Research methods for evaluating technology-enabled learning environments

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Research methods for evaluating technology-enabled learning environments

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Centre for Research in Computing, The Open University, UK
• The Open University (OU) is the UK’s only university dedicated to distance learning

• 150,000 undergraduate students, 30,000 postgraduate students, 10,000 of our students have disabilities

• Nearly all students are studying part-time. About 70 per cent of undergraduate students are in full-time employment

• More than 25,000 OU students live outside the UK
Distance learning

• Open ‘supported’ learning: students learn in their own time, at home or wherever they choose

• course texts: paper-based or online; CDs, DVDs, podcasts for listening, watching and performing interactive activities

• regular support from the tutor: email, phone, face-to-face tutorials, assignments

• Part-time students with time-constraints, and there is diversity in their ages, skills, and experiences
Context

• Students have a ‘mental model’ of OU: ‘course in a box’; studying on their own and in their own time

• collaboration and communication tools: VLE (Moodle), discussion forums, blogs, wikis and recently, a 3D virtual world, ‘Second Life’

• Kirkwood and Price (2005): “regardless of the media being used, it is very unlikely that students will make use of materials and activities unless they are embedded in the course pedagogy. If materials are not linked to the assessment strategy then the medium is likely to be unused and its potential remain fallow.”
My role

• Based in the Department of Computing
• Teaching and conducting research in Human-Computer Interaction (HCI)
• Wikis for collaborative learning
• Blogs for community-building, reflection
• Podcasting
• 3D virtual worlds (Second Life)
• Research in Technology-enabled learning
• Usability and pedagogical effectiveness of e-learning environments
Part 2 of the Tutorial
Wikis

• A wiki is a collaborative authoring environment, ‘designed to facilitate exchange of information within and between teams’

• e.g. wikipedia; requirements gathering and management in a software engineering project

• wikis for collaborative creation of a report, a multi-author paper, glossary on a course

• e-portfolios (e.g. hair salon management course, MA English)

• students work in teams, peer and tutor review, knowledge-sharing and knowledge creation
Wikis

- Did the wiki activities facilitate collaborative learning as intended?
- Is a wiki a good medium for collaborative work in a distance-learning course?
- What are the challenges in collaborative writing? e.g. resolving conflicts amongst team-members, building trust and shared values; establishing norms for communication; and assigning the roles of the team-members contributing to a wiki (authors, editors, readers, facilitators).
Blogs

- A weblog (or ‘blog’) is a webpage that allows an author (‘blogger’) to publish their thoughts or diary as a series of ‘posts’.
- individual blogs, group blogs (e.g. in a project)
- What educational and social benefits of blogging do these students perceive?
- Can blogging support the development of study skills and research skills?
- What are the concerns of students about blogging?
Podcasting

• To investigate the role of podcasts in learning and teaching in distance education

• How course-related podcasts could improve the learning experience?

• Topics in the course(s) they are associated with and which would benefit from being presented as podcasts? Why these topics would be good choices?

• Any potential drawbacks of introducing podcasts and how these might be avoided?
Social software

- Effective use of social software in Higher and Further Education: externally-funded project

- 26 case studies: wikis, blogs, podcasts, Flickr (photo-sharing), Delicious (social book-marking), 3D virtual worlds

- What are the educational benefits of using social software? Workload issues of the educators?

- What are the concerns of students, educators and institutions regarding the use of social software tools?
Second Life

• Avatar-based interactions; avatar can fly, walk, sit, teleport to other locations in 3D spaces

• real-time interactions through voice, text-chat, instant messaging, gestures, facial expressions

• a sense of ‘being together’ in a ‘place’ with other avatars, similar to a face-to-face situation
Second Life

• Does Second Life facilitate socialisation and team working amongst students working on a team project at a distance?

• How does Second Life compare with other collaboration tools such as Instant Messaging or Skype?

• What are the difficulties that students experience in becoming acquainted with and working in Second Life?

• How does the pedagogy influence the design of 3D learning spaces, and vice versa?
Part 3 of the Tutorial
Need for conducting research

• to evaluate students’ perceptions and experiences
• do the technologies help to meet the learning outcomes of the activity or the course?
• to elicit students’ requirements; benefits to the students, educators and institutions
• to determine the scalability and sustainability issues
• aim is to inform the learning and teaching strategies within the OU and other institutions
Challenges

- not all students volunteer to participate in research projects
- conducting research within the ethical framework of principles and guidelines of institutions including The Open University’s
- students are at a ‘distance’: there is, therefore, less scope for informal conversations or discussions with students or emotional cues or feedback from students, as compared to face-to-face institutions
- Incentives for participation: varied practices
Trust, ethics and privacy

• Trust and ethics: informed consent, right to withdraw

• Privacy: confidentiality, anonymity, sensitive use of information

• data protection issues: university’s server space, Truecrypt.org - you can lock a part of the hard disk, Ironkey.com - USB drive which is password protected

• providing information at the recruitment stage through a project summary sheet
Techniques

• Surveys: initial insights and for recruitment
• pre-interview questions, open-ended questions, semi-structured interview, followed by validation
• reflective diaries
• focus groups or group interviews
• case-study methodology
• Data analysis: thematic or inductive analysis
• Analysis of blogs/texts, in general, discourse analysis
• interviews by Skype, instant messaging, phone, video-conferencing, or in Second Life
Skills of the researcher

- Facilitation skills
- building up trust and maintaining it with the participants
- Interviewing, formulating questions, and designing questionnaire is really hard and an area that should get more formal attention in our discipline and curriculum
- An understanding that an ethical framework in not onerous to follow but it should be perceived as a framework to guide ethical judgements and decisions in user-based studies
Accompanying Booklet

• Ethical challenges
• Resources on ethics including a sample consent form and project summary sheet
• Toolbox of techniques along with comments based on our experiences
• Pointers to resources and papers
• Not a definitive set of techniques or resources - but triggers for ideas and further research