the lack of books for the module proved particular problematic this year. The group project, however, was very demanding of students' time and they reported in evaluation that they felt this was not recognised in the 30% mark. The final piece of assessment was relatively short (at 1500 words) and again seemed to have a disproportionately high percentage of the module mark. For the individual report, it would be justifiable to ask students to write rather more – by including a self assessment of their learning on the module and a learning journal. However, I plan to increase the project mark to 40% and to decrease the first essay mark to 30%.

I found it very helpful (though daunting and time consuming) to produce relatively detailed guides on requirements and marking criteria for each piece of assessment. This was particularly important for the public history project. Although these guides were put onto Blackboard and handed out for discussion, some students required further clarification nearer the time. For those students who had normally done well at writing standard essays, they felt less comfortable with the requirements of the project and wanted to include more academic literature. As some students were also familiar with a model of assessment which asks for a self-reflection and learning diary following a project, they were also confused by the need to include secondary literature in the project report.

I was pleased that no students fell into the trap of colluding with team members for their individual project reports. They all managed to write intelligently about their projects as individuals. However, I did stress this as a 'health warning' via email and on Blackboard prior to the deadline.

Evaluation

The module was evaluated on a number of levels. I completed a brief evaluation half way through the module using questionnaires. I then asked students to complete an end-of-module questionnaire. Some students also volunteered to take part in focus groups which explored the group project in particular. As Keith Radley was interested in their experiences of using digital media as a learning aid, he also asked students to take part in brief evaluation sessions.

As students got immersed in, and came towards the end of their projects, some of them really began to develop as autonomous learners. Some were tenacious in finding primary sources and people to interview, and took the initiative to contact outside bodies to help them. I was particularly impressed with their approach to the more challenging technical problems of producing a public history document. One group had taken advantage of the Apple editing suites and were engaged in instant messaging with the support staff. They had clearly learnt a great deal about putting together a film, and about working with large media files.

The public history projects themselves were, on the whole, a great success. Although the projects themselves did not always demonstrate a particular sophisticated understanding of the issues, from conversations with students afterwards, and from the individual reports they produced, the process of producing the projects had taught them a great deal about researching and producing a professional project. The deeper understanding sometimes came after the project was complete, as they were asked to link their research to wider reading. One group confessed that they had realised the weakness of their argument in doing so! Where I had imagined the project and the secondary research to go hand-in-hand, this had not been the student approach overall. The project thus becomes part of a process towards becoming an autonomous learner, rather than perhaps an end in itself. Nevertheless, the project had a clear impact on the self-confidence of a number of students to tackle something completely new and in a medium other than the standard essay. The tangible learning outcomes of this clearly connect to employability skills that the students can demonstrate to future employers. This was something that the students commented on in the interviews, as their graduation and the need to find employment was only a month or two away. By their third year, they had already amassed considerable experience in writing essays, yet they realised that this skill would perhaps not be the most desirable one for the prospective employers.

Conclusions

The public history project had a definite impact (evidenced by student evaluations and grades awarded) on the student learning experience in terms of:

- Allowing students creative control over a project and ownership of the final product
- Enhancing digital fluency
- Developing self-confidence (particularly in meeting new challenges, learning new skills and, for some, working with people outside the university)
- Encouraging genuine peer collaboration (particularly for the film projects, which were difficult to divide into discrete tasks)
- Limiting the reliance on the main tutor and encouraging independence (as the tutor was neither an expert on their chosen topics nor on the technology being used)

The project itself was not the 'end' of the learning. In some ways the demands of the medium chosen limited more detailed engagement with the module content. By asking students to write an accompanying report, they were then able to place their research into a

wider context and to see its limitations. They were faced with original material to analyse, which gave them greater ownership and investment in their reports. The process of compiling the projects, even where they encountered problems, was a more 'real-world' experience of actually doing history.

The majority of students put in a great deal of hard work into their projects, with impressive results. It was rewarding to see those who are less successful in 'traditional' essays, being able to demonstrate different skills.

These kinds of projects are very time consuming for the students and consideration needs to be given to clashes with other modules.

Different learning environments can shift the relationship between staff and students towards something more collaborative e.g. the mining museum trip and the workshop session in the Adsetts Centre.

Recommendations

I would definitely recommend the use of multi-media with humanities students. It gives many of them much-needed confidence with the type of technologies they may come across in the workplace but it is also a way of engaging them in the historical material being taught. The public history element challenged them to communicate their ideas in a different, but no less rigorous, way than a standard essay. This added real diversity of assessment which could then cater to a wider range of learning styles.

In future years it will be invaluable to have access to existing student work from the module. This will give students a much clearer idea of what is expected of them. I intend to keep the involvement of support staff from the Learning Teaching Institute. Their technical knowledge was crucial and they also gave students of working with staff from outside the history team. The museum trip was also an element of the module I hope to keep but to develop more clearly as a teaching aid to issues in public history, by spending more time evaluating the impact of the visit with the students during and immediately after the event.

Although there were a few tensions within groups – mainly with people not attending – these were not as widespread as I have experienced in other modules. I think as a final semester module, students would rather simply get on with the project themselves. However, I would like to make the group work a more central part of the module from the early weeks, perhaps through small group exercises to get them working on their projects at an earlier stage – this material could then be assessed as part of a project file.

Appendix 1: Feedback from students

This evaluation refers to the second part of the module where you were learning through producing a public history resource (e.g. film, wiki, booklet). For the purposes of this questionnaire, this will be referred to as 'the activity'. (*The tick in the right-hand side grid shows the median response from the students*.)

For each statement, tick one box to indicate your response as follows:

1 = strongly agree

2 = agree

3 = neither agree or disagree

4 = disagree

5 = strongly disagree

Statement		1	2	3	4	5
During the activity, I was given opportunities to pursue my own research interests			▌			
The lecturer focused more on encouraging me to find information than on giving me the facts			▌			
The activity was more about analysing and evaluating information than it was about memorising it		▌				
I now feel I am better able to find information from different sources				▌		
I am more confident in my ability to evaluate the information I have found			▌			
I needed a lot of support from staff in this activity					▌	
I found my fellow team members to be helpful in my learning		▌				
I didn't need to apply anything I learned in the first part of the module					▌	
I feel I am better able to work in a team as a result of this activity			▌			
I felt confident in communicating with external organisations/members of the public					▌	
I felt I was able to take more responsibility for my own learning				▌		
I enjoyed the opportunity to be creative in the project work			▌			
The group worked well to overcome any difficulties or problems we encountered			▌			

I found the activity challenging			I			
I learnt more from creating this resource than from writing an essay			I			
I feel more confident in my ability to solve problems			I			
I felt a sense of control over the development of the project				I		
I developed my skills in using digital media					I	
The staff gave me the technical support I needed to produce a public history resource			I			
I am now more confident in using information technology			I			

I would like to find out in a little more detail what you thought of the module as a whole and also how you feel your own learning has developed over the last 12 weeks. This should help you to think about your own skills development – useful when putting together job applications! Please add a comment to follow the introductory statements. (*Feedback from the students below)*

The thing I found most interesting was…..

The visit to the mining museum, for the first time I visited the museum thinking about how history is displayed to the public. Thinking this way allowed me to understand why certain items were placed in certain locations, and why the trip down the mine was not just about being down a mine, but by interacting with a real miner in a real mine displayed the history more clearly that it would have, had the information been written down and a few items on show in the museum.

The thing that most changed the way I learned was……

Two things, firstly the lectures. The lectures offered new ideas to my existing preconceptions regarding the north of England and northernness. The lecture on how important sport was to the region or how dialect was such an important feature of regional identity that has faded with time and migration. Secondly, the visit to the museum, the visit showed me that museum do not just display the information, but they display it in a certain way, they attempt to tell a story. The visit changed my thinking about viewing the museum, instead of just seeing the information displayed in the museum I now looked at how that information is displayed to the public, and what message is it trying to give, does it focus on certain areas but not others, is it interactive, and is it useful to the public.

What made learning most effective for me was….

The seminars. The seminars allowed me to work in a group and that allowed me to get other peoples views on the topics that we were discussing. Other people's views did give me more than one perspective, and enabled me to develop my understanding of certain subjects.

The thing I found most difficult was….

The group project, this was the first time that I had to produce a wiki or a video presentation, and trying to decide which my group was going to do was difficult. Then once we had decided on using a wiki and having decided on our topic, finding and using the materials necessary proved difficult.

To help me to develop my transferable skills, what I need to work on is….

Being more open minded to different perspectives, and not just think that what I think is correct. Other peoples points of view can be equally important and equally correct, and in some cases more so. I also need to use different means of presenting my work, the project was the first time that I had used a wiki to produce a project and I found it to be very useful and very good to use, and I believe that the video presentation would have been equally interesting to use.

Finally, please rate the following parts of the module according to how useful you found them (with 1 as very useful, 3 as undecided and 5 as not at all useful). If you did not attend, please tick n/a. (*Ticks indicate the median score from the students*.)

	1	2	3	4	5	n/a
Lectures		I				
Seminars (weeks 1-6)		I				
Mining Museum trip	I					
Local Studies Library trip			I			
Lecture on regeneration				I		
Project support sessions		I				

Appendix 2: Project planning documents; assessment guidelines and criteria

Northern Soul: Group project assessment task

Task:

To work as a team to design and produce a piece of public history relating to the theme of 'northernness'.

Your public history resource should include the following elements:

- Primary source material
- Explanation/ interpretation of this source material as suited to a general audience
- An element of multi-media/ digital technology (e.g. film, website, PDF booklet)

Additional information:

- The resource should be suitable for consumption by the general public (or a section of the general public e.g. children)
- It should be presented in a suitably professional manner (i.e. spell-checked, consistent layout, appropriate use of images and text to engage the audience, no elements left unfinished)
- You need to work effectively as a team and keep appropriate records of team activities (e.g. meetings).

Northern Soul Assessment Task 2

Group Project

Please complete the following form for next week, to assist you in planning your public history resource around the general topic of 'Sheffield/ South Yorkshire: a typically northern place?'

- Group members/ team name:
- Subject chosen:
- How the subject relates to the module themes:
- Possible primary sources available (and where to find them):
- How do you hope to use multi-media/ digital resources?
- Training you may need?

Northern Soul Assessment Task 2 - Standalone Public History Resource (30%)

Just to provide some further clarification:

Think of your public history resource as something which might be used within a museum context/ in an exhibition space e.g. a short film or presentation which could run on an AV screen; an interactive exhibit which could work on PCs in a museum; a booklet or online wiki which people could browse through. It needs to be a standalone project - i.e. you will not necessarily be around to explain it.

I am testing your ability to communicate ideas in history to a wider audience - so both the content and the form of your resource will be assessed. However, the content will not be the same as for an academic essay - this type of content belongs in the accompanying report and reflection.

You will not be required to formally present this assessment in an oral presentation, but I am hoping to hold a showcase event on the day of submission where everyone can watch the completed films, look at any booklets etc. The assessment will be submitted electronically via Blackboard (unless you make alternative arrangements with me).

I will be assessing you on the following 'pass' criteria (i.e. these are the basic requirements):

Content:

- The project is based on a degree of independent research into local/regional history.
- Some relevant primary historical sources are identified and used appropriately.
- The project demonstrates some engagement with one or more of the module themes.
- Some explanation/ interpretation has been provided to encourage a public history audience to engage with issues of local/regional identity.

Presentation:

- The format and presentation of the project is generally appropriate for communicating with a public history audience (appropriate use of images, text, sound etc).
- Technology used suits the context and purposes of public history.
- Methods and technology to produce the finished project have generally been used accurately and correctly.
- Main conventions of written/spoken English and/or visual presentation are followed correctly. Communications are mainly clear and understandable.
- The project demonstrates evidence of some planning and has been completed on time to the basic required standard.
- On the whole the group has worked well together as a team to achieve the aims of the project.

N.B. As with all history assessments, you must make sure you follow the correct referencing conventions where you use other source materials (including from the internet etc). In this particular project, you will need to have considered and adhered to any restrictions on copyright.

To achieve the higher marks, projects will have been carefully planned and put together, with evidence of some creativity and originality. They will communicate well with their intended audience to encourage real engagement with issues about local/regional identity and/or ideas and stereotypes of northernness.

Professional Learning Week Simulation

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If you want creative workers, give them enough time to play (John Cleese)

Abstract

Professional Learning Week (PLW) involved a five day simulation exercise with students on social science courses who participated in a consultancy exercise. It was introduced in March 2007. The exercise used relational autonomy approaches based on the subjects studied by the students. Relational autonomy refers to a move beyond individualistic approaches to autonomy towards a recognition of the value of using dependent relations positively. It supports a social form of autonomy and is particularly associated with feminist scholarship. PLW is readily exportable with appropriate modifications for other student groups across most subject disciplines. The simulation can be adapted to three day and single day versions so suggestions are given for such adaptations. Key learning experiences for students included: enjoyment of working on academic discipline issues in new and different ways, gains in personal development, new group relations. Students learned that sometimes conflicting pressures within a group can be used positively. They also learned to respond to contrasting demands quickly using feedback in positive ways.

Introduction

This introduction outlines the literature review carried out for the Professional Learning Week (PLW) simulation exercise held in March 2007. The review explored both 'relational autonomy' and the theory and practice of simulations. Relational autonomy is distinguishable from mainstream theories of autonomy in its avoidance of individualistic approaches. It locates autonomy through the social embedding of persons in relationships which are structured inter alia through class, gender and race. Relational autonomy does not deny the importance of the individual but seeks to avoid casting outcomes in terms of individual agency (Meyers, 1989). Theorising on relational autonomy has emerged particularly in feminist philosophy (Mackenzie and Stoljar, 2000: Friedman, 2003). This work replaces the individualistic conception of autonomy characteristic of some liberal-individual models with an understanding of how intersubjectivities and social identities might be used to foster shared understandings (Mackenzie and Stoljar, 2000: 10). Relational autonomy is by no means the only approach to autonomy that questions individualistic approaches. Work in political philosophy such as that of Seyla Benhabib and Cornelius Castoriadis critiques liberal individualism. However, as yet, scant attention has been paid to how relational autonomy might ground pedagogy in higher education classroom settings. The PLW simulation is a response to this absence.

Edelheim and Ueda (2007) refer to a standard definition of simulation from the Society for Advancement of Games and Simulations in Education and Training (SAGSET): 'a working representation of reality; it may be an abstracted, simplified or accelerated model of a process' (cited in Ruohomaki, 1995: 13). Simulations provide a controlled environment which stands in relation to a realistic experience in the world. They may involve learners in working together on a problem where they have to solve problems, derive action plans, and reflect on their own learning. Simulations may be highly complex, for example, modelling of responses to major disasters. They can of course be relatively simple with structured role activity, data analysis and report. Undoubtedly, one of the most significant developments over the last seven to eight years has been the use of online environments for simulation activity including 'Second Life'. These lie outside the scope of this project which used a face-to-face classroom based model.

There is a substantial literature on simulations including projects from the social sciences and higher education. In brief, developers and users have commented on how simulations can bring complex material to life for students, develop content knowledge, and promote negotiation skills and skills of critical thinking (Hess, 1991; Jones, 1995; Ellington, Gordon and Fowlie, 1998; Wolfe and Crookall, 1998; Ruben, 1999; Brown and King, 2000; Hertel and Millis, 2002; Asal, 2005).

The literature also draws attention to potential problems with simulation activity which developers and tutors need to consider: over-simplified scenarios, reduced validity, difficulty of maintaining student participation if the activity is voluntary and non-assessed, complexity of timetable arrangements, and some difficulties in persuading both colleagues and students to value the activity.

The view taken for PLW Learning Week was that if the simulation is well designed, caters for subject knowledge, involves opportunities for learners to follow different and demanding activities, is linked as far as possible to institutional and faculty strategies, then the strengths and advantages of simulations should come through. A well constructed simulation should also address some of the concerns about simplification and lack of application to other learning activity.

PLW organisers recognised the potential risks with the exercise and took steps to pre-empt problems, as well as responding to those that arose.

Setting the simulation exercise brief

The exercise required learners to:

- work with prepared materials linked to their subject areas as part of a problem-solving exercise;
- take on roles or activities drawn from existing real-life cases without requiring acting or drama;

- conduct ongoing review and evaluation of personal progress and to report on such appropriately;
- use prior subject-based knowledge as well as new subject-based knowledge gained through the simulation exercise;
- give and receive different sorts of feedback.

Such requirements are common to many extended simulations. Further requirements were made to set the exercise in terms of relational autonomy. Following the literature referred to above these were based on developing different forms of dependencies and interdependencies in groups with the need for explicit reflection. Learners had to:

- identify feedback challenges, act on them with others and reflect publicly on the value of feedback;
- identify how they as individuals worked within changing group relations over the week;
- adopt a critical perspective to provided material and link their judgements to increasingly complex situations.

Simulations: Attendance and Assessment

The literature shows that if there is a formal attendance requirement coupled to assessment then attendance can be up to 80%. Inevitably this figure declines with longer simulations. It also declines markedly if participation is voluntary. The average attendance figure cited by the US Political Studies Association for voluntary, non-assessed simulation exercises is 10-15% of the available cohort depending on length of simulation activity.

PLW had to be offered on a voluntary, non-assessed basis as it was not a validated credit bearing entity

Background

Professional Learning week (PLW) was offered to second year (Level 5) students from the following courses: BA Social Policy and BA Sociology, BA Criminology, students on joint degrees involving Criminology and Psychology with either Social Policy or Sociology. The simulation was offered for a whole week (25 contact hours plus additional student group work in the evenings) and was offered as a package, i.e. students could not choose to attend one or two days only. Participation was entirely voluntary.

At the end of the five days each student was awarded a certificate signed by the Executive Dean of Faculty. This certificate outlined the skills acquired, the types of activities involved. Students were offered a guaranteed reference from the lead tutor for any job they might apply for on completing their degree.

The simulation was run by a lead tutor supported by two colleagues from Applied Social Sciences with experience of running consultancy projects in both the public and the private sector.

The focus of the week was on consultancy in the public sector. Two scenarios were used

responding to evaluation data on performance in a Police Force over a one year period and developing an appropriate strategy;

responding to evaluation data on performance over a one year period against NHS targets in a Health Trust.

Students worked in groups throughout the week except for a small number of whole group sessions. Groups A, B and C worked separately developing their senior management team brief for a police force based on the provided data, while groups D, E and F represented imaginary consultancy firms responding to invitations to bid for a consultancy to help these police force management teams with their plans. A further two groups (G and H) worked independently in their representation of a Health Trust senior management team while a further three groups (I.J.K) represented imaginary consultancy firms seeking to help the health trust teams with their responses to league tables and a recent critical evaluation. Students first opted to be either members of the senior management teams dealing with evaluation and target setting, or to be members of imaginary consultancy groups seeking a tender in which they had to demonstrate their approach to consultancy and their methods for working with management teams from the two public sector groups.

Students had an initial orientation day where they worked on a specific scenario that brought in what consultancy was and how it might be used in public sector provision. They also had an introduction to evaluation reports and services for the police and health trusts with specific reference to the North Yorkshire Police Force and the Barking, Havering and Redbridge Health Trust who gave permission for this work. On the second day students had skills training working with an experienced external consultant which they then applied to developing consultancy briefs for either the police force or the health trust.

By the third morning each senior management team had decided on its particular needs. Similarly, each consultancy group had analysed the same data sets as the management teams and identified what they felt to be strengths and weaknesses within the performances of the police and the health trust. Management teams decided on their own role composition but in fact all teams included a director, a head of human resources, a liaison or communication manager, a finance director. The consultancy groups had decided on their names, considered their strengths and also their approaches, e.g. working on specific problems in a targeted way, or developing change strategies for an organisation.

Throughout the final three days students worked on developing, presenting and justifying consultancy briefs or in refining the requirements of the management teams where those

requirements changed as a result of the exercise. They of course also questioned the consultancy teams on their bids.

Students representing the consultancy firms had to present their outline applications and analyses to the relevant senior management teams. The management groups gave them feedback and the tutors then gave both consultants and managers feedback to help them with their overall performance. The management groups refined their understanding of their data and their requirements while the consultants refined their applications. The consultants made a second submission to each relevant management team. Thus the consultants for the police had three senior managements to whom to present and each such team had identified slightly different priorities for consultancy. The consultants bidding to the health trusts had two managements to present in front of, who again had slightly different requirements. On the fifth day the consultancies made a final presentation and bid to each of their relevant management teams and then found out whether or not they had been successful in obtaining a contract. The management teams made the decision on which consultancy team(s) they wished to award contracts to and in their feedback to the successful and the unsuccessful they had to elaborate on the criteria behind their decisions. Each successful consultancy team then had to meet with their police force or health trust and start to elaborate their brief by demonstrating the consultancy approach they had adopted.

49 students attended the first day and from day 2 onwards 45 students participated in every session, an attendance rate of approx 24% of the available cohort. While far from satisfactory, this figure is noticeably higher than the average figure for this type of exercise cited above. It was sufficiently high to enable the tutor team to create five management groups with four students in each group and then five groups of consultants with five members per group.

Rationale

This approach to simulation (emphasis on personal development through critical reflection directly related to subject knowledge) was adopted for the following reasons:

There are few reported simulations that specifically engage with principles of autonomy. The literature review showed that simulations frequently support the development of both team work and independent learning. While valuable, such outcomes do not meet the requirements of a relational autonomy approach: the need to think through dependencies in groups, the adoption of ethical stances as a starting point for learning.

Students could build upon the activity in subsequent studies, e.g. final year dissertation. The PLW exercise was referred to in the BA Applied Social Science revalidation for 2005/06 as an example of one way in which CPLA was integrated into the work of the subject groups.

PLW also linked to one of the findings of the 'Transitions' Special Interest Group raised in that SIG's student-led conference (Summer 2007): students find applications of material from one context to another difficult unless there is a framework which gives practical experience of applications.

The approach adopted for the simulation integrated principles and practices of relational autonomy into subject-based activity.

Professional Learning Week: The Approach

Preparing for the week

The following tasks were conducted prior to the exercise. The planning stage began in April 2006 (a year before the exercise).

- signalling its presence in the CPLA annual operating plan for 2006/07; liaison with the following: the ASS programme leader, faculty administrative support and the timetabling department with room bookings completed by May 2006.
- establishing a steering group of relevant academic, administrative and facilities staff. One lesson from PLW is of the importance of working with this diverse staff body long before the exercise takes place.
- making applications to use web site material and other sources from a police force and a health trust (September 2006). The support and interest of the North Yorkshire Police and the Barking, Havering and Redbridge Health Trust is acknowledged.
- determining an appropriate week for the exercise with the steering committee. March 26th-30th 2007 was chosen as there were no seminar groups that week and it occurred towards the end of the student courses.
- Flagging PLW in 2006 to the students who would undertake it in 2007 so they first heard of it just before they completed their first year undergraduate studies.
- Convening a focus group with a sample of second year students at the beginning of the academic year (2006/07) to identify some student expectations that could be built into the exercise.
- Informing all tutors through route and subject leaders, using blackboard organisation sites to inform students and also using a YouTube site to announce the exercise. The latter was more effective than traditional email or Blackboard organisation sites in eliciting student interest and response.
- Considering the position of associate lecturers and their contracts. Two associate lecturers with experience of different forms of consultancy joined the developer as the tutor team. Choosing a week when no seminar groups were running meant associate lecturers were unlikely to miss teaching their seminar groups.
- Preparing a single day exercise for the first day so students worked in groups on a social science topic with reasonably strong quantitative elements (the majority of students expressed dislike for quantitative materials as reported in the focus group). The purpose of this exercise was to show that achievement of a level of quantitative

skills is important in conducting evaluation activity and need not be particularly difficult to acquire.

- Inviting an external consultant, to run a one day workshop on developing skills relevant to consultancy activity within the overall programme.
- Preparing the main activity of either representing a police force or health trust or a consultancy firm. The data was obtained from the web sites of the North Yorkshire Police and the Barking, Havering and Redbridge Health Trust. This data was copied to c-d and distributed to all participants who were encouraged to bring in laptops to download particular sections. University laptops were also provided for student groups.

Activities in the PLW Week (26th-30th March 2007)

After an initial briefing on day one, the students were placed in prepared groups and worked for the day on a single project activity requiring data analysis. Projects included: preparing how to meet a breakdown of electricity services in the city in 2007, responding to threats of rural insurrection at a city level based on an analysis of riots in England in the 18th century. Both tasks were supported by prepared materials and gave students opportunities to identify how specific groups might respond, how information might be communicated in two different settings. For the last part of the day tutors went through the prepared CDs with the data from the public service bodies. Students were given an overview of each topic as well as a brief exercise on interpreting one of two tables: traffic offences, waiting lists. Overnight they had to think whether they wanted to be part of a management team or to act as part of a consultancy firm.

On day 2 students participated in a session with the external consultant, where they had practical group work based on listening, communicating, responding to difficult situations, giving feedback. Towards the end of the day students were divided according to their preferences into management groups or consultancy firms. The managers were then divided by the tutors into either senior police management teams or senior health management teams according to their preferences. There were three police management teams and two health trust management teams. Students who chose to act as consultants were divided by tutors into five groups with each group given the task of preparing a consultancy brief for either the police or the health trust. The consultancy groups were told they would be making a bid to secure a tender from either all the police management groups or all the health trust management groups on the final day. Equally, the management groups learned they would be receiving tender bids from all the consultancy groups who had chosen their service and that at the end of the week they would be awarding the contract to one or more groups and giving feedback to the unsuccessful. All students learned they would build up to the final presentation through practice runs.

The work with the external consultant gave students an awareness of what was involved in different consultancy approaches and also some insights into how management teams might respond to external demands.

So at the end of the second day the newly formed consultancy groups went away to think about logos, consultancy approaches, and, hopefully, to start analysing the issues that either the police force or the health trust might face. The senior managers had to think overnight about what exactly they wanted from a team of consultants and what sort of approaches might work in their settings. They also had to decide how they would cover finance, human resources, and leadership issues in addressing the evaluation tasks. It soon became obvious to them from the data sets that having specialised roles would be helpful.

On days 3 and 4 and 5 students had to develop, defend and re-develop emerging scenarios according to whether they were management teams or consultants. The consultants had to make three formal presentations to all relevant management teams over these three days and receive feedback from each management team each time. Each management team differed in the emphasis it placed on findings from the data sets that informed the evaluation material and had to communicate its specific needs to the consultancy teams.

On day three each senior management team decided to choose a director, a human resource manager, a finance director, a communications director. The consultancy groups also worked on their own to complete their initial analysis of the relevant management team needs. In fact the consultancy teams had by now given themselves names and logos with titles such as 'Visions', or combinations of their own names. By late morning the groups were ready so each consultancy firm made a brief pitch to the relevant senior management teams, going round these teams one after the other. The latter were able to introduce themselves and to outline their needs. Neither party was expected to role play (role playing was signalled as a 'no no' in the focus groups held ahead of the simulation exercise). But at this point (midway through Day 3) each consultancy group established itself with the management teams and indicated both their strengths as consultants and what they felt the key issues were for each management team. Of course each management team had their own sense of key issues so there was discussion on this.

At the end of day 3 each group realised they had considerably more work ahead of them. The consultancy teams had to refine their messages so they addressed the stated needs of each management team in front of them. The management teams in their turn had to know more about their particular public service and justify what they felt was required of a consultancy team. We had a situation now where groups were having to take account of diverse set of needs and perceptions. Group recording through note taking was important.

In addition to this all the groups were given a further completely separate task to prepare over night - they had to develop a practical task for a group of people with little experience of working together. In fact it was the sort of task many employers will give potential recruits as part of a selection process.

Day 4 opened with each group carrying out its problem-solving task with at least two other groups in rotation completing the requirement. Tasks that the students produced included making something out of a set of objects they provided, deciding how to cross a river with

minimal equipment and with additional hazards being suddenly introduced by the 'enjoyably cruel' task organisers.

This additional task helped each management and consultancy group refine their style of working and also gave further opportunities for feedback. It was now back to the main task and each management team called in the consultancy groups and gave them further details of requirements as well as listening to their emerging plans. For instance, a health management team agreed that waiting times and staff absence were critical factors - a point they had tried to conceal during the previous day. A police management group felt their key problem was one of maintaining public confidence over dealing with burglary and street crime at a time when they had to provide resources to deal with a single high profile murder case. This arose from their thinking about the data they were given.

By the end of day 4 the consultants had made a further detailed appraisal of management team needs which they addressed through a further 'practice' presentation which received feedback. There was clearly more work to be done over night ahead of the final day.

On day 5 consultancy teams made their final presentations to all their relevant senior management teams. The management teams then had to award a contract. Given that there were unequal numbers of management teams and consultancy groups it was always likely that a consultancy group would finish the week without receiving a contract. In fact while there were tensions between some management teams and consultancy groups every consultancy was successful. Management teams had been persuaded that their needs were diverse and that they needed the offerings of different consultancy groups to fulfil different tasks. So some contracts were split and were awarded to different consultants with negotiated costings. The exercise ended with management teams and their respective consultancy groups meeting to decide in more detail how the consultancy was to be taken forward.

Giving and receiving feedback: this was the most challenging task and was recognised as such in student evaluation. Each individual had to give and receive feedback at least three times during the week. The feedback demands became increasingly difficult as the week progressed with the consultancy brief increasing in complexity.

Simulation Outcomes: The groups divided equally at the outset between interest in the Health Service and the Police. The further subgroups of consultants and senior management teams were also fairly equally split although a deliberate imbalance was built into the exercise to make it more difficult for consultancy teams to be selected on the final day. Fortunately each group of 'consultants' was taken on by at least one senior management team.

Key learning outcomes: all students commented on how demanding giving and receiving feedback could be. They also commented on how easy it was to use a wide range of difficult material once they were embarked on the tasks but they found the total volume of material unnecessary. Students all felt the real learning was in how to use group settings effectively

and there was 100% plea for more teaching to be organised on this basis. The level of presentation improved during the week. In terms of the professional requirements of the public sector bodies represented the exercise was probably insufficient for training purposes, but in terms of the learning required by the week's outcomes it was successful.

How could this exercise be adapted?

Students commented on the length of the week and the majority felt it could be reduced to a three day exercise but with the day with an external consultant maintained.

An external consultant was used simply because consultancy was the focus of the exercise. A change in focus would obviate the need for this. However, having someone from outside the setting can be positive.

To adapt it to a three day task the initial project task on day 1 could be linked directly to the main task and then students could go through one of the cycles only - agreeing a brief through an initial presentation and refining this for one final presentation. For shorter one day versions the exercise would need far simpler data sets, e.g. one or two problems only for service providers and consultants to tackle. This might require a single presentation, opportunity for revision, and then a final revised presentation. Shorter simulations are easier to link to ongoing module activities.

Whichever approach is taken it is important for staff involved in developing simulations to create sets of large building blocks of materials as well as approaches that offer alternative ways of tackling tasks. Staff can then either drop or simplify some of the blocks. Starting from an extended simulation and working backwards to the essential elements is a good strategy for well thought-through short simulations.

Costs: this exercise cost £1,200 in 2007 to cover additional payments to associate lecturers, payment of external consultant, publicity material. This does not cover simulation development time. Shorter simulations would have lower costs but repeated use of simulation materials can reduce overall costs. Materials can also be adapted to different uses.

Simulations are regularly used in higher education but many such exercises become ‘one off’ events. The sheer complexity of timetabling and other logistical needs make simulation activity very time consuming. Many academic staff remain unconvinced either of the content value of simulations or of the pedagogies employed. Simulation exercises are not the place for lectures or formal seminars. They need extensive preparation. However, if staff with less experience of such work can join a planning team and perhaps make a small contribution initially, e.g. listening to and responding to one particular student group throughout the exercise, then more staff can see this work has value, as recognised here by the students.

Evaluation

All participants completed an extensive evaluation form before the end of the week and these were analysed independently. A report was submitted to the ASS Programme Management Team. Follow up evaluative comment was obtained from a number of participants in their final year. Some of the findings have been incorporated above.

Student evaluations included the following:

- The week tested students and over 70% felt it was the hardest task they had undertaken at university - and a sizeable proportion of these suggested it was one of the best things they had done.
- Clear gains in relevant knowledge, increased skills of self-understanding (essential to autonomy), understanding of different aspects of giving and taking responsibility.
- 80% reported they felt a three day exercise would be more useful given the pressure they were under to complete course work a few weeks after the exercise.
- All commented on communication about the exercise. The majority felt it would be helpful to know in advance what they were expected to do but all students commented favourably on communication effectiveness during the week and on tutor support.
- 10% of students felt the exercise should be held at the start of the academic year. The rest all felt that the holding of it towards the end of the second semester was the best possible time.
- Most reported that their initial motivation was the guarantee of a reference and a certificate they could use in the future. But over 50% commented on their changing recognition of the value of the exercise as the week went on.
- Academic staff on the programme not involved in the exercise also commented on communication. Many felt they were dealing with student uncertainties and that the timing (towards the end of the second semester) was inappropriate.

The perceptions of the exercise leader and the two participating staff included the following:

It is essential to have local academic programme management, administrative and technical support which was evident throughout the planning and delivery of this exercise. Communication about the week to students is never going to be ideal. If you say too much, you risk putting people off. However, the communication level needed to be improved. Understandably perhaps some students who did not participate complained to staff that they were not prepared to give up a week for such an exercise. An analysis of those who complained did show they included students with low attendance records anyway.

Most academic staff supported the project and indicated such to students. But a few academic staff advised students not to participate. Such mixed messages can be avoided and this really needs better preparation of academic staff by simulation developers. Do the direct explanation yourself rather than rely on anyone else to do it for you!

If simulation activity of an extended sort is to be built into academic programmes then it is important full-time colleagues become part of the teaching team and that simulation development becomes a shared activity. It is important students have formally organised opportunities to practise further the skills and knowledge they acquire through simulations.

Problems will arise - a sudden additional room booking necessitating a room change, absence of booked equipment. Have at least two alternatives to every main task.

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