SOLE Case Study Series

Information and Computer Sciences

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Executive Summary

This report analyses and summarises the results of two case studies into the use of Virtual Learning Environments (VLEs) in first year Information and Computing Sciences (ICS) within two different UK universities. The survey was conducted by the Learning and Teaching Support Network (LTSN) Subject Centre for Information and Computing Sciences (LTSN-ICS) as part of the SOLE (Students' Online Learning Experiences) project.

Purpose of the Study

SOLE is a collaborative project funded via Tranche 2 funding of the LTSN (and provided by the Higher Education Funding Council for England (HEFCE)) and the Joint Information Systems Committee (JISC). The project, led by LTSN Economics at the University of Bristol in collaboration with 4 other LTSN Subject Centres, carried out an independent evaluation of students' first time usage of of VLEs in further and higher education. The study aimed to establish the effectiveness of VLEs in supporting student learning across a number of different discipline areas and in different learning situations.

Background

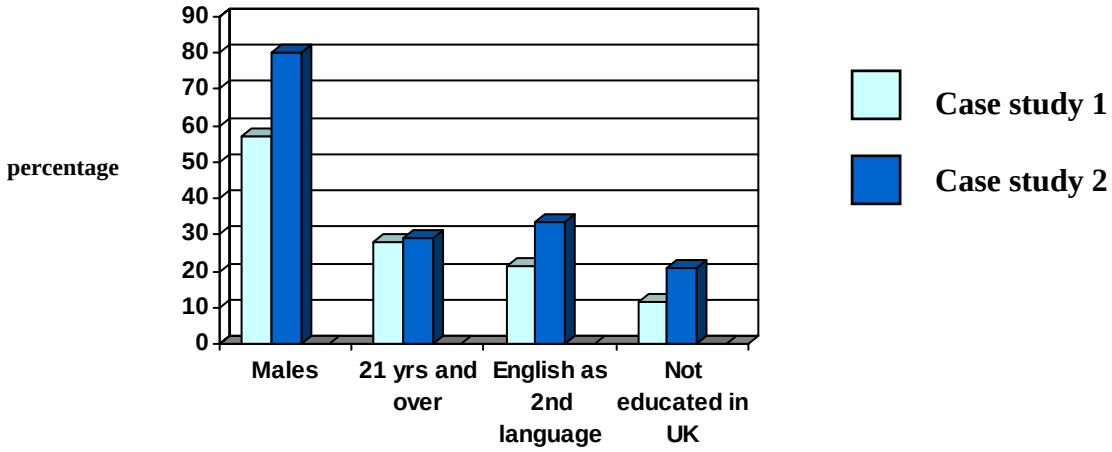
The study methodology was based upon the evaluation framework set out in the handbook for learner-centered evaluation of computer facilitated learning projects in higher education (Philips et al., 2000). Several aspects of the research has drawn on the Critical Incident Technique pioneered by Lockwood (Gilbert and Lockwood, 1999).The approach is designed to provide an in-depth set of case studies based on course modules across a range of subjects, with a wide range of data and collection methods. The main elements we have used, assuming a 10 week unit, are as follows:

- Student diaries (weeks 3 and 8)
- Transaction logging (throughout)
- Recording of transactions (throughout)
- Interview with tutor (weeks 1 and 9)
- Interview with students (week 9)

Profile of Participants

85 students out of a potential 233 completed questionnaire 1 which aimed to establish the profile of the cohort including gender, age, first language and country of secondary education. The results are indicated below.

Figure 1 Percentage profile of participants for both case studies



Learning models

Both case studies were carried out during the second semester of the 2002/03 academic year (12 weeks from February through to June 2003). Both case studies were carried out with year 1 students on full-time courses at 'new' universities. In each case the module under investigation was a compulsory module. The VLE used in case study 1 was WebCT and StudyNet in case study 2.

Case study 1 looks at a foundation module which aims to support all students in acquiring the core skills needed to study at degree level. It brings together study skills, IT and self motivation. There is a strong emphasis on group working and presentation skills as well as finding information and citation. Through short assignments, students are encouraged to reflect on their learning needs, build up a portfolio of evidence of the skills acquired and plan for their personal development in subsequent years.

Case study 2 focuses on a module where students learn some important theoretical ideas by using formal systems in the design of simple programs. An important strand of activity is the guided study, where students work through module texts, carry out paper-based exercises and use computer systems to explore the application of the theoretical ideas. This activity is supported by the supervised practical/workshop sessions and also through a structured approach to the provision of worked solutions and self-assessment exercises firmly rooted within the VLE which also hosts discussion groups and feedback mechanisms, to ensure that students have opportunities to communicate both with their peers and the module teaching staff.

Embedding the VLE

In both case studies the VLE was used primarily to provide students with access to information and to assist discussion and communication, a move which was in general appreciated by the students.

Case Study 1

The tutor was trying to encourage learning by doing as this is essentially a skills based module. Students cover group dynamics and have to do a group exercise and a presentation in groups. Using the VLE tutors have found it easier to administer the group work elements of this module. Integrating WebCT has also enabled the tutors to change the assessment, and a portfolio is now used. The tutors intended approach in using the VLE was to get the students to interact more and this has been successful.

Case Study 2

In this instance the VLE was used throughout the academic year for all their courses to a greater or lesser extent. Within the module under observation, the VLE was used as an organisational tool for delivery and allowing access to notes 24 hours a day. One interesting development was that tutors put up hand written versions (of solutions) which allowed them to see how the solutions were developed. The VLE had no multiple choice question facility, so it was impossible to provide formative, continuous assessment.

Student Preparedness

Case Study 1

WebCT is used in other modules in the first year so most students had encountered it prior to starting this module. Respondents were generally confident about using the internet. Confidence in working and learning online was slightly lower. There was a further reduction in levels of confidence in finding their way around WebCT. Not surprisingly for information science students very few students reported little confidence in any of these areas with no student recording no confidence.

Case Study 2

As with Case Study 1, StudyNet is used across the board on all first year courses, where it is mandatory. Despite this background, fewer than one third of respondents had used StudyNet prior to the start of the module, although the majority of those who had used it before had significant experience. Given that students were enrolled on a computing course it is no surprise that all respondents were confident about using the internet and needed little support. All students recorded at least some confidence in finding their way around WebCT and in obtaining information via the system. Students were considerably more reticent about taking part in online discussions underlining the fact that students of computing typically have limited exposure to innovative teaching and learning methods.

Motivation

In both cases students motivation levels were positively influenced by use of the VLE in comparison to other modes of learning. In particular working online helped them to feel part of a group.

Case Study 1

Part of the rationale behind this module is aimed at improving student confidence and making them more independent learners. However as students become more strategic in their learning patterns, they will only engage with an activity if it contributes towards their assessment mark. Developing a portfolio as part of the assessment seems to have improved motivation, as has diversity of activity and working in pairs.

All students were enthusiastic about this new way of learning, commenting particularly on its interactive nature. Despite low expectations at the beginning for most it had been a very positive experience, resulting in increased confidence and students were definitely more motivated and enthusiastic as a result. Students recorded no negative experiences in using the VLE and found it more useful than traditional chalk and talk.
The vast majority of students (89.9%) are motivated by getting good marks in the assignment. Only 57.6% indicate that they are interested in the subject matter of the module, with 25.4% indicating that they were only undertaking the module to gain credits. More than half (54.3%) were doing the module to help them achieve their personal goals.

Case Study 2

The vast majority of students (87.5%) are motivated by getting good marks in the assignment, 66.6% of respondents indicate that they are interested in the subject matter of the module, with 25% indicating that they were only undertaking the module to gain credits. Just over half of the respondents (54.2%) felt they were good at the subject and expected to do well. More than half (58.3%) were doing the module to help them achieve their personal goals.

One of the big benefits of using StudyNet on this module was observed in the discussion groups.

Student and tutor roles

Case Study 1

The use of online learning was well received by the students and the approach considered successful by staff. There were three tutors involved who worked as a team. One tutor checked more or less daily to see what had happened. Interviews with students revealed a definite need for tutor interaction which provided an informative source of support as the tutor encourages discussions. However, students were split in their opinions as to whether the VLE promoted self-directed learning. The bulletin board was used to post/manage responses to each other and the tutor and most students felt that they had learnt from their fellow students. In particular there were positive comments regarding quick access to other students and an instant response to queries.
The tutor role is really one of minor facilitation, although there has been some management of the discussions and some student tracking. The tracking tools revealed the need for early identification of non-participation and some incentives in the form of marks, e.g. for completing quizzes. Whilst tutors believe that the VLE is suitable for delivery on certain types of information and knowledge there is concern from both students and tutors that the tutor may become too remote.

Case Study 2

From a tutor point of view, the best aspect of StudyNet was reported to be the organisation of teaching staff and one tutor felt that the administrative load was genuinely reduced.

Tutors using StudyNet mainly to distribute notes with use of the bulletin board for students to get help either from tutors or from their peers. This provides students with an opportunity to reflect on the material. Students have also become experienced at providing peer support and discussions are only lightly moderated.

Although StudyNet has no monitoring capabilities, it has to some extent helped with student support. However tutors raise concerns over raised expectations and the fact that students expect notes to be there and expect responses to queries.