



Students' engagement with technologies: Implications for university practice

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The inexorable pace of technological change demands frequent modernisation of learning technologies and services to ensure they support equitable and engaging learning environments. Because of the resources involved, costs incurred need to be carefully weighed up against the potential benefits that upgrades will bring to students and their learning. In order to provide an evidence-based approach to planning, three Australian universities have recently completed a multidimensional survey to gain a better understanding of students' experiences and expectations of technologies in everyday life and for study purposes. More than 10,000 students responded. Technologies surveyed included established (email, learning management systems) and the more recent Web2.0 technologies (YouTube, Facebook). This paper presents the initial findings and implications they have for the development of technology-rich environments that are equitable, engaging and support quality outcomes.

Keywords: learning technologies, infrastructure planning, student experience

Introduction

Few can deny the pivotal role that technologies play in facilitating learning. Maintaining currency with the latest technologies however, incurs substantial costs to institutions, not only in developing robust technical infrastructure but also in the provision of educational development and support services. Hence, decisions about technologies need to be made with clarity of the potential benefits to students and their learning.

Kuh (2003), in his research on student engagement warns against universities making judgments about policies and practices in the absence of student engagement data or some comparable source of information. The danger of making decisions based on assumptions, rather than evidence, is borne out in research on the net generation, i.e. students 25 years and under. These students are claimed to have digital technologies central to their daily lives (Strauss & Hoew, 2006). However research by Kennedy et al. (2006) challenges assumptions of the digital literacy of net generation students as well as their interest in the use of digital technologies for study purposes. They found that the use of technologies was not as widespread in first-year students in Australian universities as expected. On the other hand, Oblinger & Oblinger (2006) in studies of American students, found that it is the mature-aged students balancing work, family and study who are more likely to be looking to use technologies to support their learning. Although this may have changed in the last five years, it does point to the value of understanding students and their academic and social practices; something that Gibbons (2007) maintains as necessary if students are to be placed at the centre of decisions about services and facilities.

The need to establish an evidence base to support future planning for learning technology infrastructure provided the impetus for three Australian universities – Macquarie University (Macquarie), the University of Western Sydney (UWS) and the University of Technology, Sydney (UTS) – to embark on a project to identify students' experiences and expectations of technologies. This paper reports on the preliminary findings from a survey, developed as part of the project, and also highlights the implications they have for future planning.

The survey

The survey was designed to provide insight into students' current and expected use of technologies for learning and also differences in academic use compared to use in everyday life. The development of the survey drew on several sources of information. The ECAR Survey, a United States based survey developed by Educause (ECAR, 2008), gave a perspective on how undergraduates think about and use information technology. The Great Expectations of IT Survey (JISC, 2008) from the United Kingdom, canvassed students aged 16–18 considering going to university about their expectations of technology provision. To preserve commonalities with these surveys we used them as a reference point in relation to the scope of technologies and issues to be canvassed. The Horizon Project, a project of the New Media Consortium (<http://www.nmc.org/horizon>), produces annual reports describing emerging technologies likely to have an impact on teaching and learning in universities. These reports were used to ensure the survey was forward looking, capturing emerging trends. In addition, the work of Kennedy et al. (2008) served as a reminder that not all students have access to, or use the latest technologies, hence we were careful to include the familiar established technologies (email, SMS, mobile phones) as well as more recent Web2.0 technologies.

Overall, the Learning Management System (LMS) (i.e. Blackboard) and 25 other technologies were surveyed: instant messaging, text message (SMS), email, collaborative/conferencing technologies (e.g. Skype, Elluminate), mobile phones for voice calls, mobile phones with internet access, social networking sites (e.g. Facebook, Myspace, Twitter), virtual worlds (e.g. Second life, Active Worlds), blogs, wikis, online multi-user computer games, podcasts/webcasts (e.g. YouTube), social bookmarking/tagging (e.g. del.icio.us, Diigo), software used to create audio/video materials (e.g. Audacity, GarageBand, iMovie), presentation software (e.g. PowerPoint, KeyNote), data analysis software (e.g. spreadsheets and databases), Google docs, e-portfolios, GPS tagging (e.g. Flickr, Picasa, blog), library search engines, internet search engines (e.g. Google, Yahoo), RSS feeds, interactive whiteboards, web development software (e.g. Dreamweaver, Front Page), and tablet computers (e.g. iPad).

The survey comprised 127 questions covering demographics, access to technologies for learning, administration, communication and everyday social and work purposes. Included were four open-ended questions to provide qualitative data about the student experience.

Procedure and results

The survey, open to all students, was delivered online at each of the universities through Voice Project (<http://www.voiceproject.com.au/>). Invitations were extended through the LMS and the regular avenues for student announcements at each of the universities. The survey was administered during 2010: in April at Macquarie, May at UWS and October at UTS. The combined responses yielded a data set of 10,269 participants: 1104 from Macquarie, 7419 from UWS and 1754 from UTS. Only a portion of the findings that relate to technologies for everyday use and coursework purposes are reported here.

Technologies used in everyday life

Participants were asked to indicate on a five-point scale (Never or Rarely, A few times a semester, A few times a month, A few times a week, or One or more times a day) how often they currently used the technologies listed above in their everyday life, for social and work purposes. The top 10 technologies used a few times a week or more were: internet search engines (93% of respondents), text message (SMS) (92%), email (90%), mobile phones for voice calls (83%), social networking sites (77%), podcasts/webcasts (54%), instant messaging (51%), mobile phones with internet access (50%), library search engines (36%), and Google docs (28%).

Technologies for learning

To explore current and future use for learning, participants were asked, *How often do you, and how often would you, like to engage in the following learning activities that use technologies as part of your course?* The top 11 technologies currently used are shown in Figure 1. The most popular was internet search engines with 90% of participants using them at least a few times a week. This was followed by library search engines (46%), social networking sites for groupwork activities (24%), and podcasts/webcasts created by lecturers (23%).

When these technologies were matched with participants' preference for future use (shown in grey in Figure 1), it can be seen that comparatively more use would like to be made of all technologies, except internet search engines and social networking sites. Two other technologies, not shown in the figure, were also rated highly: tablet computers (e.g. iPads) for information access and contribution (42%) and interactive whiteboards (33%).

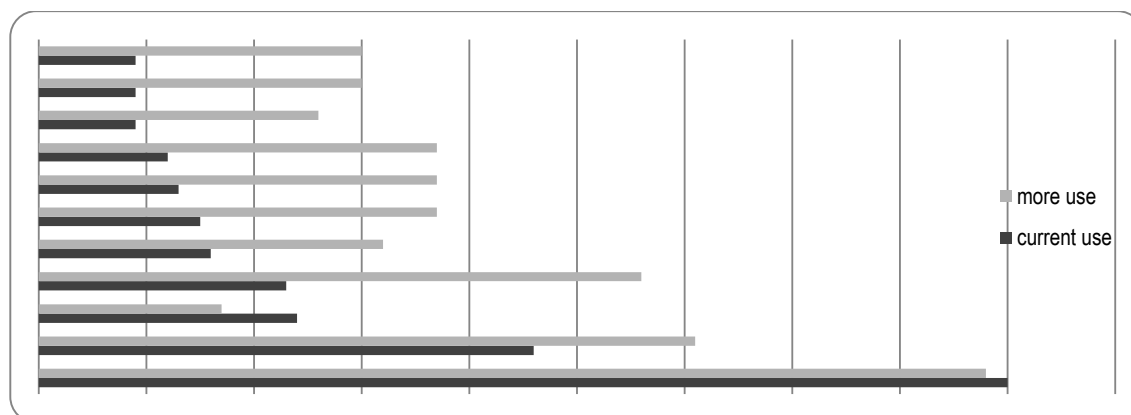


Figure 1. Students' current use of technologies compared with preferred use for learning

With regard to the LMS, participants were asked to indicate their use of 12 tools/functions. Their current use in rank order is: access to content (56% of participants doing so at least a few times a week), announcements appearing at login (56%), access to unit outline (40%), access to lecture recordings (37%), discussions (36%), quizzes for assessment (28%), tracking of progress and grades (26%), mail (22%), quizzes for feedback (19%), submission of assignments (17%), return of assignments (14%), and sharing work with other students (13%). In the future, students would like more use made of all tools and functions, with the strongest demand for lecture recordings with a 27% increase, followed by increases for assignment submission (23%), quizzes for feedback (21%), tracking grades and progress (21%), return of assignments (19%) and discussions (18%).

Web 2.0 technologies

There is quite a lot of speculation about the use of Web 2.0 technologies for learning, particularly applications

that are popular in everyday life. Figure 2 shows the current use for social and work purposes (black) and preferred use for learning (grey).

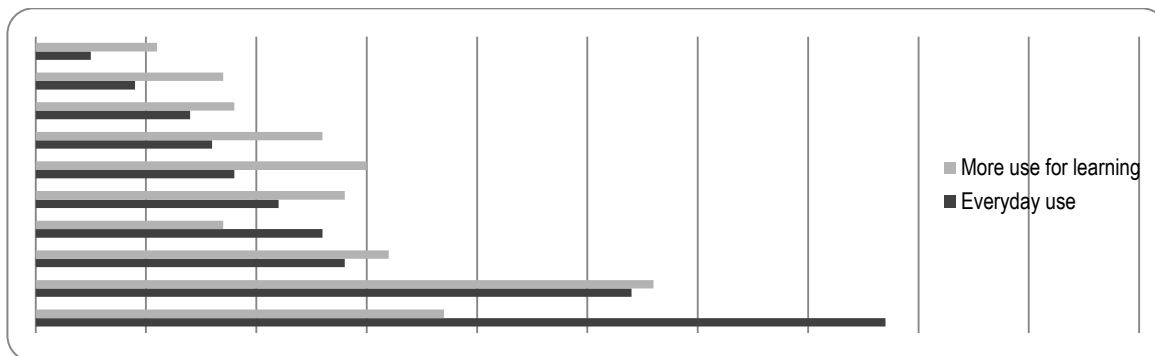


Figure 2. Students' current everyday use of Web 2.0 compared with their preferred use of learning

It can be seen that in everyday life the most frequently used Web 2.0 technology is social networking with 77% of respondents using it at least a few times a week. However, most students clearly do not want more use made for educational purposes, with preferred future use for learning falling to 37%. A similar but weaker pattern was evident for wikis. This was not the case for the other technologies shown. In everyday life, little use is made of virtual worlds (5%), tagging (9%), e-portfolios (14%), blogs (16%) and RSS feeds (18%) with somewhat more use being made of Skype/Elluminate (22%), Google docs (26%) and podcasts (54%). Nevertheless, these technologies are seen to have some educational value and students would like more use made of them.

Implications and concluding comments

The findings presented provide a snapshot of emerging trends. Overall, there is a clear message that students would like more use made of almost all technologies to support their learning. An exception to this is social networking, which is clearly seen as a technology for everyday use. The technologies that are currently used most often for learning are search engines, library databases and e-materials, and the functions in the LMS related to accessing information and resources. For future use, a similar pattern emerges with the strongest preferences being for search engines, access to online content through the LMS, announcements (LMS), lecture recordings (LMS), and podcasts/webcasts created by lecturers, followed by the LMS tools (discussions, access to unit outline, tracking progress, quizzes for feedback and assessment purposes). This suggests a continued focus on the development of the core, mainstream technologies in the university is warranted.

Looking at the comparative differences between current and future use, as opposed to outright rankings, gives an indication of the technologies associated with the strongest demand for increased use. Appearing in this group are mainstream technologies; podcasts, lecture recordings, and LMS tools for assignment submission, tracking progress, quizzes for feedback and assessment. Other technologies in the group reflect an increasing demand for mobility, flexibility in access and synchronous interaction and these are: tablet computers, e.g. iPads, to access and contribute to activities; mobile phones to access and contribute study-related information on the internet; interactive whiteboards to participate in tutorial-based learning activities; and web conferencing, e.g. Skype/Elluminate, to join in remotely to lectures or tutorials.

A cautionary note when interpreting the findings is that students' ratings could be influenced by their current experiences of learning and teaching with technologies; if courses are not designed to encourage new learning experiences and use of emerging technologies, their future potential may not be evident. If the full potential of these technologies is to be exploited, then academics must have the understandings, skills, support and time to enable their effective integration into the curriculum. Students' current experiences of campus infrastructure and support facilities also need to be taken into consideration. Although not shown here, satisfaction levels with these were quite low at all three universities. The reliability of technologies on campus, availability of wireless networks and power points to charge devices, and spaces to use mobile devices, attracted satisfaction levels of between 45% and 49%. Not only could this impact future use, it has serious implications for the present.

Overall, the findings suggest the need for continued investment in core technologies and services to promote

more reliable access and effective use. However this should not exclude investment in more recent and emerging technologies, as there is a growing demand and awareness of their potential. Further analysis is taking place exploring the use of the LMS, differences between cohorts (e.g. disciplinary groups, low SES students, international, distance and on-campus students) as well as individual differences (e.g. age, gender). There is also the potential for repeated use of the survey to increase the database and provide a profile of changing usage patterns over time.

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