SOLE Case Study Series

Students' Online Learning Experiences

Education

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Summary

This is the preliminary report detailing the two Education case studies for the Students' Online Learning Experiences (SOLE) project.

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Acknowledgements

Executive Summary

Two case studies reporting on the experiences and behaviour of students from two modules in Education are summarised here. These two studies were carried out by the Education centre of the Learning and Teaching Support Network (ESCalate) as part of the SOLE project.

1. Purpose of the study

SOLE is a project funded by the Higher Education Funding Council for England (HEFCE) via the Learning and Teaching Support Network (LTSN) Tranche 2 initiative and the Joint Information Systems Committee (JISC) to undertake an independent evaluation of students' usage of virtual learning environments (VLEs) in higher and further education. The purpose of the study is to draw out the effectiveness of VLEs in supporting different subject areas, different national agendas (such as that of widening participation) and student learning in general.

2. Background

The two case studies, undertaken during February to June 2003, come from the subject network of Education. One (Cast Study 3) is a post-graduate module with a small number of students in a large pre-1992 university. The second case study (Case Study 4) comes from a large post-1992 university college based on a second level, year-long undergraduate module. Case Study 3 used WebCT and Case Study 4 Blackboard to deliver the online component of the module.

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 two modules participating in the case study were markedly different – the main differences were level of study, number of students on the module and the length of the module. These differences led to some unavoidable differences in data collection. Within both case studies the following methods were used:

- Student questionnaires;

- Student diaries;

- Transaction logging (throughout in Case Study 3);

- Recording a sample of interactions (in Case Study 3);

- Interviews with tutors involved with the module;

- Focus group with the students (Case Study 3).

3. Profile of participants

A total of 93 students participated in Case Study 4 with seven students participating in Case Study 3. However, not all students participated in all aspects of the data gathering. In terms of those that completed questionnaire 1, four out of the seven students in Case Study 3 had been educated abroad and were non-native English speakers, the remainder were educated in the UK with English as their first language. All the students in this case were aged over 21. In Case Study 4 all the students were native English speakers with 97 educated in the UK and 3% in Western Europe. All of the Case Study 3 students were female, 94% of the Case Study 4 students were female.

4. Learning models – explicit and implicit

The learning models evidenced in these case studies supported a constructivist/social constructivist approach to learning. The VLE was used, in both cases to embed these principles into the module and the module was structured to reflect the use of collaborative tools. However, there were some notable differences in terms of the structure of the tasks and the context within which the task was undertaken in the two case studies. In Case Study 3 students were required to work on collaborative tasks in pairs during class time; in Case Study 4 students were expected to work collaboratively in groups of 4 out of class time and there is therefore less opportunity for tutor input into that process. In addition, there is a considerable difference in the number of students that the tutors had to support in each of case studies.

5. Student and tutor roles, use of resources and communication

These two case studies demonstrate tutors who are all clearly committed to developing students who actively participate in the learning process and exploiting the communication tools in the VLE fully. However, there are some clear differences between the two case studies in relation to the use of resources and online communication. In Case Study 3 the students clearly made full use of all the resources available through the VLE including active use of the communication tools. In Case Study 4 the students commented favourably on the accessibility of the lecture notes and other resources and made full use of email to communicate with tutors and students; however, the made less use of the synchronous (Chat) and asynchronous (Discussion Board) tools for communication.

6. Motivation and confidence

The students in both case studies demonstrate similar motivation for the module in terms of initial and later rating. Motivational factors such as interest in subjects, personal goals were rated highly by both groups and both case studies agreed that being better than others and simply doing the module for credit was less important. For both groups there is some evidence that technical problems impacted on motivation. However, they differed in terms of their views on the motivational importance of the online communication element of the course. Case Study 3 students found the collaboration and sharing of ideas through the online communication motivating whilst Case Study 4 students recognised the potential for this but did not necessarily engage fully in this aspect of the module. It is interesting to note though that there is a potential anomaly here as the Case Study 4 students reported increased confidence in communicating online.

7. Support for students and staff

These two case studies demonstrate that there was institutional support for the staff involved in the development and delivery of online learning through staff development and technical support. The students in both case studies were well supported in terms of introduction to the VLE though this was done differently. Case Study 4 students had induction in year 1 of the course, whilst Case Study 3 students were introduced to the VLE during class time. For both sets of students the tutor was seen as offering crucial support and the notion that students could manage without a tutor on an online module was not accepted by either of the student groups.

1. Introduction

The two case studies reported on here are set within faculties in Education in two English HE institutions and provide the ESCalate input to the SOLE project. The main aim of the case studies is to explore student online learning experiences using a holistic approach drawing on both qualitative and quantitative methods of data gathering. Case study 3 is based on a post-graduate module and case study 4 reports on an under-graduate module.

2. Purpose of the study

SOLE is a project funded by the Higher Education Funding Council for England (HEFCE) via the Learning and Teaching Support Network (LTSN) Tranche 2 initiative and the Joint Information Systems Committee (JISC) to undertake an independent evaluation of students' usage of virtual learning environments (VLEs) in higher and further education. The purpose of the study is to draw out the effectiveness of VLEs in supporting different subject areas, different national agendas (such as that of widening participation) and student learning in general.

3. Background

Higher education has experienced considerable change in the past 30 years. The changing composition of the student body, greater emphasis on teaching and learning and rapidly changing technology are creating new demands for university teaching. In 2001/2 there were 2.2 million students in Higher Education, 55% of whom were female - there are now six times as many female students enrolling in HE in 2001/02 compared to 1970/71. The corresponding increase for male students is 2 ½ times the enrolments of 1970/71 (Social Trends, 2003). An increased emphasis on accountability on the one hand and teaching and learning on the other led to the Quality Assurance Agency's being set up to monitor the quality of teaching and the learning experience. This in turn has led to an increasing emphasis on pedagogy and on theories of teaching and learning (see e.g. UHI 1999, Bonk & King 1998, Mayes 2000). The importance attached to the role of the learner in teaching and learning has encouraged the development of theories that have moved away from the transmission model towards constructivist and social constructivist models. In addition to these changes universities are now expected to embrace the rapidly changing technologies that are potentially allowing for different modes of teaching. The UK government recently published a new document – Towards a Unified E-learning Strategy (www.dfes.gsi.gov.uk/consultations2/16/) and Charles Clarke, secretary of state for education and skills exhorts HEIs to engage in the challenge of making full use of new technologies (THES, 11th July 2003). The government's paper recognises that the web-based instruction has already been developed in higher education and that it is seen as increasingly important by this sector (Carr-Chellman & Duchastel, 2000; Traxler, 2002).

In terms of education the national ICT agendas for schools and the need for increases and diversity in teacher recruitment are impacting on the initial training of teachers which takes place in our universities. At the beginning of the 2000/01 academic year, seventeen initial teacher training (ITT) providers started a new postgraduate route to Qualified Teacher Status (QTS) (Teacher Training

Agency, 2002). This route, called flexible postgraduate training, has been designed to allow candidates to follow training which meets their individual needs and circumstances. The changing patterns of structure for PGCE courses at UK universities away from campus-based courses and towards school-based programmes of study have been major drivers for Education Departments to focus on new models of communication and learning and in particular on the role that VLEs can play. The requirements for tutor – student and peer to peer dialogue and support, together with the need to study more independently than previously make e-learning an essential element of most Education Departments programme planning and design. Furthermore in 2002 new ICT testing is being introduced as part of the QTS (Teacher Training Agency, 2002) requirements which mean ITT providers need to ensure that students have the required level of transferable ICT skills to use in their teaching. LTSN Education needs to support university departments and academics to use VLE's both as effective tools and as exemplars to help students model good practice and this requires sound evidence to build this support.

There are thus considerable 'drivers' in terms of introducing e-learning into faculties of Education – both in terms of the national agenda and the particular demands of the discipline. There is a growing body of research into the use of web based discussion boards and chat room, especially in relation to their potential to foster discussion and dialogue based on constructivist and social constructivist principles (e.g. Bonk & King, op. cit.) some of this research focuses specifically on Education (e.g. Bonk et al, 1998). In particular methods for analysing such dialogues have been developed by a number of researchers (see e.g. Chappel H, MacAteer E, Harris R, Marsden S, 2002, Pilkington, 2000, Hillman D.C.A., 1999). However, there has been far less research exploring the total online learning experiences of students and student behaviour when learning using a virtual learning environment (VLE).

These two case studies form part of a larger research project that aims to address the apparent lack of research into this important area – the Student Online Learning Experiences (SOLE) project (http://sole.ilrt.bris.ac.uk/). The team consists of researchers from five different Learning and Teaching Support Network (LTSN) centres and covers the subject areas of Economics, Psychology, Information and Computer Science, Education and Hospitality, Leisure, Sport and Tourism. The case studies come from ten different HE and two FE institutions and include both undergraduate and postgraduate students. The case studies reported on here are described in more detail below. The methodology employed for all the case studies was set by the project team and followed by each of the researchers with minor modifications to take into account the specific context of the individual case studies. The methodology is outlined in section 4. Modifications to this methodology in relation to these particular case studies are explained, as are the reasons for these modifications.

The main research questions that this project aimed to address were:

- What is the implicit learning model, what is the explicit learning model and what is the actual tutor and student behaviour?

- What factors do students identify as affecting their motivation positively or negatively and can these be attributed to the VLE itself?

- How much time (online and offline) do students spend working on VLE modules?

- What resources are the students making use of and what patterns of use can be identified?

- How do students use the VLE toolkit?

- How do students choose to communicate – how, when and why – and for what purposes? How the VLE tools support this?

- Who is/what is the role of the tutor? What is the role of the student? How do these relate to the implicit, explicit and actual model of learning? How does it relate to student participation in the VLE?

- Is it possible to identify issues around authority, for example, of knowledge, of expertise and teacher-student communications, in relation to VLEs?

- How do students and tutors use and perceive the various forms of support available? How important do tutors think support is and what is their understanding of student preferences?

In addition a number of areas for potential investigation were identified – these were:

- How do we separate distance learning from virtual learning issues?

- How can we define successful participation in online communication?

- What evaluation (general and VLE specific) is the tutor undertaking and what do they/will they do with the outcomes?

It should be noted that whilst a range of different VLEs formed part of this project the intention of this research was not to compare VLEs. The main focus is to try to identify what happens when students are working within a VLE, the discourse and processes they undertake, the students' views and perceptions and identifying common factors and success indicators. It is also intended that these research questions draw on *all* case studies and it may therefore not be possible for a single case study (or the two contained within this report) to address all the questions.

Case Study 3 - Introduction and background

Context. This case study is set within the subject network of education. It explores the behaviour of postgraduate students on a Masters level module that was being developed for online delivery in a large pre-1992 university. It is a small-scale study as the module that formed part of the case study had only a small number of students. The data are therefore not generalisable; however, taken as part of larger project the case study can serve to provide some important information in relation to students' online learning behaviour and their perceptions of this mode of learning.

Institutional issues. The institution has a learning, teaching and assessment strategy that stresses its commitment to the development of ICT through campus wide use of WebCT. It further states that it aims to support and reinforce other delivery methods with appropriate web-based learning. Other aspects of the document stress the need for student-centred learning, the need to work further on widening participation and supporting the development of skills in students. It also notes the need for recognising that students from non-traditional backgrounds may require additional support when entering higher education. To summarise, the institution is committed to student-centred learning for a diverse range of students and to a development of modules that have at least some part of the delivery via web based resources.

The module. The 11-week long module in the post-graduate programme was intended for teachers involved with the development of ICT in schools. It aimed to develop teachers' skills in the use of online learning within the classroom and was available part-time. Half the module was delivered online, covering five weeks and the other half was delivered by traditional lectures. Attendance was expected once a week during a two-hour evening slot except for the one reading/research week in the middle of the module. There were two tutors involved in the delivery: one provided the Web-CT delivery of the module and the other the traditional lecture. This report looks only at the online part of the course and thus only the tutor in charge of the online delivery of the module was involved in the case study. One notable aspect of the module was that the online delivery sessions took place during class time with the students in a computer lab and the tutor on hand. This is different from some uses of online delivery provided at a distance with students and the tutor only 'meeting' virtually.

Case Study 4 - Introduction and background

Context. Case study 4 is also set in the field of Education in a large post-1992 university college. The case study explores the behaviour of undergraduate students on a BEd second level year-long professional studies course that was taught using a VLE as part of a blended learning approach in a faculty that has a large teacher training department and a strong reputation in this field. All the faculties in this institution were moving towards adopting VLEs, and a major pilot was under way, though a final decision to implement Blackboard across every faculty had not been made at the point when the course under review began.

Institutional issues. The institution has a learning, teaching and assessment strategy that stresses its commitment to the development of ICT campus-wide, and the appointment of four faculty ICT learning technologists whose role is to support the development of e-learning is a key element of this. Within Education, staff are at very different points in their confidence in and experience with e-learning. Some staff have more than ten years experience in the field, and hold European and DfES research grants to evaluate e-learning initiatives; others are far less experienced.

The module. The VLE is used in two ways: as a background course support mechanism and as a specific locus for collaborative student planning in relation to one specific area of the course - preparing on-line for a face-to-face student-led seminar, which all students have to do in groups of four, at some time. For this specific task the group of four students is encouraged to work online to identify supplementary on-line resources which will deepen their own knowledge and from which they will select additional material that they will use in delivering the face-to-face seminar for a larger group of students.

4. Methodology

This project used a case study design with a range of both qualitative and quantitative data gathering techniques. In addition, secondary sources such institutional policies in relation to e-learning were consulted. The main focus was on gathering data from the students; however, tutors were also interviewed as were others involved with the particular module where appropriate. Ethical guidelines were observed and all those participating were fully informed of the purpose of the project, consent forms were completed by all those participating and participants were assured that they could withdraw at any point of the project.

The following main primary data gathering tools were used:
- Student questionnaires (two - one at the start of the module and one at the end)
- Student diaries (two – one to be completed in week 3; and one two weeks before the end of the module)
- Student interviews with a small sample using a critical incidents approach.
- Tutor interviews (two – one at the start of the module and one at the end). In addition others involved with the development were interviewed if appropriate.

The following secondary sources were consulted:
- The teaching and learning strategy of the institution
- Log details of student behaviour in the VLE (e.g. number of times logged on and activities undertaken; in the event this data was not available for all case study sites)
- Chat room transcripts (where these were made available)

The methodology for the overall project was followed as far as possible in the Education case studies; however, the short duration of the online element of the course and the part-time attendance made it problematic to follow it strictly. In both of the case studies teaching and administration staff at the institution were very keen to support the SOLE project, and most of the data needs were met. The changes to the methodology were as follows:

In Case Study 3:

- Timing of student diaries was not followed – it was not possible to include the time spacing intended as students only started with the online part of the course in week 5 and the module only ran for eleven weeks. Students were therefore asked to fill in diaries over a period of two consecutive weeks. In addition it was not possible to collect diaries from all students.
- Interviews at the end of the module – the students only attended once a week and the only feasible time for the researcher to carry out the interviews was during the last session of the module. It was not possible to set up interviews after the completion of the module as it would have been difficult for students (some of whom were working full-time) to attend for interview only. The students were therefore asked to respond to the full set of interview questions in a mixture of written responses and a focus group session.

In Case Study 4:

In terms of Case Study 4, the year-long duration of the online element of the course, together with the secondment of the key information technology lecturer on study leave during the main period of data collection also imposed certain restrictions on data gathering. Time-spacing of data collection – it was not possible to include the time spacing intended as students were on a year-long course, and data collection began more than six months into the academic year.

- Although there was good will on all sides, it did not prove possible to collect online transaction data.

A total of 74 students completed questionnaire 1 and 55 students completed questionnaire 2, of whom it was possible to match 38 for pre-post comparisons.

5. Profile of participants

5.1 Gender

Table 1. Percentage of respondents to questionnaire 1 by gender

Gender	Case study 3	Case study 4
Male	-	6%
Female	100%	94%

The demographics of the survey participants can be compared to those of the survey population, using data from the HESA publication Students in Higher Education Institutions in 2001/2002. The general proportion of male/female students studying Education is 73%, both case studies reflect a much bigger portion of female students.

5.2 Age group

Table 2. Percentage of respondents to questionnaire 1 by age

Age Group	Case study 3 (Total Number: 7)	Case study 4 (Total Number 74)
>21	-	70%
21- >41	87.5%	28%
<41	12.5%	2%

The general proportion of Education undergraduates aged under 21 is 71% - a similar proportion is reflected in case 4, while in case 3, all the students are post-graduate who are all mature students aged over 21.

5.3 Country of education/first language

Table 3. Percentage of respondents to questionnaire 1 by country of secondary education

Country of education	Case study 3	Case study 4

UK	43%	97%
W. Europe	-	3%
N. America	14%	-
E. Asia	29%	-
2 countries	14%	2.5%

Table 4. Percentage of respondents to questionnaire 1 by first language

First language	Case study 3	Case study 4
English	43%	100%
Afro-Asiatic	14%	-
Chinese-based	43%	-

There is a marked difference in the backgrounds in the students in these two case studies. The majority of the students in the undergraduate module were educated in the UK with most citing England as home country and they all spoke English as a first language. By contrast the post-graduate students came from a range of different cultures, and less than half spoke English as their native language.

According to HESA, 96.4% of UK Education undergraduates and 88.1% postgraduates come from the United Kingdom with further 4.0% postgraduates from other EU countries and 7.5% from other overseas countries. Case study 4 reflects a similar percentage of UK original students; while case study 3 reflects a much higher percentage of students from overseas, and a much higher percentage of students whose first language is not English. However, the total number of students in case study 3 is too small to be representative.

6. Results

The findings from the two case studies will be reported separately with a comparative summary at the end of each section. This is due to the considerable differences in size of sample and also differences of level of module. However, similarities and differences between the experiences of the students will be explored in a summary at the end of each main section and these will be further discussed in the conclusion.

6.1 The learning model: implicit and explicit

Case Study 3. The learning model promoted by the institution is that of student centred learning and implicit in its Learning, Teaching and Assessment Strategy document is a commitment to constructivist/social constructivist principles of learning. This model of learning is explicitly adopted by the tutor of the online part of module as evidenced by the following response:

> "*Well – I can't speak for the other half of the module but I am very much trying to get them to be collaborative and constructive in the way that they approach their learning and to get them to think critically about what they are doing and what they are trying to achieve with their learning and ICT.*" (tutor interview 1)

Additional evidence supporting the tutor's position comes from further comments by the tutor, the VLE and the students. The module is entitled ICT and Learning. The online part of the delivery has clearly embedded the pedagogy in the VLE as the activities are structured to engage the students in active exploration of a range of online resources and activities. It also encouraged collaboration in terms of producing joint documents (small group) and these were then shared with the other two groups. The following examples demonstrate this clearly:

"I wanted the students to know about learning and teaching … I tried to practice what I preach .. I do feel that if ICT is to be taken as a normal teaching tool then seeing teachers as role models teaching with it is as important as teaching them about it … Also the structure of the WebCT materials supported collaboration." (tutor interview 1)

Three out of the five students also refer to this as the following examples show:

> *"When I can check on other students' work, i.e. one time our classwork was to create a firework from Logo. I could see other students' work posted on the bulletin board and compared mine to theirs"* (student interview)

> *"We planned a lesson on contour lines, as a group and pasted it to the bulletin board."* (student interview)

In addition to this evidence three out of the five students' interviews focusing on positive experiences also referred to aspects of group work.

It should be noted, as shown above, that the other half of the module was delivered in a traditional way with lectures. As this part of the module did not use any online resources it was agreed that it would not form part of the case study. Thus it may well be the case that the non-online part was not based on constructivist principles. That this might be the case is supported by the following summary of the students' views from the focus group session:

> *"There was general consensus that there was a clear distinction between teaching styles in the online and the face-to-face part of the course. There was also agreement that having the complete module online would be an improvement".*

Also noteworthy is that whilst the online activities encouraged collaboration, the assessments do not seem to afford any opportunity for jointly developed materials. A student wishing to take a 'traditional' HE approach to assessment could focus on writing a standard essay. However, the assessments did allow for use of material from the course and also for change to other topics covered if agreed between tutor and student. Interestingly, in the focus group session, one of the students suggested that the chat room discussions should form part of the assessment (this was not elaborated on any further).

Case Study 4: Learning models: explicit and implicit

The driving force for the introduction of VLEs in course delivery in the Case Study 4 institution had come from specialist information technology staff who have had for a number of years a responsibility to deliver IT to student teachers in training as part of the Qualified Teacher Standards, and who therefore chose to '*use IT to teach IT*' (course tutor interview). The course team had been '*using IT and websites as part and parcel of [their] work for several years*' (course tutor interview). The main focus was therefore on 'blended learning', the integration of ICT and web-based components into a campus-based full-time course. The institution had put in place an e-learning sub-committee that took a leadership role in addressing and reviewing not only issues such as security and authentication, but also teaching and learning issues, and also took a lead in evaluating and researching the impact of the e-learning strategy.

In the college, VLEs were increasingly being used for supporting courses in which the students were on field experiences, such as the secondary PGCE, in which the students are based in schools over 60% of the time, but the course that is the focus of this case study was not like this. Case Study 4 is based on a second-year core module in Education that was taken by 260 students. Much of this module was delivered in a traditional way with lectures. The VLE was used for course-wide information sharing, but also to support small groups who were given responsibility to liaise electronically and organise a seminar in which the small group would run a follow-up to a main lecture (the PowerPoint slides and other supporting material for which had been posted in the VLE). Student participation in VLE-mediated discussion was mandatory for those planning the seminar.

The tutor interview also clearly indicated a commitment to VLEs as offering a valuable opportunity to some students for contributing to discussion in a manner that was not possible in face-to-face sessions. The following anecdote, which was spontaneously offered by the tutor at the end of the tutor interview, illustrates this point:

> "The most powerful anecdote, that changed my thinking about working at a distance, working through an computer media communication, not being face-to-face with students was a discussion that I had with a year three student, part of a seminar session where she was talking about web boards, when we were talking about all technology, and this was a young woman sitting in a group of other young women, but she was very plain in comparison to the others in the group, very poorly dressed in comparison to the rest of the group and she said she loved the use of web boards because people judged her on what she wrote and not on what she looked like. And there was a totally stunned silence in the group in which she had worked with for three years, because they had never ever understood the kind of feeling that she felt interacting with them as a group of people. She loved it. She loved the fact that she could stop and think, she could pause her thoughts, …and she didn't have to come up with lots of articulate ideas within the group setting and she could actually concentrate on it, she could go and get her references and then she could go on and construct her argument. And people judged her on the strength of her argument and not what she looked like or any peripheral information about her. And that suddenly made me think about the way which we use this type of distance education with students and the way which we put them into different roles, and that always struck me as being an incredible powerful thing." (tutor interview)

The VLE was clearly embedded in the pedagogy in the part of the module that was delivered online. The tutors involved in delivering this course met regularly and had also given a great deal of time and thought to the issue of precisely what materials were to be delivered using Blackboard.

To summarise – it can be seen that the learning models from both these case studies supportted a constructivist/social constructivist approach to learning. The VLE was used, in both cases to embed these principles into the module and the module was structured to reflect the use of collaborative tools. However, it is also worth noting the following:
- In terms of Case Study 3 the online part of the module clearly supported; the lecture part (delivered by the other tutor) did not necessarily do so
- The assessments afforded some opportunities for student choice in assessments and deviation from those set by the tutor; however, there was no evidence of the collaborative activities encouraged during the online sessions necessarily feeding into the assessments
- There were differences in terms of the structure of the tasks. In Case Study 3 students were required to work on collaborative tasks in pairs during class time; in Case Study 4 students were expected to work collaboratively in groups of 4 out of class time and there is therefore less opportunity for tutor input into that process. In addition, there is a considerable difference in the number of students that the tutors had to support in each of case studies.

6.2 Student and tutor roles, use of resources and communication

The espoused learning models for both case studies emphasised a constructivist/social constructivist approach. This model would expect an active role by the students and a more facilitative role by the tutor. Collaboration and co-construction of knowledge would be evidence of a social constructivist model in practice.

Case Study 3. In this case study there is clear evidence of students taking an active role with the tutor in a more facilitative role. Two quotes from different students reflect the responses from all five:

> "My tutor's role is quite important to me, actually she assisted me when I have questions/difficulties in using it (the vle). She acts as a guide, an assistant and I think." (student interview)

> "The tutor was the facilitator. I had to be fully active in personally carrying out tasks and making decisions. I also had to communicate when I needed help." (student interview)

The WebCT virtual learning environment with integrated communication tools supported the development of these roles. The VLE was used to provide a total environment with course content available only through the VLE and this was fully integrated with the use of communication tools. The

full range of these tools was used – asynchronous discussion board, synchronous chat and email. Examination of the VLE and the associated chat and discussion board postings supported the claim that students made full use of these tools. There were no lectures in this part of the module. The class met in the computer lab and worked on structured activities during this session. There were opportunities for students to discuss issues during these sessions but the main focus was on using the online environment. It is possible to analyse each aspects of these tools in terms of a taxonomy of student learning activities – with the reading of course notes featuring at the lower end – 'knowledge' with some of the exercises featuring at the higher end 'evaluation' and 'creation'; however, many of the activities on the online part of the module were linked so reading led to an activity or an exercise which was then used as the basis for a discussion using the VLE tools. This integrated approach means that it is possibly not helpful to view a particular aspect of the course as a discrete unit nor a particular tool as used in isolation.

The emphasis on collaborative work supported by the VLE was clearly evidenced. Students commented on using email to contact both the tutor and other students. The value of the asynchronous discussion board in promoting collaboration and also in promoting critical thinking was evident in some of the responses. This is shown by the comments from two of the five students referring to collaborative work:

> "*When I can check on other students' work, i.e. one time our classwork was to create a firework from Logo. I could see other students' work posted on the bulletin board and compared mine to theirs.*" (student interview)

> "*We planned a lesson on contour lines, as a group and pasted it to the bulletin board.*" (student interview)

Critical thinking was evidenced from the focus group discussion with the students. The students noted that when they had worked in small groups and posted on the same topic but the way they had tackled the topic was very different. This initially made each of the groups feel that their posting was 'wrong'; however, they then realised that they could learn from 'each other'. There was a suggestion (from the students) that the tutor could have provided feedback here – this issue was not pursued further – but it could be that the tutor deliberately allowed the students to work this issue through for themselves in order to appreciate that there was no 'wrong' answer on this occasion. In that sense she would be maintaining her social constructivist approach to learning as the students were engaged in a collaborative construction of learning.

The data from the student diaries (see Appendix 1), whilst incomplete, all support the integrated approach taken in the design of this module and shows the students' use of the online environment for communication and accessing resources. It should be noted though the diaries also reflect the two different components of the module – the online WebCT supported part and the traditional lecturer led delivery. The student diaries were analysed using an adaptation of the Bloom taxonomy. However, it should be noted that the student diaries, were not used in the intended manner due to the timing of the online component of this module. In the main the students seem to have entered what they did outside class time in the diaries and this is likely to have led to many of the activities identified as being at the lower end of the taxonomy (the knowledge category). Small group discussion has been entered as 'synthesis' as these were based on work undertaken by the students prior to taking part in the discussion.

The tutor interview complements the statements from the students in terms of the tutor role, but does recognise that the tutor's role was also to structure the activities. The tutor described her different roles thus:

> " *…different at different stages .. The first stage would be me standing up and introducing the exercise to get the aims across. … Once the activity is started I go around and check progress … so I was acting principally as a facilitator. …. You can feel a bit like a lemon sometimes when using WebCT in the face-to-face classroom! You can feel that you are not useful whilst the students are doing things ... wondering why am I here? But that is really how it should be – they should be doing the activities because they are learning by doing and I'm there to help them when they need it.*" (tutor interview)

However, whilst it is clear that the role of the tutor was seen generally as a facilitator four out of the five students responding to the statement 'We didn't need a tutor for this course' with Strongly disagree or Disagree – the fifth student responded with neutral. This would support a tutor role based on a social constructivist perspective where the tutor is seen as essential in structuring the learning

experience effectively and also in engaging with the learner in terms of developing an increasing understanding of complex topics.

Case Study 4.

Students in this case study group reported that most of their use of the VLE was for gaining information:

> "*I went into it and most details are on it and the documents are really useful. And the course documents section was really useful for the GSPS lecture notes. It had like things that you needed to find out like room numbers and the tutors you were going to have for the next year. It was easily accessible.*" (student interview).

The students appreciated the opportunities offered by the VLE to learn at their own pace, and in their own time:

> "*… you are able to distance yourself like being at home and log on and you can go in whenever you want. You know - you can go back to lecture notes in your own time and think about it and go back and go and get them before the lecture and read them through beforehand. And then that way you are not so dependent on other people.*" (student interview).

Although on this module the students interviewed appeared not to have made significant use of the VLE for chat and discussion, they were positive on the question of whether or not Blackboard encouraged them to feel part of a group:

> "*I also strongly agree … that …working on Blackboard encourages me to feel part of the group. I thought that was particularly so when I was on placement and I was able to go on and see what was happening and if there was any notices. That was all there. And again when we were talking about getting our groups and our timetable before we actually got into college, it did make - prepare you mentally for like coming back after a really long summer break.* (student interview).

Another student said:

> "*Working on Blackboard also makes me feel part of the group because it is a team effort. We're also - this is a whole year thing. It's not just made for - this isn't an individual person. It's a group thing.*" (student interview).

The tutors in this college, particularly those with an e-learning interest, made it clear that e-learning may have been initiated bottom-up, through the enthusiasm of individuals, but it was clearly coming to the forefront of the college agenda:

> "*the vision is being made by the people who are sharing it with us, we are working from the bottom up*" (Senior course leader interview).

Interviews with staff of the college and conference presentations at the British Educational Research Association made by college staff exemplify this, and tutors take their roles in promoting e-learning very seriously.

In this case study, however, issues such as how tutors encouraged online participation, how they monitored chat and discussion areas, or intervened in relation to issues of 'nettiquette' did not raise themselves. Perhaps this was because the use of a VLE within a campus-delivered blended learning approach was less likely to throw up such issues. Instead, tutors were concerned about encouraging colleagues to upload course support material, in formats that did not cause problems for those accessing with low bandwidth. They were also keen to use Blackboard for communication to students (better than email lists because student email address lists can hold a high proportion of dead addresses).

The possibility of having all course resources available to students (and indeed other staff) via a VLE was considered a significant advantage:

> "*… and then comes along the possibility to use Blackboard which allows us to do one thing in one place with all the types of tools that we need which is the tremendous advantage…*" (Course leader interview)

Staff were aware of the danger of e-resources overload if lecturers simply put all their PowerPoint presentations up in Blackboard:

> "*I don't want to have the complete year two course where we get every thing that they have done and put it up on Blackboard. Blackboard would then just become a digital drop box.*"
> (Course leader interview)

Extending the awareness of other colleagues as to how Blackboard might be used was also important:

> "*… we have a huge range of ICT capability within the lecturers that we have, so its almost suggesting things that they can do afterwards. There is a lot of time speaking to them and saying well maybe not use the PowerPoint presentation, but have you got something else a bibliography or a reading list which will help them in the future? So it has been a staff development issue.*' (Course leader interview).

Finally, getting resources more portable using data compression software has also been an issue, in order particularly to support the transfer of data for students working online away from college but without broadband:

> "*I've been looking at software that will convert PowerPoint in to a flash file which will make the file size smaller for students it may take away some of the animation or the Glitzy bits of the presentation but it delivers the message.*" (Faculty learning technologist interview)

Students reported mixed experiences with using the communication aspect of the VLE. The tutor's intention was that student communication using the VLE was to be an integral component of preparing for leading a seminar. The students, however, saw their use of the VLE as much more of a whole-course experience, and while their confidence in taking part in online discussions went up (see the section below and Table 5), the interview data did not highlight this aspect of the VLE as a key one for this group. A typical tutor comment was the following:

> "*the students all do a seminar to disseminate what the lecture was about, so they use Blackboard then get course materials to support the lecture and things like that … so what we have is students doing virtual seminars almost anywhere, talking about the seminar virtually so they are sending emails to each other, to their group and they are using the virtual classroom as well.*" (Head of Year interview).

The Student Diary data (see Appendix 2) based on returns from 5 students was clearly going to be of somewhat limited value in the evaluation overall, since there might be difficulties generalizing from it. Nevertheless, the diary did contain student self-report on the number of minutes devoted to different types of activity, and this data confirmed the impression gained from both questionnaires and interviews. In total, the five diaries reported 5683 minutes of student activity (a mean of 1137 minutes), which averaged just under 19 hours per student. All five students reported using the VLE during the week they kept their diary, but two reported no chat or discussion activity (the modal activities were checking for announcements and course administration details, and then studying material online). Of the three who reported chat or discussion activity, these accounted for 60 minutes out of a total of 529 minutes of VLE activity. In total therefore, 60 minutes of chat/discussion was reported out of 599 minutes of VLE activity recorded in diaries of these students.

To summarise – the two case studies demonstrate tutors who are all clearly committed to developing students who actively participate in the learning process and with attempt to exploit the communication tools in the VLE fully. However, there are some clear differences also – it could be suggested that these are:

- Case Study 3 students have to engage with the communication tools during class sessions with tutor available for advice and guidance and they then continue on these activities out of class time. The interviews, diaries and transaction logs all support that students did participate effectively in these activities.
- Case Study 4 students have tasks that ensure that they engage with the communication tools of the VLE but this has to take place out of class time. Whilst there is evidence of students' confidence in using these tools increasing during the study there is less evidence to demonstrate the extent to which the students actually engaged in this activity.

6.3 Motivation and confidence

Confidence and motivation are clearly both important in studying on a module, the addition of technology to support study raises further issues in this area. These issues are related to students IT skills in general and also to their attitude to using technology. The students were therefore asked about their previous experience and confidence in using aspects of technology. They were also asked to comment on their motivation for studying on the module. The small number of students in Case Study 3 means that the data for these students will be combined into a single table. The larger numbers in Case Study 4 warrant separate exploration of the different aspects of preparedness and IT skills.

Case Study 3: Student preparedness and confidence in using IT.

Out of the eight students questioned only one student had previous experience of WebCT and she had only used it for 5 hours. However, in spite of this the students did not report any particular worries about undertaking the module.

Table 5. Student preparedness (Q1 refers to Questionnaire 1; Q2 to Questionnaire 2)

	Very Confident		Confident		Some Confidence		Low Confidenc	
	Q 1*	Q2*	Q1	Q2	Q1	Q2	Q1	Q2
Using internet	2	2	4	3	1	-	-	-
Work/learn online	1	2	3	3	2	-	1	-
Navigating vle	1	2	3	3	2	-	1	-
Obtaining infor in vle	1	2	4	1	1	2	1	-
Taking part in online discussion	1	-	3	5	2	-	1	-
This module	-	-	2	3	4	2	1	-

* Questionnaire 1 numbers are 7; Questionnaire 2 numbers are 5

Overall the questionnaire data on student preparedness suggests that the majority of students were relatively confident in using online resources and tackling online learning. There was a slight tendency for the English as first language students to state lack of confidence (3 out of 5 LC from English as native language).

Comparison of Questionnaire 1 with 2 in terms of confidence suggests little change – except that there are no longer any students that are low in confidence. Two of the students that had recorded Low Confidence for some of the items in Q1 had changed to Some Confidence Q2, the third student did not complete Q2.

Case Study 4: Student preparedness and confidence in using IT.

The Case Study 4 student questionnaire data on confidence in using the Internet gave initial information on student preparedness. Student confidence in relation to this year-long professional studies module was moderate, and as will be seen, the student self-ratings of confidence were generally higher in the area of IT than they were for the course as a whole. The table below shows student confidence levels as indicated from the questionnaire data related to the item on 'the subject you are studying in this module'.

Table 6. Levels of confidence in the middle and at the end of the module

'This module'	Q 1 (n=74)	Percent	Q2 (n=55)	Percent
Very confident	11	15	10	18
Confident	35	49	26	47
Some confidence	25	35	18	33
Low confidence	1	1	1	2
No confidence	0	0	0	0

Overall, initial student confidence was moderate and stable, which is perhaps to be expected in the second year of a three- or four-year course leading to qualified teacher status.

As Table 6.3.3 shows, confidence levels of this group of students in terms of using the Internet were high initially, and went slightly higher at the time of questionnaire 2 (though it must be recalled that 'initially' in this case study, was based on a point in the spring of 2003, by which time the students would already have been on this year two course for six months, and 'final' on a point three months later):

Table 7. Levels of confidence in using the Internet in the middle and at the end of the module

Using Internet	Q 1 (n=74)	Percent	Q2 (n=55)	Percent
Very confident	27	37	22	40
Confident	40	54	30	55
Some confidence	7	10	3	6
Low confidence	0	0	0	0
No confidence	0	0	0	0

Of course use of the Internet is a general background factor, and a slightly different picture emerged in relation to the question of working and learning online, which is a distinctive feature of VLEs. Table 6.3.4 shows the answers given to a question asking students to rate their confidence in relation to 'working and learning online'. As the table shows, there was a clear increase over the time between administration of questionnaires 1 and 2, with the number of 'confident' or 'very confident' responses moving from 63 to 77%. This corresponds fairly well with the answers given to another question, which was whether the student had had previous experience of using a VLE; the answer to this question was positive for 57% of students, which corresponds closely to the 63% who were initially 'confident' or 'very confident'.

Table 8. Levels of confidence in learning online in the middle of and at the end of the module

Learning online	Q 1 (n=74)	Percent	Q2 (n=55)	Percent
Very confident	18	24	17	31
Confident	29	39	25	46

Some confidence	26	35	12	22
Low confidence	1	1	1	2
No confidence	0	0	0	0

A dependent 't' test was carried out to establish whether the pre-post differences on this item were statistically significant, and for the 38 students on whom we had paired data the pre-post difference was significant at the $p<0.01$ level, which is highly significant.

A similar picture emerged on items relating to 'finding your way around in Blackboard' and on 'obtaining information via Blackboard', in that all responses were in the 'some confidence' to 'very confident' range, with slight improvements over time, though these were not statistically significant.

Table 9. Level of confidence in using communication in online learning environment during the middle and the end of the module

Online discussions	Q 1 (n=74)	Percent	Q2 (n=55)	Percent
Very confident	8	11	30	56
Confident	21	28	19	35
Some confidence	36	49	0	0
Low confidence	9	12	5	9
No confidence	0	0	0	0

During the period of the case study, student confidence rose, with the number of 'confident' or 'very confident' responses moving from 39 to 91%. A dependent 't' test on the paired data was significant at the $p< 0.001$ level, which is highly significant.

Case Study 3: Motivation

The student interviews suggest that the ability to share ideas with others (as afforded by WebCT Discussion Board/Chat room) acted as a motivator, this is exemplified by the following quote:

> "*When I put my own work online I got the reply from others. They shared their ideas and opinions toward my work which are quite valuable.*" (student interview)

In addition, the opportunity for contact with the tutor that it allows, also increased motivation as the following two quotes demonstrate:

> "*Because it was easy to get into contact with the tutor, I felt supported and this encouraged me to study for the module.*" (student interview)

> "*Being able to get the tutor's assistance helped me understand things that seemed difficult and this, therefore, maintained and increased my interest in the module.*" (student interview)

The generally positive view of the online aspect of the module (as opposed to the lecture part delivered by the other tutor) also suggests that the VLE had a motivating effect. Evidence for this comes from the focus group session in the request from the students that the whole module be delivered online. However, it should be noted that technical problems experienced in particular by one student affected motivation negatively but also the timing of the online communications:

> "*The time was not always appropriate, i.e. meetings after school, being able to log on due to admin problems. If I hadn't had password problems and the timing had suited me better.*" (student interview)

Questionnaire data also support high motivation towards the module though it is clear that motivation was generally high at the beginning. Table 10 shows motivation at the beginning and end of the module and here there is a very slight positive change. Responses from questionnaire 1 suggest that the main motivating factor were to achieve personal goals and satisfy an interest in the subject matter. For these students it was less important to do better than others and to simply do it for others.

Table 10. Rating of motivation at the start and end of the module

Rating	7		8		9		10	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
No. of students	7	3	1	2	-	-	1	-

Note: Numbers for questionnaire 1 was 7 and for questionnaire 2 it was 5. No student rated motivation below 7. The student who rated motivation at 10 in questionnaire 1 did not complete questionnaire 2.

Table 11. Motivational factors

|	Strongly Agree	Agree	Agree/ Disagree	Disagree	Strongly Disagree
Want good marks	1	2	2	1	1
Worried about not doing well	1	3	1	2	-
Interested in subject matter	3	3	-	-	-
Personal goals	2	5	-	-	-
Good at subject	-	2	4	1	-
Important to do better than others	-	2	2	1	2
Doing it for credit	1	-	1	2	3

Aspects of WebCT that decreased motivation were not really part of the learning environment – the main one was the inability to log on or access the VLE from other computers (apart from university ones). This is evidenced in the following comment from one of the students: *"A bit less enthusiastic given that I thought I should be able to use WebCT anywhere I want when I was at home – but there seems that there is a bug in this system, which rejected my log on".*

Case Study 4: Motivation

In general, the motivation of these students both towards their course as a whole, to this module, and to the use of VLEs was high. Students made a self-rating of motivation towards the module as a whole on a ten-point scale, and on questionnaire 1 this gave a mean of 7.76 (n=74; sd 1.13); for questionnaire 2, the comparable figure was 7.72 (n=55; sd 1.24).

There were a number of motivation-related questions on questionnaire 1, and the results from these for Case Study 4 are presented as means on the bar graph below, where 'strongly agree' has been scored as +2, and 'strongly disagree' as –2 (n = 74).

Figure 1. Factors affecting student motivation
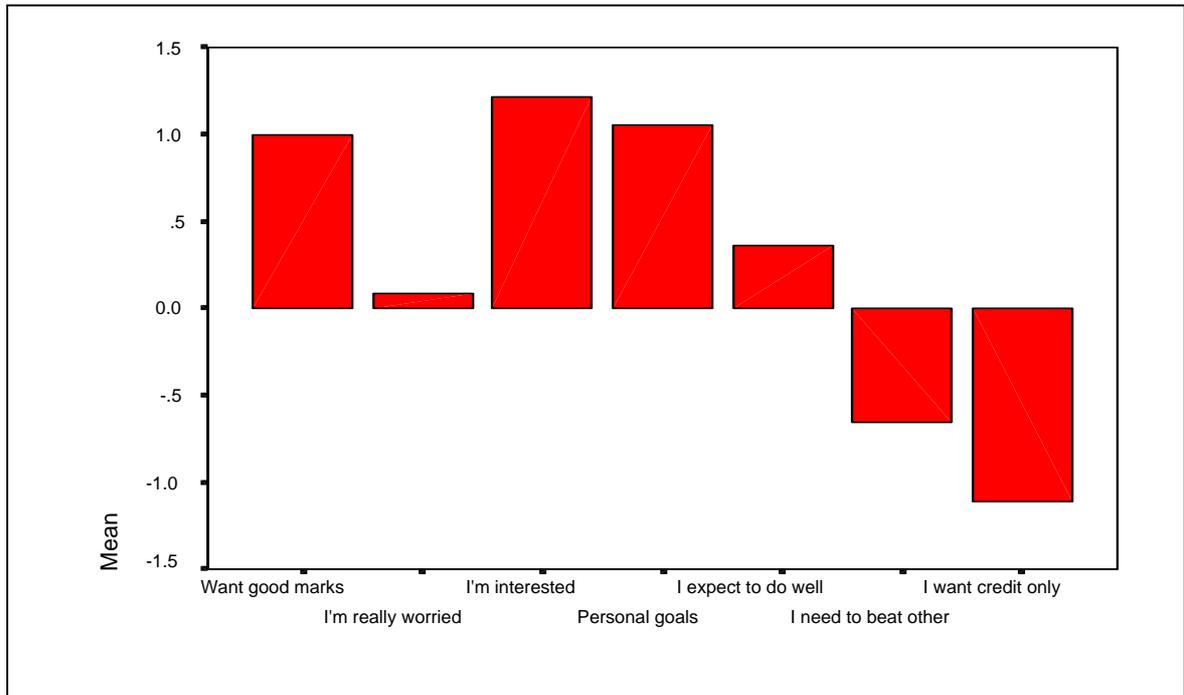
For these students, the items on wanting good marks, having a keen interest in the module and expecting to do well gained high scores, while those on wanting to do better than their peers and taking the module for credit only were disagreed with strongly.

Interestingly however, student interviews put the issue of communication in a more mixed light. One student reported a passive rather than a negative view:

> "…*I don't think that the on-line discussions- people have really used them as much as they could have done this year. And you have got the same people going on every time just to put things on. It's too easy to just sit back, read it like I do and not actually write anything.*" (student interview)

Other students were happy with the principle, but had not really got into two-way communication much on this course:

> "…*I only agree with the on-line discussions are a good thing way to learn in this module because I mean I haven't used them a lot so I don't really know about how good they really are, so when we first - when we first used them we had some problem with them in the first bit, so it didn't actually work as well as we'd hoped. I think I used them once after that and I managed to sort of get a few responses from people like through the discussion board, so I suppose they were - they are a good way to learn but I haven't used them very much.*" (student interview)

To summarise – the responses from the two case studies once again show some similarities and differences between the two. The students in both case studies demonstrate similar motivation for the module in terms of initial and later rating. Motivational factors such as interest in subject, personal goals were of rated highly by both groups and they both agreed that being better than others and simply doing the module for credit was less important. For both groups there is some evidence that technical problems impacted on motivation. However, they differed in terms of their views on the motivational importance of the online communication element of the course. Case Study 3 students found the collaboration and sharing of ideas through the online communication motivating whilst Case Study 4 students recognised the potential for this but did not necessarily engage fully in this aspect of the module. It is interesting to note though that there is a potential anomaly here as the Case Study 4 students reported increased confidence in communicating online.

6.4 Support for students and staff

Support for both staff and students can come from different sources and for different purposes. For staff there can be institutional support in terms of staff development and ongoing support both in

terms of developing pedagogical abilities to deliver online and also technical skills to develop and deliver online modules. For students support can come from effective induction and ongoing tutor and technical support.

Case Study 3.

The tutor delivering the module was already experienced in developing and delivering online modules. There is clear evidence though that institutional support would be available if required as the following shows:

> *"There is a web officer who is very helpful and there is an e-learning group in the institution helping staff doing projects like this. And information services do, I believe, run modular courses to help people get started – but I haven't actually attended any of these…. I have been well supported, when I have asked for anything it has been done, by and large, the exception is that I have not managed to get any guest access accounts yet. But, comparatively, because they have adopted WebCT as a university strategy it has, comparatively been easier than it was in my former institution in terms of things like the student data base being hooked up to WebCT so that I can get student logins fairly automatically and there hasn't been too much of a delay to that."* (tutor interview)

For the students it is clear that support from the tutor has been important and effective. The students were introduced to the VLE in class time with tutor support. This tutor support is clearly evidenced in the responses from three of the students in the student interviews:

> "*Tutor taught us how to attach files and put our work on the bulletin board. …*"

> *"Help from tutor to follow instructions. …"*

> *"The tutor's guidance. Yes I asked for help when I needed it."*

The students also strongly disagreed with the statement that there was no need for a tutor on the course as they were learning online.

In addition the access to resources through the VLE provided support for the learning process. It is clear that the students appreciated having easy access to these resources but also that they did not consider reading documents online as effective as printing off and reading a hard copy. The focus group session identified that most of the students printed the materials they wanted to read. They had also identified a difficulty with printing off html documents and suggested that two formats were provided: html for VLE use and word document for printing off. The main reason for wanting to print the materials was so that they could 'interact' with them, e.g. underline and make notes on the reading materials.

Case Study 4

In terms of support staff the institution had supported a college-wide pilot of Blackboard, and many staff in different faculties took the opportunity to participate, to the extent that the members of the e-learning committee felt that even though the official pilot had not concluded or reported, the move to campus-wide adoption was '*unstoppable*' (course leader interview). The feeling of the e-learning group was that for many staff the posting of messages and lecture notes was the initial and principal use of the VLE, but that this was inevitable; more experienced staff actively discouraged the 'shovelware' approach (ie putting every scrap of available course material onto a server), and specifically encouraged bulletin-board and chat discussions, but recognised that these were likely to occur when there was a pedagogical or structural reason for these to take place. The college had also appointed four faculty learning officers whose job was to work not only to support VLEs, but to support the development of teaching and learning using ICT across the college. A dedicated network administrator had also been appointed to support VLE activity and integration into courses.

Support for the students included induction to the VLE. Sixty-five out of 74 students (87%) in questionnaire 1 reported that they had been given an introduction to using the VLE, and interview data confirmed this:

> "… *we were able to use it in our first year. We had that ITT week, didn't we? And that was really good because we got to have really good play around and use all the communications and like chat room and all those sort of things."* (Student Interview)

Students also valued having the possibility of face-to-face help:

> "*About having a person - it's nice to know that there is actually somebody there that can help you. Not just in Blackboard but if things - if you can't access it through a computer, then you can go to this person and you have the direct person you can go to.*" (student interview).

Students clearly saw the VLE as an extension to their tutor access possibilities:

> "*I like to ask lots of questions and e-mail people or even ask in person and I get all the answers back, which has been very useful. Every time I've e-mailed someone I've had a reply eventually.*" (student interview).

The students strongly disagreed with any suggestion that because they were studying via a VLE that they didn't need a tutor for the course:

> "*…because teaching is all about communicating with other people and I think that without the tutors there and being able to e-mail them and contact them, I think Blackboard works best when it's alongside a course where you have to have to come in. I don't think I would have liked it so much if it was like a distance learning thing.*" (student interview).

As a fellow student put it:

> "*ICT may be taking over the world- ha ha- but you still need human beings.*" (student interview).

To summarise – it is clear that both institutions supported its staff in the development of online learning through staff development and technical support. The students in both case studies were well supported in terms of introduction to the VLE though this was done differently. Case Study 4 students had induction in year 1 of the course, whilst Case Study 3 students were introduced to the VLE during class time. For both sets of students the tutor was seen as offering crucial support and the notion that students could manage without a tutor on an online module was not accepted by either of the student groups.

Other findings

The course included in Case Study 4 was only one of a number in the institution that was using a VLE, and while it may have been typical in terms of blended learning approaches, it would not have been typical of the distance learning VLE activity that was a significant part of the college's work in the field. Perhaps the most important aspect of what was learned in Case Study 4 that has not surfaced thus far is the very positive disposition of both staff and students towards e-learning, and the determination to maximize its benefits for both groups. Tutors reported strong upward pressure from students to have all courses supported by Blackboard ('*I think one of the other issues … is that students are very much one of the driving forces as well. I mean one of the reasons it was to rollout so rapidly in Education is that we tried the experience with our year one students who want to take that into year two. And they want very much to know why isn't it there in year three … the tutors are now having to run to catch up with what the students expectations are…*' (Senior course tutor interview). At the time of the student interviews, at the end of the 2002-3 academic year, this was indeed what was heard: '*How would I improve Blackboard? I would ensure that everybody was there and posted stuff on it. And for my own personal benefit I think if students want to post something on there then they should be able to do that as well. I might be able to do it but I don't know how. And, that was a good thing on Maths the other day, because we were all in different core groups are different to our GSPS groups, a guy in my Maths group had done this Powerpoint presentation …And I would have really liked to have gone back and accessed it but I'm only able to get into group 4s so I can't now access his data in group 10. So if it was possible to switch that around please, that'd be really cool.*" (student interview).

7. Discussion

It is clear that the two case studies reported here cannot answer all the research questions posed by the SOLE project as some of the questions depend on comparison across a larger number of institutions. However, some tentative responses to the research questions can be offered. It is clearly important however to bear in mind the context and nature of the two different samples though.

The main research questions are shown below and evidence based on this case study will be used to offer some suggested answers to the questions.

1. *What is the implicit learning model, what is the explicit learning model and what is the actual tutor and student behaviour?*

In Case Study 3 there was a close match between the implicit and explicit learning model and this is supported by tutor and student behaviour. In Case Study 4 the match was less close, in that for the students in this large course (n=260), the VLE was valued primarily as an information source, whereas the tutors had two goals, one relating to the VLE as an information source, the other relating to a specific joint planning task to be conducted using the chat and discussion areas of Blackboard, which was not perceived by the students as a central element in their use of the VLE.

It was our perception that in both institutions the tutors had a very positive disposition towards both constructivist and social constructivist learning principles, but that the challenge faced by both course leaders was that of encouraging their students to make use of the opportunities, and to move from constructivist approaches (making good use of a range of build-it-yourself course resources) to social constructivist approaches (building knowledge as a group). It was also clear that it was easier to do so when the numbers are low and the students are more mature. It is noteworthy that, whilst all the tutors involved conceptualised the learning process in terms of social constructivist principles, other factors impacted on actual delivery in terms of Case Study 4. De la Harpe and Radloff (2001) argue that it is essential to change teachers' conceptions of learning in teaching and that this can be done through staff development; however, our study suggests that holding a particular conception is not sufficient and that contextual factors beyond the tutors' conception of teaching and learning will either support the implementation of such a model or may hinder it.

2. *What factors do students identify as affecting their motivation positively or negatively and can these be attributed to the VLE itself?*

The students on both modules were generally highly motivated – the main positive factors seem to be:
- An interest in the subject of the module
- The module is clearly linked to their professional practice
- The tutor aimed to support the students effectively in developing the relevant skills with structured activities that allowed them to develop a good understanding as individuals and as groups

The main negative factors encountered were:
- Password/log on/authentication problems
- Bandwidth issues (slow downloads from home computer)
- Platform/software issues (e.g. not being able to open attachments from home computer)

It is interesting to note that in Case Study 3 the use of the Discussion Board and especially the fact that others' work could be seen was a motivating factor. The VLE clearly offered an opportunity here that is not always available in the traditional face-to-face setting. This contrasted with Case Study 4 where motivation related to the overall module and the access that the VLE provided to course materials and other information. These students did not find the discussion boards adding to their motivation though they did report increased confidence in online communication at the end of the module. The experiences reported by the students in Case Study 4 reflect those identified by Monteith & Smith (2001). This study focuses on students on a range of course in an English HE institution. They found that the students made extensive use of technology in a range of ways but that use of computer mediated communication was limited. The students in this sample commented on the value of non-verbal communication afforded by the face-to-face environment – this seems to reflect the comment of the student in Case Study 4 who argued for the need of 'human beings'.

Other research, e.g. MacKenzie (2001) explores the role of assessment in promoting contributions to asynchronous discussion. Generally it was found that the patterns of posting for a group of students on a post-graduate certificate in Education and Professional Development were high in the introductory (social) period and then again when assessment was introduced. It was noted and suggested that strategic learners would take this kind of approach but that examination of individual students revealed a range of patterns of contributions. Whilst our Case Study 3 did not involve actual assessment in relation to contribution the tasks that the students were asked to engage with were clearly related to the practice of these students in that they related to their own teaching. This could account for some of the difference in terms of engagement between students in Case Study 3 and Case Study 4. It is also interesting to note that the students commented on the fact that discussion board contributions should perhaps be assessed.

Technological difficulties are not uncommon in online delivery. Bothams and Fordyce (2002) noted that that staff engaged in an online learning module at the Scottish Business Development Unit frequently experienced difficulties in accessing the site and had difficulties in posting messages. These experiences are clearly demotivating and the experience of one of the Case Study 3 students supported this strongly.

3. How much time (online and offline) do students spend working on VLE modules?

The data in this study is limited as the diary entries were not complete – an accurate estimate can therefore not be provided. However, it should be noted that accurate figures for the amount of time that students spend working on traditionally delivered modules is not necessarily available and there is perhaps a need for some form of comparison between the two modes of delivery. It is also worth noting that in an evaluation of student learning experiences (Broumley & Weedon, 2001) there was a considerable variation in terms of the time that different students spent on working on a module. Factors such as the need to work whilst studying is likely to have an impact on the amount of time spent on the modules and statistics (Curtis & Shani, 2002) show that the number of students in this category are increasing. It is also clear that some differences may emerge between traditionally taught modules and online modules delivered at a distance. In the latter case the flexible delivery is likely to appeal to students who wish to continue in work. However, the modules that formed part of this case study were both campus based.

4. What resources, including the VLE kit, are the students making use of and what patterns of use can be identified?

The students made use of the full range of resources available to them: readings (including internet links), activities, software packages, face-to-face sessions and lectures. In terms of Case Study 3 this included full use of the VLE communication tools; however, Case Study 4 students made less use of the discussion board and chat room but did use email to communicate with both tutors and other students. The behaviour of these students reflects findings from a study by Monteith and Smith (2001). These researchers found that students made good use of technology to access resources and noted that they had developed specific skills in using the technology. The authors commented that use of computer mediated communication other than email was very limited but that accessing tutor notes before a lecture was appreciated. This latter point was also noted by students in both of our case studies. Interestingly though, Case Study 3 students commented on problems of printing off lecture notes and requested these notes be presented in easily accessible word files to allow for 'interaction with the notes'. This possibly suggests a deeper approach to learning among the post-graduate students though the data here does not allow for exploring that possibility.

There is a suggestion here that the extent to which students made use of the resources was linked to the structure of the activities and the manner in which students accessed the activities. In Case study 3 students started working on activities during class contact hours with a tutor present; in Case study 4 students were expected to engage in seminar presentation preparation out of class.

5. How do students choose to communicate – how, when and why – and for what purposes? How the VLE tools support this?

The main purposes for communication in both case studies were to:
- participate in tutor led chat room discussions (Case Study 3).
- collaborate in exploration/execution of specific tasks (Case Studies 3 and 4; Case Study 3 had joint product posted on bulletin board).
- collaborate and discuss outcome of specific tasks (Case Study 3- e.g. to compare how the different groups had tackled the same task).
- communicate with each other – email – e.g. to find partner for activities or to tackle an activity (Case Studies 3 and 4).
- communicate with the tutor – mainly to get information (e.g. re reading), advice and guidance (e.g. structure of essay) or with password/technical problems. (Case Studies 3 and 4).

As noted in the previous section there were some differences in terms of the range of VLE tools used for communication and the role of the tutor has been noted and will be explored in more detail below.

6. *Who is/what is the role of the tutor? What is the role of the student? How do these relate to the implicit, explicit and actual model of learning? How does it relate to student participation in the VLE?*

The main roles of the tutor in Case Study 3 was to develop the online module in such a way that there were structured online activities that linked to relevant resources and which made full use of both synchronous and asynchronouse communication within the VLE. The student role was to actively engage in the learning process and to collaborate with other students in co-construction of knowledge. The role was very similar for the tutors in Case Study 4; however, the activities relied on the students undertaking the tasks on their own without tutor support at hand. The aims of the tutors in both case studies thus support the implicit and explicit learning model. In the case of Case Study 3 the tutor led the discussion and acted in a role akin to an e-moderator. Zenios et al (2002) note the crucial role of the e-moderator in developing a community of practice amongst students on a PGCE course. The evidence from this research notes that the computer mediated conferencing promoted professional development of the students. It also noted that the role of the e-moderator was crucial and that the topic of the conferences was of importance – in this case it was focused on real problems in real contexts based on the students' own experiences. It is clear that there are certain similarities to Case Study 3 here in that the students in this case focused on exploring resources that they could use within their own professional setting and linking this to relevant readings. Interestingly there are some notable differences. The students in the study by Zenios et al were distance education students whilst those in our case study were campus based. The fact that both sets of students engaged effectively seems to suggest an important role for the tutor in encouraging participation in online discussion and also that the nature of the task may impact on the way the students perceive the value of such communication.

7. *Is it possible to identify issues around authority, for example, of knowledge, of expertise and teacher-student communications, in relation to VLEs?*

It is clear that whilst the Case Study 3 students saw the tutor as the expert, they saw her main role as a facilitator in their learning process. It was also clear that the chat room discussions were managed by the tutor. In Case Study 4 the main authority issues were around authentication and access in a highly complex multi-course environment.

No issues relating to such matters as inappropriate language or students failing to engage in mandatory chat raised themselves. The main concern relating to control and management of the VLE in the college during the case study was that of authentication. Tutors reported that authentication was an issue, in that the staff did not want every student to be able to view the contents of every course-level site, since confidentiality was felt to be crucial in encouraging active participation from less confident students. At the time of the tutor interview, student authentication was organised course by course, with a semi-automatic password setting in the hands of a single VLE administrator. This was a challenge, in that most students were signed up for 6 or 7 courses at any one time, and in years 2 and 3 these were chosen from a bewildering array of options, not all of which were taught by lecturers with Blackboard training. To have all of these mounted within Blackboard was not felt to be a good choice at the time of the case study.

In relation to Case Study 3 the aim of the tutor was to act as a facilitator rather than an expert. However, the VLE gives the tutor a great deal of control over the structure of the learning environment (including the tracking of student activity). This autonomy is not reciprocal – it does not extend to the students who cannot set up their own discussion boards and do not have a say in terms of structuring the curriculum. The tutor control over the structure has led some to suggest that VLEs in general have a tendency towards transmission modes of delivery rather than social constructivist principles (e.g. Bonk, 2001). In this respect both of these VLEs are different from, for example, the facilities offered by First Class where the students are able to check on both tutor and other student activities within the Discussion Board.

8. *How do students and tutors use and perceive the various forms of support available? How important do tutors think support is and what is their understanding of student preferences?*

The students in both case study groups clearly saw the tutor as vital in their learning process and as providing an important source of support. In both case studies support for tutors in terms of staff development and ICT support was available. Students in Case Study 4 clearly appreciated the induction provided for them in relation to ICT whilst Case Study 3 found the introduction of the VLE during class time helpful.

8. Conclusions

The aim of these two case studies was to explore student online learning experiences and student behaviour and the impact that the tutor conception of learning has on the students' experience. It is clear that holding a constructivist/social constructivist approaches to learning influence the development of online learning and impact on the student experience. However, it also noted that factors beyond the tutors' control impact on the extent to which these principles of students learning can be implemented. It seems from these studies that highly structured activities that link clearly to students' professional practice and strong tutor support impacts on the extent to which students engage in online collaborative communications. The studies also indicate that students are generally motivated towards using online learning resources and find access to materials that are provided by a VLE motivating.

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Appendix A: Analysis of Diary activities – Case Study 3

Diary 1 initial analysis:

ID	Activity	Bloom's taxonomy classification	Time
001	Small group discussion (V)	Synthesis – high interactivity	20 mins
002	Couldn't access vle due to password problems		
004	Reading text (P)	Knowledge	20 mins
	Reading text followed by online discussion – chat (V)	Knowledge/Synthesis – high interactivity	75 mins (altogether) – estimate up to 60 mins for group discussion)
006	Researching library at school (P)	Knowledge	25 mins
	Researching e-journals online (E)	Knowledge	35 mins
	Attending a lecture (F)	Knowledge	150 mins
	Doing assignment at home (E, P)	Application	180 mins
	Search for article at school (E, P)	Knowledge	35 mins
	Attending a lecture (F)	Knowledge	150 mins
	Using a computer at school (E)	Application	60 mins
008	Reading lesson notes (V)	Knowledge	30 mins
	Finding work partners (V – private mail)	?	15 mins
	Small group discussion (V)	Comprehension – High interactivity	
	Compiling document from discussion (V)	Synthesis – high interactivity	60 mins
	Online discussion (V)	Comprehension – High interactivity	?
			60 mins

Diary 2 initial analysis:

ID	Activity	Bloom's taxonomy classification	Time
001	Small group discussion (V)	Synthesis - high interactivity	25
	Small group discussion (V)	Synthesis - high interactivity	30

004	Posting work on WebCT (V)	?	5 mins
	Writing word doc (E)	Application ?	20 mins
	Reading lecture notes and printing off (P)	Knowledge	15 mins
	Using Logo	Application	60 mins
	Posting logo pattern to bulletin board as word doc (V)	?	5 mins
	Reading textbooks (P)	Knowledge	60 mins
	Writing ideas for essay (P)	Application	20 mins
008	Reading		
	Discussion logo (V)	Synthesis – high interactivity	
	Reading (V)	Knowledge	50 mins
	Discussion (F)	Application	25 mins
	Evaluation of multi media (V)	Evaluation	75 mins

Time spent on different activities

	Diary 1	Diary 2
VLE activities – accessing/posting materials	30 mins	195 minutes
VLE communicative activities	215 mins	55 minutes (but record of time missing for one student)
Non VLE activities (includes word processing + using software packages)	670 mins	140 minutes

Appendix B

Student A			
Checking rooms for lectures	V	Announcements	2
Lecture for Eng	F		120
Lecture in ICT	V	Checking for messages	10
Presentation in GSPS	F		120
Reading for Assignment	P		60
Checking rooms for lectures	V	Announcements	10
Researching on net for assignment	E		60
Doing activity for Maths	E		60
Checking announcements	V	Messages for next week?	10
Reading comments about work experience	V	Discussion board	20
Getting Assessment grid for assignment	V	Course documents	5
Getting guidleines for ICT	V	Course documents	15
Lecture for English			120
Typing out notes	E		40
Reading for Eng	P		30
Directed activity for Maths	E		45
Directed activity for Science	E		75
Reading ICT notes	P		10
Researching books for ICT	P		60
Checking announcements	V	any new messages?	10
Researching on the internet for ICT	E		45
Checking college e-mails	E		10
Checking announcements	V	any messages from tutors?	5
Looking for room numbers	V	room changes for English?	5
Doing notes from readings - Eng	P		60
Looking at NLS documents	P		30
Scanning NLS CD ROMS	E		20
Planning schemes of work			
Looking at standards website	E		30
Lesson planning	E		180
Reading for Eng	P		30
Student A (continued)			
Writing assignment	P		120
Reading assignment	P		120
Writing assignment	P		120
Printing assignment	E		60
Checking e-mails	E		30
Checking rooms for Eng	V	Announcements	10

Student B			
Assignment research	P		60
Miscellaneous college tasks	P		30
Assignment research	E		30
Assignment research	E		45
Writing assignment	E		60
Checking library books	E		10
Assignment notes/reading	P		40
Assignment notes/writing	P		35
Checking messages and docs	V	Course documents. Announcements	5
Assignment jottings	P		25
Assignment writing	P		20
Hyperstudio presentation	E		180
Science task	E		30
Group discussion - Hyperstudio	F		15
Lecture	F		60
Seminar	F		45
Lecture	F		60
Assignment writing	E, P		90
Assignment research	E		20
Library - check books	E		5
Check Announcements	V	Announcements. Tools	5
Check assignment requirements	V	Course documents	2
Filling in planning sheet	P		20
Typing up planning sheet	E		40
Editing print out	P		15
Organising files	E, P		30
Seminar	F		120
Printing Powerpoint presentation - Science	E		10
Exam revision	P		40
Exam revision	P		30
Printing past exam paper	V	Course documents	10
Revision	E, P		60

Student C			
ICT for year 2 outlines	V	year 2 ICT page	30
Seminar room for GSPS	V	Announcements	30
Session notes for GSPS	V	Course documents	60
Session notes for Science	E		60
Typing assignment - ICT	E		120
Updating timetable	V	Course documents	60
Reading messages	V	Announcements	60
Assignment outlines	V	Course documents	60
E-mailing message	V	Discussion board	30
Seminar room for GSPS	V	Announcements	
Session notes	E		60
Typing assignment	E		30

Student D			
Discuss GSPS issue	V, E	chat room	10
Check Announcements	V, E		5
Get info about essay from T&L website	E		10
Checking notices	V	Notice Board	5
Message group	V, E	Chat room/e-mail	10
Whole year lecture	P		60
Seminar	P		60
Get lecture notes from Blackboard	V, E, P	Course notes	20
Meeting with G Parton re ICT assignment	F		5

Student E			
Checking e-mails	E		10
Checking announcements	V	Announcements/discussion board	5
English lecture and workshop	F		120
Checking e-mail and use internet	E		20
Studying	V	Course documents	40
ICT seminar	E, P		300
Blackboard	V	Announcements/course documents	5
GSPS lecture	F		120
Maths directed task	V, E	to find Maths task	60
Science directed task	V, E	to find out about Science task	45
Checking e-mails	E		10
Finding out where lectures are	V	Announcements	2
Use internet	E		15
Checking e-mails	E		5
Studying	V	Course documents	30
Maths audit	P		40
English workshop	F		120
Check new announcements	V	Announcements	2
ICT seminar	E		300
GSPS lecture	F		120
Studying	P		45
Maths workshop	F		120
Science audit	E		50
Check e-mails and send e-mails	V	Contacts	10
Using internet	E		5
Using internet	E		20