The Internet in Tertiary Education: A survey of students' Internet activity

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Abstract: This paper presents the findings from a survey of 752 Australian University students and their families. It examines the extent to which individuals engaged in various Communication, Recreation, Information, Production and Transaction activities on the Internet. The results clearly identify the popularity of certain Communication and Information-seeking activities and the limited way many Production technologies have been embraced at this point in time. Amongst other things, the data highlights variations in certain types of Internet activity based on age and identifies activities that may become second nature for future generations of University students, in a similar way to email and information-seeking have for current generations.

Introduction

It is currently estimated that of the 6,676,102,288 current global population, 1,463,632,361 (21.9%) use the Internet (Internet World Stats, 2008). Of this population of Internet users there is supposedly a new generation who, born between 1982 and 1991, are known as the 'Net Generation' (aka, Net Geners, Digital Natives, Millenials, iGeneration). This generation are now aged between 17 and 27 years and began using computers between the age of five and eight years (Oblinger & Oblinger, 2005) (Oliver & Goerke, 2007). It is claimed that they possess unparalleled technological competence because the Internet has always existed in their world. This generation are claimed to possess skills and characteristics that 'Baby Boomers' and 'Gen X' do not understand. This creates a debate between what University educators offer and what the NetGen want and need. The counter-argument is that the landscape still unknown and we should not make decisions about integrating new Internet technologies into the curriculum based solely on perceived desires of a particular generation of students.

It is argued here that pedagogical decisions be based on students' actual experience, exposure and access to the Internet and not on their year of birth. This paper commences with discussion of the current landscape of Internet use in tertiary education. The paper then moves to present the findings of an online survey which was emailed to students currently in the Faculty of Education and the Faculty of Humanities and Social Sciences in an Australian city-based University. This survey investigated the frequency with which respondents used different Internet applications in their daily lives. These findings are contrasted with similar studies emerging from Australia and internationally. Discussion then moves to identify issues surrounding the integration of various Internet technologies in Universities.

The Internet in Tertiary Education

Discussion abounds on the need to integrate new technologies into higher education but there is not substantial empirical data to support this move from either a student preference or pedagogical perspective. As Roberts (2005) highlights, students have rarely been directly engaged in dialogue to determine how technology might be integrated to improve their learning. Presently technology appears to be favoured by University students for its convenience, flexibility, self-pacing (Hartman, Moskal, & Dziuban, 2005; Kvavik, 2005), rather than being valued for its contribution to their learning. Further, students value the traditional traits of a good lecturer (eg. knowledgeable, motivated, engaging) above the use of new technologies (Harman, Moskal & Dziuban, 2005; Roberts (2005).

Studies evaluating the integration of specific Internet technologies in tertiary education are emerging; particularly the use of wikis, blogs and social bookmarking. One significant limitation in many of these studies is that they are being carried out in technology-focused subjects and courses where students have, by enrolling in these subjects, indicated a preference toward technology use. Lockyer & Patterson (2008) investigated the integration of popular photosharing website Flickr in a postgraduate ICT subject at a regional Australian University. They concluded that some students experienced frustration with the site but, because its use was directly related to the content being studied, the opportunity to learn new skills outweighed the frustration. Similarly, Williams & Jacobs (2004) examined the use of blogs in the Graduate School of Business at the Queensland University of Technology. They concluded that students were generally in favour of using blogs. However, as instructors, they needed to give the students more direction from the outset and make clear what the students could expect to get out of the experience. They also identified problems in linking the blog to assessment.

Others have introduced such technologies in tertiary education to demonstrate their usefulness in the workforce. Sendall, Ceccucci & Peslak (2008), for example, investigated the use of blogs, wikis and social bookmarking within an introductory information systems course at two United States colleges. The study concluded that there was a significant increase in knowledge and comfort levels using the Internet technologies after specific instruction and they were judged to be useful in both classroom and in the workplace. West, Wright, Gabbitas & Graham (2006) also introduced blogs (and RSS feeds) with undergraduate preservice teachers in order to facilitate learning and provide knowledge of a tool which could be used once entering the teaching profession. It was found that most students somewhat enjoyed using blogs and considered them to be helpful tools for stimulating reflection. However, problems associated with using blogs included: mastering the technology; students neglecting their blogs; and the monitoring and assessing of fifty individual student blogs.

Further review of research in the area reveals some commonalities: (1) technology is primarily valued by students for its convenience and flexibility; (2) students value lecturer knowledge and skill above the use of technology for effective instruction; (3) where new Internet technologies are being trialled, lecturers and students are experiencing difficulties in mastering the technologies in the first instance (4) the use of Internet technologies must have a defined purpose which can be explained to students. Given this, it is necessary to take a step back and determine how current and future University students are actually using the Internet in daily life. This will enable us to more readily identify the skills students may possess and the areas where instruction and guidance is necessary. Investigations of this nature are emerging and presented in Table 1 below several relevant studies are identified.

Authors	**Location**	**Surveyed Population**
Oliver & Goerke (2005/2007)	Australia	University students (N=703)
Kennedy, et al (2007) & Kennedy, et al (2008)	Australia	University students (N=2588) NOTE: students born after 1980
Australian Government (2006/07) (2008)	Australia	General population (HUIT data N=17040) General population (various sources) (Morgan Stanley N=25000+) (Nielsen Online N=1906) (Woolcott Research N=1600+)
PEW Internet & American Life Project (2008)	United States	General population (24 Oct-2 Dec 2007 N=2054) (3 Aug – 5 Sept 2007 N=2400) (entire total unclear)

Table 1: Internet-Use Studies

In the results section of this paper the findings from the survey which forms the basis of this paper are contrasted with the findings from the four studies in Table 1.

Research Design

An online survey was created using an in-house University survey tool. After gaining approval from the Deans of the Faculty of Education and the Faculty of Humanities and Social Sciences the survey was emailed to all undergraduate and post-graduate students. In the accompanying email to students it was stated that others within the household of the original recipient could also respond. This was done to gain insight into a broad range of Internet – users, rather than limiting findings to full-time students from the NetGen. This approach has enabled some comparisons to be made between gender, different age groups and those who class themselves currently as full-time University students or who identify more closely with working full-time or part-time (with University playing a lesser role in their lives). This approach also enabled data to be collected from 167 adolescents aged between 15-17 years, who currently reside with a University student and reflect the future generation of University students. The survey was open from Nov 07 – Feb 08. From this population there were 752 respondents and a breakdown of demographics is presented in Table 2 below.

GENDER	Male	24.4% N=183
	Female	75.6% N=569
AGE	15-17	22.2% N=167
	18-20	25.2% N=192
	21-25	10.6% N=80
	26-30	11.4% N=86
	31-35	13.7% N=103
	36-45	13.2% N=99
STUDY/EMPLOYMENT STATUS	Full-time University student	47.3% N=354
	Full-time employment	35.4% N=265

	Part-time employment	13.4% N=100

NOTE: age & study/employment status outliers excluded hence totals not 100%

Table 2: Respondent demographics

This sample is clearly limited given the over-representation of women and people aged between 18-25 years but the sample does still provide some insight into Internet activity of 752 Australians who all have a connection (to some degree) with a University.

Findings

The survey asked respondents to identify the extent to which they engaged in various Internet related activities (either daily, weekly, monthly, yearly or never). Five core uses for the Internet were identified (CRIPT):

Communication	*Communication* - activity which enables synchronous or asynchronous interaction with other select users.
Recreation	*Recreation* - activities undertaken for personal fulfilment and/or enjoyment.
Information	*Information* – activities where the primary purpose is to inform oneself on an issue, event, activity, etc.
Production	*Production* - activities where the user is posting new content, using Web 2.0, generally for a wider audience
Transaction	*Transaction* - all financial related activities

The specific Internet activities within each CRIPT category are presented below.

Communication	Email	Instant messaging (IM)	Chatroom	Online social networking (OSN)		
Recreation	Watch YouTube	D/load music	D/load television shows	D/load movies	Dating sites	Online games
Information	Watch/read/listen to news	Search info: products/services; recreation activities; 'how-to'; study/work				
Production	Post photos	Blog	Add to a wiki	Social bookmarking	Contribute feedback/reviews	Create/post video
Transaction	Bank	Purchase tickets	Buy/sell online (inc. auctions)			

The percentage of respondents who engage in each CRIPT activity was determined. These rates are presented in Figure 1 below.

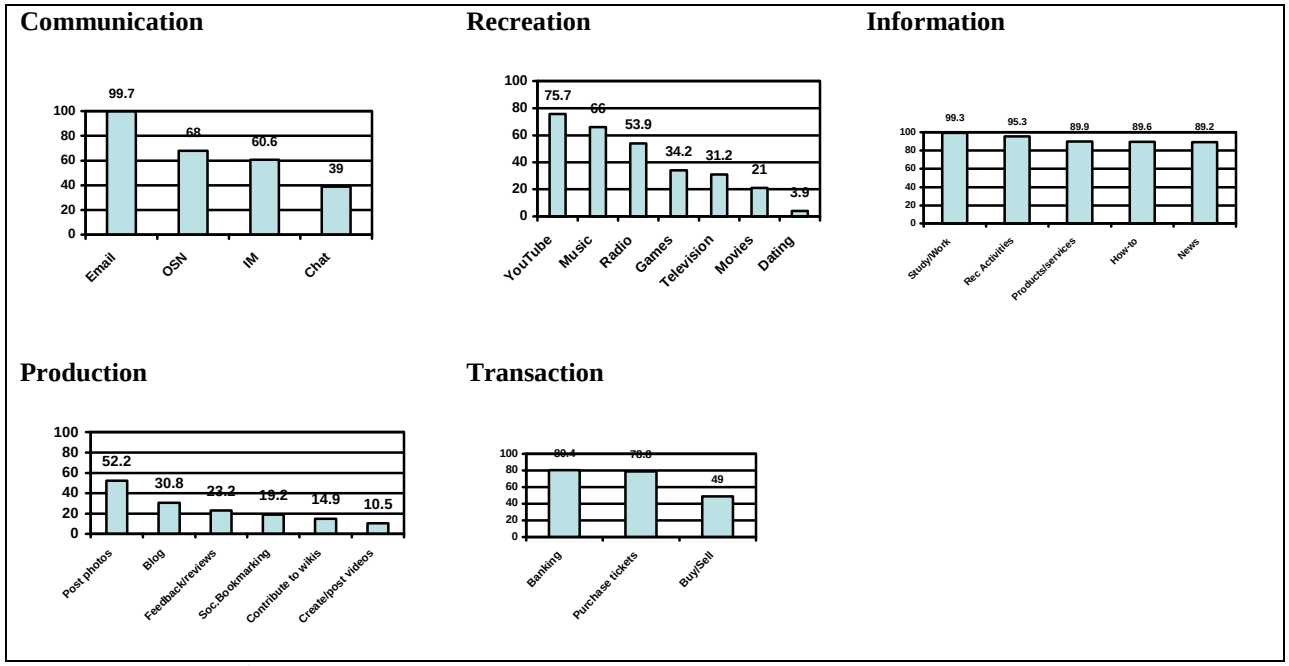

Figure 1: % of respondents engaging in the various CRIPT activities

Identifying the percentage of respondents engaged in each type of activity is useful to obtain an overview of general Internet activity. However, it doesn't enlighten us as to which are the more popular and frequently engaged activities, because although a significant percentage may engage in an activity they may do so as a one-off. This activity could not then be considered part of day-to-day life. Given this, popularity of Internet activity can be ascertained, to some extent, by reviewing the data in terms of percentage of respondents who engage in the activity

on a daily/weekly basis. Taking this approach, the 20 most popular activities identified from this survey are listed in Table 3 below.

Daily/Weekly Engagement		%			%
1. Email	C	98.8	11. Search info recreation activities	I	37.2
2. Search work/study related info	I	88.7	12. Download music	R	26.0
3. Listen/read/watch news	I	69.7	13. Listen to radio	R	17.7
4. Banking	T	59.8	14. Post photographs	P	13.8
5. Online social networking	C	53.5	15. Participate chatrooms	C	13.0
6. Instant messaging	C	48.9	16. Download television shows	R	12.0
7. Purchase tickets	T	48.4	17. Blog	P	11.8
8. Search info products/services	I	41.5	18. Social bookmarking	P	8.1
9. Search 'how-to' info	I	39.0	19. Download movies	R	5.7
10. Search/watch YouTube	R	38.8	20. Buy/sell online	T	4.9

Table 3: Most popular CRIPT activities

It is noted that PEW (2008) also reports the three most popular online activities (based on daily use) to be email, using a search engine to find information and getting news. The Australian Government (2008b) report email, banking and news, sport or weather updates as the most popular consumer activities. It is important to note that the data presented in Table 3 presents only one side of the story. We must also consider that a substantial proportion of respondents may never have engaged in an activity. Another way to examine the data is to identify the activities which are 'never' undertaken by respondents. From this perspective the 20 least popular activities were ascertained (Table 4).

Never engage		%			%
1. Create/post videos online	P	89.5	11. Post photographs	P	47.8
2. Contribute to wikis	P	85.1	12. Listen to the radio	R	46.1
3. Social bookmarking	P	80.8	13. Instant message	C	39.4
4. Download movies	R	79.0	14. Download music	R	34.0
5. Contribute feedback/reviews	P	76.8	15. Online social networking	C	31.2
6. Blog	P	69.5	16. Search/watch YouTube	R	24.3
7. Download television shows	R	68.6	19. Purchase tickets	T	19.0
8. Play online games	R	65.8	18. Banking	T	19.6
9. Participate chatrooms	C	61.0	19. Listen/read/watch news	I	10.8
10. Buy/sell online	T	51.0	20. Search 'how-to' information	I	10.4

Table 4: Least popular CRIPT activities

This alternative perspective of 'popularity' highlights issues with ranking based solely on number of people who engage in the activity. For instance, downloading music is the 12th most popular activity in terms of daily/weekly use for those who do engage in the practice, however, 34% never engage in this activity. Similarly, about half of all respondents purchase tickets on a daily/weekly basis but one-fifth of respondents have never purchased tickets via the Internet. Further examples from the 'Communication' category, we see that 48.9% of this surveyed population use IM on a daily/weekly basis but a substantial proportion (39%) have never used IM. Further, 38% of respondents search/watch YouTube videos on a daily/weekly basis, while 24.3% have never accessed YouTube. We must be careful, as educators, when trying to understand the experiences of our learners that we question statistics that possibly over-represent or under-estimate the use of particular technologies.

To more fully understand the current landscape of popular Internet activity this paper now moves to explore how different cohorts of Internet users engage with the Internet in day-to day life. Each of the activities making up the CRIPT categories is now explored in terms of gender, age and current employment/study status.

(a) Communication

There were four activities under the category 'Communication' - email, online social networking, instant messaging and chatrooms. Figure 2 provides detail of the percentage of respondents who engage in each of these four activities.

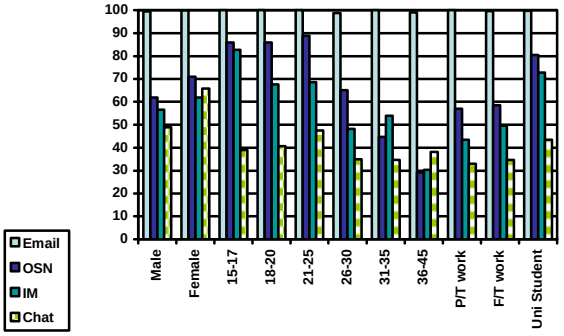

Figure 2: % of Internet users engaged in Communication activity

Email is as common as picking up a pen for the respondents of this survey and is popular across all cohorts – with 98.8% using it on a daily/weekly basis. Kennedy et al (2008) similarly found that 97.3% of University students use email regularly. Other studies of the general population support these findings. The Australian Government (2006-07) found that 98% of the Australian population use email and PEW (2007) reports that 92% of the US population aged over 18 years sent or received email. This is not surprising given that email evolved alongside the development of the Internet and by 1993 email was adopted globally on a large scale (Crocker, undated). It has been used as a communicative tool for the past 15 years. This forces us to consider how newer Internet technologies might indeed also reach such widespread popularity over time.

IM was not found to be as popular as email. It is more likely to be used by those aged under 25 years and those who currently identify as full-time University students. However, the full-time University students in this study reported lower usage levels than Australian University students surveyed by Kennedy et al (2007) who initially reported 77.2% used IM and reported in 2008 that 10.4% had never used IM. Oliver & Goerke (2007) claimed that 87.8% use IM for personal use and 86.5% used it in study (although very infrequently). Initially it could be assumed IM was not as widely used because it has not been available for as long as email and, to some degree this is true. However, from the mid- to late-1990s IM was accessible through some of the large companies (eg. AOL, Yahoo and Windows MSN) (deHoyos, undated). This means its accessibility by the general population was not substantially behind email, so reduced uptake is more likely due to the function of IM rather than its history.

OSN usage was similar to IM in that it is more popular amongst those aged under 25 years and those who identified as full-time University students. However, given the relative short history of OSN it is interesting that it has been taken up by 68.8% of the surveyed population. The figures reported here are higher than those obtained by Kennedy et al who reported in 2007 that 43.5% use social networking sites while the figures reported by PEW (May 2008) suggest 30% of US citizens aged over 18 years use OSN. The higher rates in this study would be due to the inclusion of <18 year olds who were excluded from other studies but are heavy OSN users.

It was found in this study 39% of the respondents visit chatrooms and of that population almost half do so on a daily/weekly basis. Given the varied nature of online chatrooms up-to-date data on their popularity proved difficult to obtain. PEW (September 2005) report 22% of American citizens had accessed a chat room or online discussion. Other accounts have suggested there is a decline in online chat. Several reasons have been put forth for this decline, including: the growth of other forms of online communication; influx of younger people infiltrating chatrooms and reducing quality and, online safety concerns about predators (Greenspan, 2003).

(b) Recreation

There are seven activities which fall within the category of 'Recreation' - searching/watching YouTube, downloading music, streaming radio, playing online games, downloading television shows, downloading movies and visiting dating sites. The popularity of these activities across the various cohorts is presented in Figure 3 below.

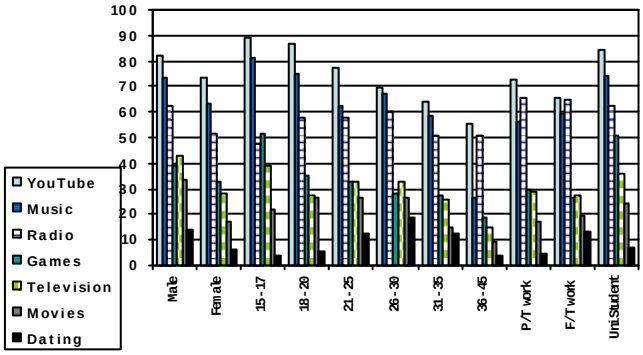

Figure 3: % of Internet users engaged in Recreation activity

YouTube is ranked as the third most popular website globally (after Yahoo and Google) and is the sixth most popular site in Australia (Alexa, 2008). It is not surprising then, to find it is the most popular activity under the Recreation category with 75.7% of respondents found to search/watch YouTube videos. Access to YouTube by these respondents was substantially higher than the PEW data which indicated 52% of the general population watch videos on a video-sharing site like YouTube or Google Video. From this survey it was revealed that searching/watching YouTube videos decreased with age and those in full-time employment are less likely to visit the YouTube site. It is important to note when considering the integration of a video-source such as YouTube in tertiary education, that although a substantial proportion my search and watch these videos very few respondents reported actually creating them. We should certainly not assume students have the underlying skills to create and upload a study related video.

The next two most popular activities from the Recreation categories were downloading music and listening to music or the radio online. Sixty six percent reported downloading music, while 53.9% stream the radio. This is slightly lower than reported by Kennedy et al (2007) who found that 73.5% of the University students they surveyed used the web to listen to sound recordings. However, the findings here are considerably higher than the PEW findings which suggested as at December 2007, 37% download music files to their computer and in May-June 2004 reported that 29% listen to a live or recorded radio broadcast online. This suggests that University educated persons are more likely than general population to download audio.

Similar to IM, playing online games was another area with some discrepancy between the various cohorts. Those aged between 15-17 years were far more likely to play online games than older persons. Full-time University students were also more likely to play than others. Kennedy et al (2007/2008) only surveyed University students who were considered to be from the Net Generation (where 80% of respondents were under 25 years) and a similar rate of usage was identified here. The PEW report of general US data (as at August 2006) suggested 35% play online games.

Downloading television shows and movies from the Internet are less popular activities than the four discussed immediately above. However, two fifths of respondents have downloaded a television show and one fifth have downloaded a movie. Men were more likely than women to do so and downloading either television shows or movies certainly decreased with age. The findings were closely aligned with that reported by PEW who found that 27% of respondents had downloaded video files to their computers.

Finally, the use of online dating sites was found to be very low at only 3.5% in this study. As is one of the major limitations of self-reporting in surveys, it is unclear the degree to which individuals may not want to acknowledge their use of this online service. The findings are, however, similar to that reported in the PEW data which reports that as at December 2006, 6% of the surveyed population reported visiting an online dating site

(c) Information

The third category to be explored is 'Information'. This category is comprised of five 'searching' activities: for information for work and/or study purposes; on recreational activities; on products/services; searching for 'how-to'

information and watching/reading/listening to the news. The percentage of respondents within each cohort who engage in these activities is presented in Figure 4.

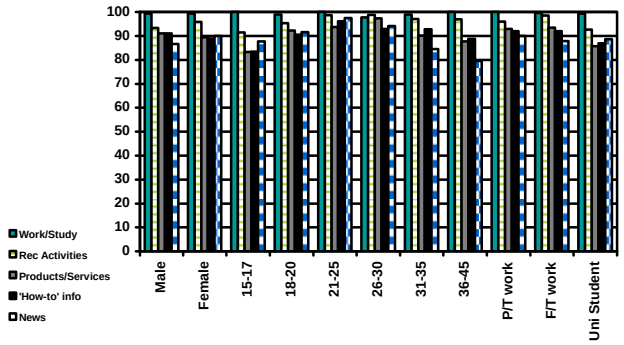

Figure 4: % of Internet users engaged in Information-seeking activity

Using the Internet as a tool for accessing information was easily the most popular category across all cohorts. Second only to email was using the Internet for work or study-related purposes. Kennedy et al (2008) similarly found that 97% of the University students engaged in work/study related online activity and did so on average 4.2 hours per week. Oliver & Goerke's (2007) also found in their study of Australian University students that over 90% used online resources for study purposes. The Australian Government (2008a) report that just over half (53%) of Australian citizens use the Internet for education or study and a similar proportion (52%) use it for work related purposes. This is reflected in the activities of the US population and PEW (Feb/March 2007) data reports that up to 51% of surveyed population do some type of online research related to their work.

Over 90% of respondents have used the Internet to search for information beyond work/study, be it for recreational activities, products/services or 'how-to' information. Kennedy, et al (2007) report that 96.3% of their respondents use the Internet to browse for general information (eg. news, holidaying, event timetables) and this is spread mainly across several times per day(23%), once per day (20.2%) or several times per week (27.7%). PEW data indicated a lesser percentage of the general population engage in these activities, but still a substantial proportion of adults surveyed did make use of a search engine to find information (89%), look for info online about a service or product you are thinking of buying (81%) and look for 'how-to' 'do-it-yourself' or repair information (55%).

The final activity to be explored under the Recreation category was listening/watching/reading the news online and it was found that almost 90% of the surveyed population use the Internet to access news, ranking it as the third most popular online activity, in terms of being done on a daily or weekly basis. PEW (May 2008) report a lesser, but still significant proportion of the population (73%) obtain news through the Internet.

(d) Production

There are six online activities which fall under the category of 'Production' - posting photos, blogging, adding information to a wiki, social bookmarking, contributing reviews/feedback and creating/posting videos. The degree to which these Production activities are engaged is presented in Figure 5 below.

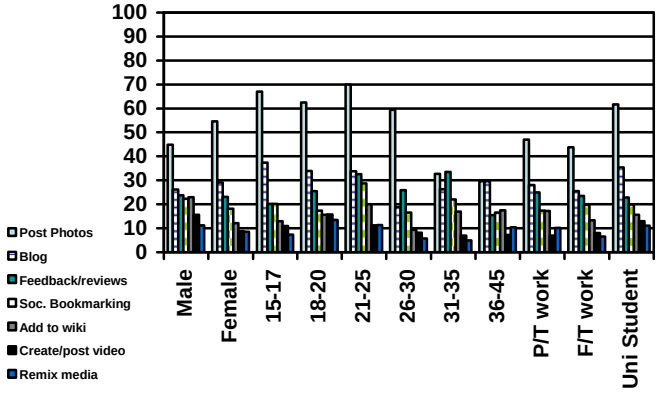

Figure 5: % of Internet users engaged in Production activities

It is apparent that Web 2.0 production technologies are not commonly used across this surveyed sample. The results of this study would concur with Sendall, Ceccucci & Peslak (2008) who note that despite the Web 2.0 hype, generally speaking the Internet is still limited to Web 1.0 activities, particularly with the older population of Internet users.

The most popular of activities under the Production category was the posting of photos online. Younger people are more likely to post photos, and overall around 50% of the surveyed population had done so at some stage. This reflects the findings of Kennedy et al (2007) who report that around 50% use the Internet to share photographs or other digital material. PEW (August 2006) report a slightly lower rate with only 37% uploading photos on a website in order to share them with others.

The remainder of the Production activities were in quite limited use. Around 40% have, at some stage, written a blog but only 11.8% of those people are doing so on a regular daily/weekly basis. Kennedy, et al (2008) report similarly, that only 34.9% of the University students they surveyed have blogged. However, they did report that use of a blog had grown in the period 2005 to 2007. Oliver & Goerke (2007) found that 29.8% of students surveyed keep a blog and 7.3% write frequently, 50.0% occasionally and 41.7% use it rarely. In terms of using a blog for study purposes Oliver & Goerke (2007) found that only 2.1% used a blog often, 17.9% use it occasional, 37.9% rarely and 31.7% have never used a blog for study purposes. Similarly, Safran, Helic & Gutl (2007) report blogs are read by 50-60% of participants from all age groups but very few write their own blogs. The percentage of US population creating an online journal or blog is also quite low at 12% (as reported by PEW May 2008).

Around 20% of respondents of this survey make use of social bookmarking. This finding aligns closely with the recent findings of Kennedy et al (2007) who found that 18.3% of University students surveyed used social bookmarking. Safran, Helic & Gutl (2007) determined from their review of literature that the number of people using social bookmarking is quite low.

Slightly fewer respondents appear to contribute to wikis at around 15%. Again, the findings of this survey replicate that of Kennedy et al (2007) who report 15.3% of students contribute to a wiki. Also, this study identified just under one quarter of the surveyed population use the Internet to post reviews/feedback – slightly lower than the 30% identified by PEW (September 2007).

(e) Transaction

There are three activities which fall within the 'Transaction' group – banking, purchasing tickets, buy/selling online (including auctions). The extent to which these activities are engaged are presented in Figure 6 below.

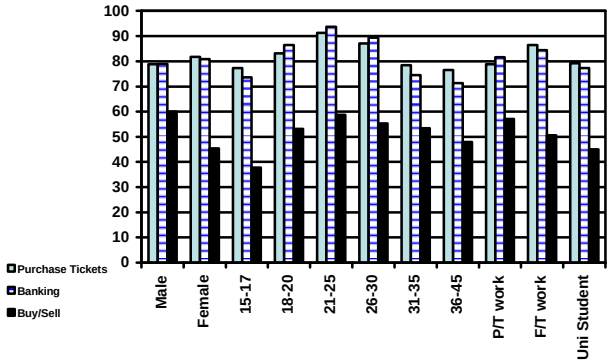

Figure 6: % of Internet users engaged in Transaction activities

Online banking and purchasing tickets through the Internet are both relatively popular activities with between 75% and 90% of the surveyed population engaging in these activities to some extent. Those who do bank online do so quite frequently, on a daily to weekly basis. Kennedy, et al (2007) reported slightly lower usage at 67% but still found that those who did bank online did so with some regularity. PEW found (September 2007) 53% of the general US population banked online.

The Australian Government (2008a) estimates that of the 11.3 million people who access the Internet 61% have used it to purchase goods or order services. This is a higher rate than data obtained in this survey (49%) but does accord with Kennedy et al's (2007) statistics which report 64.6% have used the Internet to buy or sell something (generally once per month 16% every few months 17.4 once per year 12.8%).

Discussion and Future Directions

The findings presented here support similar work being undertaken both in the Australian and the United States context. It is clear that University students use the Internet for communication and information activities. Their activities are overwhelmingly Web 1.0 activities. However, given the short period in which activities such as email and searching for information became commonplace (and some might even say essential), it is reasonable to assume that many of the Web 2.0 technologies will see similar levels of usage in the coming decade. This is particularly feasible when we consider the specific activities where age-discrepancies were evident. There were several activities that were clearly more popular with younger respondents (under 25 years). These included: IM, OSN, watching YouTube, downloading music and posting photos. These activities should be closely monitored because growth to date would indicate they will be as commonplace as emailing and 'Googling' within the next decade.

If it is the case that IM, OSN, YouTube, downloading music and posting photos become highly popular activities for the majority of the University population then it is conceivable that we can readily integrate these activities into teaching/learning activities where we feel there is a pedagogically sound basis and purpose. Also we should keep in mind that although Production activities such as writing a blog, contributing to a wiki, writing feedback/review are not yet popular activities, the skills being developed by younger generations when engaged in activities such as IM, OSN, YouTube, downloading music and posting photos, will be useful for producing content when individuals have the life experience necessary to want to contribute meaningfully to a wider community.

It appears that some lecturers/Universities are eager to introduce Production technologies such as blogging and social bookmarking into the tertiary environment. This is causing undue frustration for students, as well as being time-consuming for lecturers. In the students' present day-to-day lives these activities are not being taken up extensively. This means that much time must be spent on instructing how to use the technologies and promoting their purpose and value. In the interim it might be wiser to embrace the popular Internet technologies and demonstrate to students how they can be integrated into courses to both enhance learning of subject matter and develop skills applicable in the future work context. We need to take the existing student skills and reframe these skills for tertiary education.

In addition, before going to great lengths to integrate Internet technologies we must tease out the potential problems in advance. At the top level we must consider issues of bandwidth consumption; inappropriate use of intellectual property; security threats; accreditation processes; staff technical expertise and demands on time (Hartman, Moskal & Dziuban, 2005; Collis & Moonen, (2008); Lockyer & Patterson, 2008). At a more personal level we must consider the public/private nature of many Web 2.0 technologies and the ethical implications of bringing students' outside world (eg. social networking site profiles, personal blogs, photosharing sites) into formal education and possible consequences of *"the blurring of the lines between the personal and professional roles of the lecturer and students"* (Lockyer & Patterson, 2008 p. 533; Ryberg, 2008).

We also need to consider the ways students actually want to use the Internet within tertiary education. Hartman, Moskal & Dziuban (2005) recognise this and recommended that we talk to students to learn more about how they conceptualise and use these new tools. Kennedy et al (2008) have certainly moved toward this and students were asked the degree to which they would like various technologies integrated into their learning and found that Communication and Information activities were desirable (93.4% want to search for information; 74.6% would like to make use of IM/chat) while Production technologies were less in demand (37.8% want to create web pages; 32.2% want to keep a blog).

Conclusion

In order to better anticipate the needs of future generations of tertiary students we must continue to monitor the degree to which various Internet technologies are being embraced by the population (Harman, Moskal & Dziuban, 2005). BECTA (2008) are studying the online practices of youth and logically suggest that we should monitor the NetGen because they *"…may be harbingers of change. Their habits, expectations and behaviours may anticipate what the rest of society will come to consider as its culture or norms. In fact, indicators suggest that society's shared beliefs, values, customs and behaviours are being reshaped by globalisation and technology – these changes apply across the spectrum of age and occupation – not just to young people"* (p. 13). Research must continually ask: What technologies are people embracing in daily life? and, how are they using these technologies?

While it is essential to understand the Internet activity of the student population as it occurs naturally outside the formal education context, what is even more important is to evaluate the potential of specific Internet technologies to support and enhance learning. That should be the overriding factor for technological integration into courses – not merely because some students enjoy engaging with a particular technology in their day-to-day lives.

Based on the evidence of this study, current and future students are not yet regularly engaging in Production activities in the ordinary course of their lives. We cannot, therefore, assume integration of them into tertiary education is a natural progression. However, the widespread growth of email and information searching suggest that some newer Production technologies may well be commonplace within a decade. Given this, what is needed at this point is to envisage how teaching/learning could look by embracing new Internet technologies and to determine how to purposefully integrate them with meaning and purpose (Kirkwood & Price, 2005).

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