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Enhancing teaching and learning with technology through collaborative research with students

Abstract

The recently published JISC inquiry into the implications of Web 2.0 technology for higher education highlighted how learners make effective use of Web 2.0 technology in social contexts. At present our knowledge of how university students and staff engage with and use Web 2.0 technologies, both through the Virtual Learning Environment (VLE) and outside of it is limited (Sharpe et al., 2005). This project aimed to explore how Sport Sciences students expect, use, and would like to see, technologies used to enhance their learning whilst at university. The methodology of the project is of note as it adopted a collaborative approach by involving students in development of the study, particularly in assisting with design of data collection tools, participant recruitment and interpretation of findings. The study involved interviewing twenty-one students about their familiarity and use of Web 2.0 technologies. These students also gave ideas for potential technological enhancements within the sport curriculum. This data then formed the basis of a staff and a student questionnaire used to ascertain broader views of Web 2.0 technologies as well as the perceived potential of such technologies to enhance student learning. The findings from this wider survey of staff ($n = 17$) and students ($n = 323$) informed curricular innovations in teaching and learning that involved introduction of Frequently Asked Questions (FAQs) and discussion boards in the institutional VLE as well as use of Facebook for specific student learning activity. The paper reflects on the learning through this project and its contribution to the scholarship of learning and teaching.

Introduction

The use of technology in universities has developed rapidly over recent years, and it seems that learners also have high expectations of technological provision in higher education institutions as well as using it in their social and leisure activities (Sharpe, Beetham, Benfield, DeCicco and Lessner, 2009). Moreover, it has been suggested that young people are now 'digital natives'; immersed in technology throughout their lives and familiar with technology to such an extent that educational methods need to change to keep pace with changes in student learning preferences, skills and interests (Prensky, 2001). For example, courses are beginning to experiment with the use of emerging technologies such as Second Life, or Facebook as learning tools; hooking into the increasing use of these technologies in young people's social lives. Whilst the notion of students as 'digital natives' is now being subject to more critical discussion and review (see Bennett, Maton and Kervin, 2008), there remains relatively scarce literature on how learners view, experience and engage with

technologies in their learning (Sharpe et al., 2005), or indeed how learners themselves would like technology to be used to their benefit (Sharpe et al., 2009).

This paper outlines the process and findings of a collaborative pedagogic research project in the then Division of Sport Sciences, which explored sport students' familiarity and use of technologies in learning. A key aim of the project was to be able to develop potential enhancements to teaching and learning within the sport curriculum, based on knowledge derived from this research and based on student input.

The full aims of the project were to:

1. Use research into student use of new and emerging technologies to inform curricular and teaching innovations
2. Enable staff to engage with contemporary developments in the use of technology in student learning to enhance their practice
3. Engage students in pedagogic research to analyse the current and future potential of technology to enhance learning within the curriculum

Methodology

The approach taken in this project was that of 'pedagogical action research' (Norton, 2009, p.50). That is, we felt this was a piece of systematic research, undertaken by practitioners, with the aim of improving learning and engaging with the pedagogic literature on learning. The research followed a characteristic action-research cycle; beginning with a current problem within sport of how best to engage and develop students through e-learning; inviting discussion through focus groups; planning a survey based on findings and reflections from these groups; and modifying practice based on the findings. Reflection occurred throughout the process, both individually and within meetings, and it is anticipated that further reflection and action cycles will follow.

The project arose initially through collaboration between a member of staff working in the sport department at Northumbria University, and a colleague who worked in the central Learning and Teaching Academy at Northumbria. However, we also aimed for collaboration with students in the processes of design, data collection and interpretation phases of the work. Our inclusion of students as researchers was based on our constructivist philosophy, emphasising our view that learning occurs through interactions with others (see Palincsar, 1998) and our belief that it was important that the ideas for enhancements derived from a shared understanding rather than the thoughts of lecturers alone – that is, we, as staff, were

also learning (see Boyer, 1990). At the same time, we felt that engaging students in pedagogic research was an important part of engaging them in a scholarly ‘community of practice’; exposing them to pedagogic research and developing their research and critical inquiry skills (Brew, 2003).

Student involvement

Fielding (2001) identifies four levels of potential student involvement or collaboration in research or inquiry 1) Students as a data source 2) students as active responders, 3) students as co-researchers 4) students as researchers. Fielding (2001) recognises that different models and levels of engagement by students and teachers are appropriate at different times and contexts, but suggests it is the level of ‘student as researchers’ that should be strived for, and which reflects transformatory assumptions and values about education and learning.

In the initial phase of the project, students were involved mainly as a data source: interviews were undertaken between October and December 2008 with 11 undergraduate students across levels 4, 5, and 6 (years 1, 2, and 3) and a focus group was undertaken with 10 postgraduate students (level 7). Students were provided with a list of technologies and asked to discuss both their knowledge of the technology and how, if at all, they used it. They were also asked to identify which technologies they were most familiar with, and which they were least familiar with. Students were also asked what they thought were ‘emerging technologies’, what they saw as the purpose of technology and what they expected of universities in relation to the use of technology in learning. Students were then invited to a subsequent interview to explore themes emerging from initial data analysis and to gain student input into ideas for potential curricular enhancements. Following the advice of Sharpe et al. (2005), students were asked about how they used particular technologies in their own life and subsequently how they might relate these to their learning, rather than asking about tutor provided technologies.

Student suggestions for enhancements, and their responses to the different uses of technology were used as the basis of the wider staff and student survey. Here, the students from the interviews or focus groups became more ‘active responders’ as they were asked for comments on the development of a wider student survey. This survey included asking students to ‘rank’ the student-identified enhancements on a scale of 1 (most value to learning) to 9 (least value in learning). Three students commented on the draft survey, and questions were subsequently changed to reduce confusion and to clarify particular questions.

Interviewees were then e-mailed to ask if they would be interested in being involved in the data collection phase and two final year students came forward. These students appeared to become more 'co-researchers' than active responders; they went into seminars, explaining to other students their involvement in the project and its aims, and invited participation from other students in the survey. In total, 344 student questionnaires were completed; 323 from level 4 and 5, and 21 from level 6. Postgraduate students did not complete the survey as the entire cohort had taken part in the focus group.

The two student 'co-researchers' who helped with data collection were also invited to comment on the findings and final write up of the project, and one helped with the dissemination of the project by presenting alongside staff at a cross-university dissemination event and at the SOTL conference. I believe that we did not fully achieve the level of students as researchers, however, and this has become the focus of a further reflective paper exploring SOTL and the notion of 'collaboration' between staff and students in higher education.

Analysis

Findings: Student use of technology in their learning

It was clear from our findings that students now expect universities to provide them with information and communication 'on the go'; laptops, wi-fi and access to information through the VLE are seen as essential aspects of university life. The VLE is widely used for gathering evidence and preparation of university work, with the university library resource NORA and search engines such as Google Scholar also viewed as key evidence gathering resources.

E-mail is also central to student communication and tutor support. Students view this as a direct way of contacting fellow students, and gaining information, advice and responses to questions from staff. Students identified the potential value of discussion boards in collaborative student learning, but also had issues with its use. Student comments suggested that success with discussion boards may be enhanced through integration and developing their use throughout the curriculum from level 4, encouraging use by peers and with greater direction and facilitation by staff. It is also important for students to see the use of these technologies as relevant and useful to their studies.

However, the research showed that the sport students were not as technologically literate as might be thought. Familiarity and use of emerging technologies remained confined to a minority of students. As such, the debate surrounding whether or not current students are

really ‘digital natives’ continues. The research revealed similar findings to the JISC (2009) inquiry and Sharpe et al. (2009) review of various projects. A minority of key technologies such as E-mail, Facebook and YouTube were in common use by almost all (over 90%) of sport students (and indeed, the majority of staff).

Second Life, Delicious and Twitter were rarely used by students, but there was some evidence of increasing familiar with a wider range of technologies, and using podcasts and Twitter significantly more. This may be due to increasing promotion of these technologies through the internet, and increased use of podcasting in the media (for example of news or other television programmes).

Lack of Engagement

The main reasons identified from the student survey for non-engagement with aspects of the VLE or technologies were primarily associated with lack of perceived need or relevance; lack of awareness of the technologies; and lack of knowledge/understanding in relation to how to use the technologies. Students also identified lack of use by peers (students and staff) and lack of direction from staff as factors influencing their non-engagement with aspects of the VLE. For the use of discussion boards, students identified both lack of use and or good facilitation by staff, plus a concern with ‘looking stupid’ through the type of posts that put forward for public display:

‘Discussion boards aren’t used particularly often in my course....when they are I don’t really engage with them because they tend to not be very useful in the way they are run. It just tends to be a lot of people asking the same questions, there is not much interaction on there, so I don’t engage with them’ (level 6 student)

‘...the whole not wanting to look stupid in front of your peers prevents you from using it I suppose’ (level 5 student)

Suggested Enhancements

Students comments in interviews related to a number of potential enhancements to the curriculum, notably the use of podcasts, interactive whiteboards, integration of discussion boards, group Facebook discussions, video-conferencing, and a Frequently Asked Questions section on modules. From the wider survey results, sport student potential ‘top three’ enhancements were identified as below:

Suggested Enhancement	Percent of student responses in the 'top three' rating
Integrating and developing use of discussion boards in all modules	48.1%
Introduction of a Frequently Asked Questions board for specific modules	51.5%
Introducing Blogs or Wikis in specific modules	11.5%
Introduce use of podcasts/video lectures for specific modules/levels	34.9%
Allow electronic assignment submission in specific modules	38.2%
Develop use of interactive whiteboards in lectures	41.6%
Develop use of video-conferencing	22.2%
Development of a Facebook-type community	46.6%

Initial Curriculum Developments

From these findings, the use of FAQ sections; the development of discussion boards, and the development of a Facebook type community were identified as potential areas to work on, with the use of podcasts a further development to explore. It was felt that the incorporation of FAQs was a fairly easy and 'quick' enhancement to begin to develop: so that students could see how their input had made an impact. This involved further collaboration between the Learning and Teaching Academy and academic staff and resulted in a 'new look' FAQ document for a placement module; providing instant access to responses in relation to gaining placements and the placement process. Further FAQs are anticipated for sport dissertation modules and student views on this will be sought. As a member of staff who had previously been unsuccessful with discussion boards, I also reflected on some of the comments made to revamp my use of the discussion board feature on the VLE. In particular, I tried to develop a more interactive style; providing tasks, asking questions and inviting peer to peer discussions as well as tutor-peer responses on a regular basis. In order to do this, I also engaged more with the e-learning literature to explore effective facilitation, noting that participants in on-line learning need to be supported in structured and

developmental way if they are to be successful, and it is important to facilitate student understanding of why they are learning in that way, as well as how to engage (Salmon (2007). From having 'zero' engagement in my discussion board, this increased to 13 participants in an on-line discussion task – slow progress, but progress nevertheless! I also presented the findings to a staff curriculum discussion, so that the issues, concerns and potential enhancements from students can be shared and taken further. A further pilot enhancement was the introduction of a 'Facebook' page for a final year module. Initial feedback on this, however, is that students are engaging with the page, but in a similar fashion to the way they engaged with discussion boards: hence further exploration of the use and facilitation of Facebook as a potential collaborative tool for learning is needed.

These initial enhancements are only the first step in the next action-research cycle exploring student use of technology in learning. What has been particularly important on reflection, however, has been the process: engaging students in research into e-learning

Feedback from these students indicated that they found it an interesting and valuable learning experience:

'I found taking part in the study interesting as I am interested within e-learning and new technologies. The focus group was good as it allowed the time for certain technologies that I hadn't heard of before to be explained to me, this helped when completing the survey at a later date. I also thought that the survey was very easy to fill in and was presented well. It was interesting to be involved in the research starting from the focus group and then seeing the survey that was produced using information from them. I found gaining student involvement fine as it took place in lectures meaning it is easier to improve engagement with the research' (level 6 student 1).

'Personally I found it interesting. I didn't realise how vast the differing databases there were, it challenged my own thinking and current learning. I feel that whilst there are lots of opportunities there is little information given to students, the focus group (there was only me in one session!) I attended allowed me to express ideas and thoughts of current and future learning tools' (level 6 student 2)