

# Tackling the Issue of Student Motivation Through Educational Technology: An Action Research Model<sup>1</sup>

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## Introduction

As part of broader research at Sheffield Hallam University which seeks to explore student and tutors perceptions and experiences of networked learning and educational technologies (Steel and Hudson, 2000), this paper presents findings that focus more narrowly on specific issues around the learning and teaching experience of one member of staff and his students. Following an action research model (Kemmis, 1997), this paper explores the process of change within the restructuring of a level one unit in which problems of student attainment and motivation were identified.

This paper explores both the lecturer's understanding of learning technologies with regard to how such technologies might help solve the problems of poor attainment and motivation; and the students own perceptions of how networked learning and the use of educational technologies might contribute to an 'enriched learning experience' for them. The first part of the paper will outline the lecturers expectations, experiences and process of reflection (Schon, 1987) relative to his engagement with networked learning technologies; particularly in relation to the notion of increasing the quality of the student learning experience thus tackling the problem of attendance and retention. The second part of the paper will explore the student perspective of this process, particularly in relation to their perceptions and experiences of networked learning and educational technologies within their course of study, but also within higher education in general.

In providing an insight into the perceptions and experiences of the lecturer and his students within this context, we provide an example of a methodological framework that seeks to be proactive in engaging staff and students in exploring ways to enhance and enrich their learning and teaching experience, thus providing a remedy to the problems noted above. In addition, we offer an account of an innovative use of learning technology with which practitioners may be able to draw from within their own learning and teaching contexts.

## Methodology

### *Action Research*

Given that a number of problems were identified with the course unit, it was decided that a fundamental reappraisal of the approach to the unit was necessary. Rather than restructuring the unit ad-hoc, a critically reflective process was engaged both in terms of the way the unit was delivered and in terms of generating student feedback. Such an approach is best summarised by Kemmis when he notes that action research is a "collective self reflective enquiry undertaken by participants in social situations in order to improve the productivity, rationality, & justice of their own social or educational practices and the situations in which practices are carried out." (Kemmis, 1997). The idea of action research is to situate the participant at the core of the research and to engage a constant reflective process.

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### *The Reflective Essay*

Ashworth *et. al.* (1996, p. 3) notes that portfolio's have two differing but overlapping purposes: to increase the quality and specificity of the assessment process; and to increase the user's reflection and provide a record of growth and development. The learning journal also has been identified as a key device for engendering students' reflective abilities, whilst at the same time providing work that fits specific assessment criteria and learning outcomes. (Woodward, 1998; O'Rourke, 1998) In keeping with the reflective active philosophy outlined above, coupled with the potential of learning journals and portfolio's as a site of reflection and assessment, it was considered that some form of reflective writing, in the form of a reflective essay, would be useful in terms of providing *active* data on the student's own perceptions and experiences of educational technologies as well as generating feedback on specific technologies used on the unit whilst meeting specific learning outcomes.

### **Context**

This study focussed on a level one unit entitled *Introduction to Information and Computing Technology* (IICT) run within the School of Science and Mathematics' Business and Technology Programme. Two distinct student groups, Business and Technology (degree and HND) and Media Science (degree) making up a total of one hundred and ten studying this unit. A key feature of the unit is that it introduces the concepts behind Information and Communications Technology to a cohort with little or no science background. In addition, for the Business and Technology students, the unit provides the key underpinning for the Technology strand within the course, and provides the rationale behind the study of Technology within what is a Business orientated course. The Media Science course focuses on the communication of scientific ideas through different media so the rationale for the unit is clearer, although the students themselves tend to come from an arts rather than science background.

After running the unit for two years a problem of student retention and attendance was identified, as student 'fall off' had been encountered with regularity particularly in lectures. In addition, poor student attainment resulted in low unit averages (typically around 45%) and an unacceptably high number of referrals (20% for Business and Technology and 35% for Media Science in 1998/99). Clearly the teaching and learning strategy which employed a traditional format of lectures and tutorials, with a long two hour lecture as the main focus for learning, supported by smaller one hour tutorials, was not motivating the students. As is often the case in higher education, a potential conflict was perceived to exist between teaching large numbers of students and the quality of the interaction with the students.

It was decided that a fundamental reappraisal of the units teaching, learning and assessment strategy was necessary. A critically reflective process was adopted both in terms of the way the unit was reviewed, restructured and delivered. The process adopted seeks to engage staff and students in exploring ways to enhance and enrich the learning process. The framework revolves around a dialogue between the lecturer and educational research staff within the University's Learning and Teaching Institute, which is informed by student feedback.

### **Process**

The first stage in this dialogue was to identify the key drivers behind the learning process and the new agenda within Sheffield Hallam University, and Higher Education in general. What emerged was the development of a more flexible mode of delivery of the technology strand with a move towards 'student centred' or 'supported open' learning. These drivers were then placed in the context of what the unit team identified as key issues. The following is an outline of issues and their responses:

To improve *student motivation* by:

- Encouraging participation and a sense of ownership of the learning process i.e. to engage all students in the learning process.

- Encouraging through a structured and supportive learning environment the move from dependent to independent learner.
- Enabling students to learn at their own pace and by encouraging autonomy within the learning process.
- Removing the dependence on traditional styles of delivery.
- Raising awareness and understanding of ICT within the programme - students on these courses should really be using the technology.

To improve *student support* by:

- Improving the accessibility of the subject matter to non-specialist students i.e. those without a strong background in science.
- Enabling the support of a relatively large and diverse student group in terms of background and qualifications.
- Improving the quality of support within existing resource constraints.
- Providing a structured learning environment.

To meet *student demands* by:

- Introducing more flexibility and reducing the constraints of on-campus learning.
- Encouraging the further development of IT skills.

To *benefit the lecturer* by:

- Clarifying and refocusing the subject matter and the materials used.
- Enabling more 'control' over the learning process.
- Moving the focus of staff time away from delivery towards facilitating and supporting the learning process face to face.

As a result of this dialogue between the lecturer and educational development and research staff, the decision was taken to remove a large portion of formal contact time out of the learning and teaching framework, in this instance lectures, and by supplementing these with interaction based around learning technologies. This mixed mode of delivery created 'space' which could be used to enable more meaningful interaction between students and tutors.

For example the authors considered that lectures should be kept as the primary mechanism for the delivery of key concepts and ideas as this provides a focus for the unit and enables regular direction and support to be provided. These lectures were held in a state of the art lecture theatre with high quality projection facilities. The ability to project a networked screen from the student network proved to be a valuable asset in student support and guidance. Moreover, the time taken for lectures was reduced from two hours a week to one hour a week. The 'Introduction to IT' element of the unit was then delivered through 'supported open learning' through a set text and the use of the TopClass web based learning environment. A one hour tutorial each week underpins the learning and supports the concepts delivered in the lectures. The tutorials provide a means of 'small group' face to face contact with a tutor. In addition to the lectures and tutorials, three two hour laboratories support the learning within the unit through hands-on experience of the technology.

#### *Supported Open Learning via TopClass*

The Introduction to IT element of the unit involved no formal teaching (reducing the total lecture time by around ten hours in the semester). Teaching was instead provided through the TopClass web based learning environment and course management system. The focus of this part of the unit was around students reading the set text, with the use of weekly use of multiple choice tests within TopClass providing the assessment. Marks were provided instantly on completion of the tests, thus providing instant feedback. In addition to this

feedback, TopClass also provided a mechanism for student support through the provision of course materials and relevant information: reading lists, timetables etc.

### *Skills Development*

In previous years a one hour workshop was held each week focussing a different skill. By integrating the introduction of key skills across this unit and the semester two unit Interfaces and by the use of the Key Skills Online package,<sup>2</sup> these workshops were reduced to regular short sessions following the lecture slot.

### *Assessment Strategy*

The assessment load was simplified to enable the introduction of TopClass. The key changes were the removal of group tasks, moving the focus on group work to semester two, replacing it with an individual reflective essay and the use of the TopClass tests to contribute to the unit examination mark.

### **The Student Response**

As noted, the adoption of a reflective essay in this unit was a key element both of the assessment strategy and of engaging students in the action research process. Approximately one hundred and ten essays were marked and then analysed. For the essay, the students were asked to describe the different educational technologies that they were aware of and *how* and *why* these are being used increasingly in higher education. Importantly, students were asked to reflect on their own experiences of educational technologies particularly within the IICT unit. What follows, is an outline, with examples and analysis, of students' responses to the essay questions.

### *Increasing Instrumentalism/Vocationalism*

Emerging from the essays was the explicit recognition by students that the use of educational technologies in themselves provided a meaningful learning experience, despite the content of the technologies used. Often students talked of their engagement with various technologies as 'preparing them for the world of work' or as 'providing skills that they would need in the outside world'. Even those with relatively little experience of technology were pleased that they were getting the opportunity to engage meaningfully with numerous technologies.

*"As my educational life has progressed, I have come into contact with more advanced forms of educational technology, learning new skills which will enable me to enter full time employment with the confidence in my education that comes from experience."*

Linked to issues around instrumentality is the notion of increasing confidence with technological developments. Many students noted that they had gained in confidence in the use of computers and this was important for their educational and career development.

### *Flexibility in Learning*

The idea of 'flexibility' that the use of educational technologies brings with it was welcomed as students were keen to stress that they benefited greatly from doing the work at their own pace at the time of their choosing.

*"It puts more emphasis on out of lecture study, and allows the user the freedom to work at their own pace."*

*"...students feel that as though they still have access to the main sufficient notes of the overall topic outside lecture hours at their own convenience."*

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<sup>2</sup> A web based system to support key skills development.

With added confidence and appropriate support, (see below) notions of flexibility are interwoven with students engaging, at least implicitly, in contemporary educational discourses around notions of independent learning and autonomous learning etc. It was evident from the essays that students' were aware that learning was increasingly their responsibility.

#### *Tutor Support and Feedback*

Students' awareness of learning as being self directed was also tempered with an appreciation of the need for a continual dialogue within the learning process. This stress on dialogue was represented very strongly in the texts particularly within the context of the use of the TopClass learning environment, as the tests within TopClass provided instant feedback. The authors feel that this is one of the most important elements of this learning and teaching scenario, as we shall demonstrate below, the students can often feel isolated when the technology is the sole focus of learning.

In addition to support and feedback in the contexts of tests, the awareness and appreciation of mixed mode teaching was applauded by many of the students as a key mode of tutor support.

*"I was very impressed with the mixture of technology and traditional teaching, as a support mechanism the web based learning added a new dimension to the learning process and made the unit easier to learn."*

This mixed mode teaching involved the tutor providing an appropriate balance of traditional lectures and tutorials as well as online learning. Thus the students did not feel as though they were totally alienated from traditional or more familiar learning scenarios.

Support was not only provided by the tutor as students were keen to employ technologies that engendered collaboration. As such, learning was taking place from within the student body and emerging as a result of collaboration with peers rather than solely being directed by the tutor.

*"The idea of students sharing advice within the virtual environment is also a good way of encouraging student interaction, as well as helping them find hints about course work and other things that they may be finding difficult."*

#### *Concerns*

Although the students responses from the essays were generally positive, there were some concerns that students had, some of which were directed towards the actual role that educational technology has in higher education as well the wider social and cultural dimension of the use of educational technologies. For example issues around 'information overload', and 'there being just too much information out there' was of concern to some students. Also the isolation factor, that being the perception that human contact and the quality of interaction may be placed under threat if the use of educational technology go unchecked.

*"It abolishes the need for human contact during the course, and the user may feel completely isolated."*

However, it was noted that the balance provided in the unit helped compensate for any undue concerns that the students may have about the threat of diminished face to face contact.

*"I am generally more familiar with lectures and tutorials and than with on-line learning. I was pleased therefore that lectures were included as part of the course. I feel that through the lectures, the course is given a face and personality. I like to have the opportunity to speak to the tutor in person."*

#### **Conclusions**

This paper provides an insight into the perceptions and experiences of a lecturer and his students, through the restructuring of a course unit from a traditional teaching and learning strategy to one adopting a mixed mode of delivery, combining lectures and tutorials with learning technologies. The process of change adopted engages staff and

students in exploring ways to enhance and enrich their learning and teaching experience thus providing a remedy to the specific problems of attendance and attainment. By the end of the unit a considerable improvement in attendance was observed (from 50% to 80%) accompanied by a dramatic decrease in the referral rate (to 4% for Business and Technology Students). Student responses to the learning experience, obtained from the reflective essay, were favourable in particular to the adoption of a mixed mode of delivery which was seen to provide an effective support mechanism introducing flexibility without the loss of human contact.

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