

Executive Summary

It has been widely suggested, and in some respects accepted, that a so-called Net Generation of students is passing through our universities. Born roughly between 1980 and 1994 these students have been characterised as being technologically savvy, having grown up in an age where computers, mobile phones and the Internet are part of mainstream culture and society. A number of commentators have even suggested that educators – whom they label ‘digital immigrants’ – need to radically adjust their teaching and learning strategies to accommodate their ‘digital native’ students, predominantly by adopting and capitalising on the affordances of emerging technologies.

This project explored the notion of the Net Generation in higher education to gain a better understanding of:

- students’ and teachers’ current technological experiences and preferences (in the *Investigation* stage of the project); and
- a range of issues associated with the implementation of emerging technologies in local learning and teaching contexts (in the *Implementation* stage of the project).

This Handbook represents a key project outcome and this *Executive Summary* aims to distil its key findings and elements. The six statements presented below represent the main messages that have emerged from the *Educating the Net Generation* project.

1. The rhetoric that university students are Digital Natives and university staff are Digital Immigrants is not supported.

An extensive literature review revealed comparatively few comprehensive empirical studies of the Net Generation (see studies from the *PEW Internet and American Life Project* and the *Educause Centre for Applied Research* from the United States). Studies from Australia and the UK began to emerge from 2006. Available research indicates that young people tend to be high users of established technologies, such as computers, the Internet, email and mobile phones but are less likely to use emerging technologies, including so-called ‘Web 2.0’ technologies. This research also suggests that even though young people’s access to and use of computers and some information and communications technologies is high, they don’t necessarily want or expect to use these technologies to support some activities, including learning.

The evidence from the Investigation stage of the project does not support the notion that a homogenous group of Net Generation students, broadly adept with the latest technology, are entering our universities. We found little evidence that technology usage patterns can be explained primarily on the basis of broad generational differences – dispelling the digital natives versus digital immigrants argument. While age did account for variation in two technology-based activities (*Advanced Mobile Use* and *Media Sharing*), the average difference between younger

and older people was small and the absolute level of engagement these activities was low.

Any differences in students’ technology usage patterns were more likely to be related to the university they were attending and a range of other key demographic variables including their gender, whether they were domestic or international residents, and their socio-economic status. However, technology use did not vary significantly according to subject discipline, and the magnitude of any differences between groups of students, even when significant, was generally small.

2. There is great diversity in students’ and staff experiences with technology, and their preferences for the use of technology in higher education.

Both the Investigation and the Implementation stages of our project provided striking evidence revealing the diversity of technological experiences of both students and staff. It cannot be assumed that incoming university students are broadly technologically literate, just as it cannot be assumed that university staff are broadly technologically backward.

The results of our Investigation stage – reported in Section 3 of this handbook showed students were relying on core technologies for the fairly traditional purposes of communicating and information gathering. Students reported very high use of mobile phones for calling and texting, and the Internet for accessing general information, reference information, and email. Web 2.0 technologies such as blogs and wikis were used by a small proportion of students and while there was evidence that social networking, digital file sharing and podcasting were popular among a minority of students, very few students were regularly using technologies such as social bookmarking.

Students were generally more positive than staff about how useful technologies could be in supporting university-based learning and teaching; staff were generally more sceptical and unsure about the potential value of technologies. None of the technologies included in our survey was universally accepted as being useful in learning and teaching.

There are at least two clear implications of this diversity: caution should be exercised when making assumptions about what students or staff already know or prefer in relation to technology, and a one-size-fits-all approach to the implementation of learning technologies is unlikely to succeed and should be avoided.

3. Emerging technologies afford a range of learning activities that can improve student learning processes, outcomes, and assessment practices.

The overall evaluation of students’ discipline-based understanding across the eight implementation projects was somewhat equivocal – the number of students who reported that the activity helped develop their understanding was similar to the number of those who didn’t. Students were,

however, more likely to report that the implementations helped them develop a greater understanding of how to use particular technologies in their studies. When implementations were considered individually, there were clear cases in which the use of emerging technologies positively impacted on students' learning processes and outcomes in areas such as self-reflection, peer evaluation and independent research skills.

A clear theme that emerged across all evaluations was that many students recognised or gained unexpected benefits from their exposure to the ideas and experiences of other students that were shared using Web 2.0 technologies. The use of publishing and information sharing tools, such as wikis, blogs and photo sharing sites, positively impacted on many students' engagement with the subject material, their peers and the general learning community.

Another clear finding was that the use of new and emerging technologies often provided new opportunities in assessment practice. Specifically, these technologies often provided more flexible access to and opportunities for both informal, formative self-assessment by students and informal, formative assessment by teachers. The latter, in particular, presented opportunities for 'contingent teaching' whereby staff were able to tailor their classes to better align them with the needs of students.

4. Managing and aligning pedagogical, technical and administrative issues is a necessary condition of success when using emerging technologies for learning.

The success of the implementation projects seemed to depend on how the pedagogical, technical and administrative components of the task were designed, managed and integrated. It was clear that despite the best efforts of staff, students could become disengaged or disgruntled if they felt the activity was not educationally relevant or if it was not well supported technically or administratively. Simply matching a learning design (e.g. collaborative writing) with a technology (e.g. a wiki) is unlikely to guarantee student engagement if the learning activity is not adequately supported within the course of study.

Positive staff and student experiences with learning technologies were consistently associated with learning activities that were clearly integrated within the broader curriculum and assessment. Students in particular are more likely to appreciate the value of a learning activity when its assessment criteria and its specific alignment with their learning objectives and the broader curriculum are made explicit. However, there are significant challenges associated with clearly communicating the requirements of students and their responsibilities when using new learning technologies, particularly when unfamiliar technologies and learning activities are being employed.

5. Innovation with learning technologies typically requires the development of new learning and teaching and technology-based skills, which is effortful for both students and staff.

From the Implementation stage of the project it was clear, but perhaps not surprising, that designing, developing and implementing learning activities involving new and emerging technologies can require both staff and students to develop new technological skills. What was more surprising was that some key but non-technological aspects of the learning activities (e.g. collaborative work) were *also* novel to staff and students. As a result, staff and students were required to develop new general skills, including the ability to negotiate new roles with staff members and fellow students.

Guidance and time is needed to develop these two sets of skills; both in the design and development of learning tasks that employ new and emerging technologies and also in their implementation in undergraduate studies. The development of all the learning activities trialled in this project required a team with a diverse set of skills and involved a significant amount of effort on the part of team members. This should not be underestimated by individuals or by those responsible for staff development.

6. The use of emerging technologies for learning and teaching can challenge current university policies in learning and teaching and IT.

The findings from the Investigation and Implementation stages of this project clearly show that many areas of university policy warrant review and updating so as to accommodate opportunities and challenges raised by learning and teaching with emerging technologies.

For example, many Web 2.0 technologies enable students to publicly publish and share content in forums hosted outside their university's infrastructure. This raises complex questions about academic integrity including issues of authorship, ownership, attribution and acknowledgement. Most staff were alert to potential difficulties of plagiarism in online environments, but staff and students were less clear about the conventions for attribution and acknowledgment of material published using new media, or about the rights to re-use material produced by themselves and others.

Institutional guidelines in the area of educational technology often fall into 'learning and teaching' policy and 'IT infrastructure' policy. Attention needs to be given to the revision and integration of some policy areas – the rights and responsibilities of the institution, individual staff members, students, and other interested parties – when it comes to learning and teaching with emerging technologies.