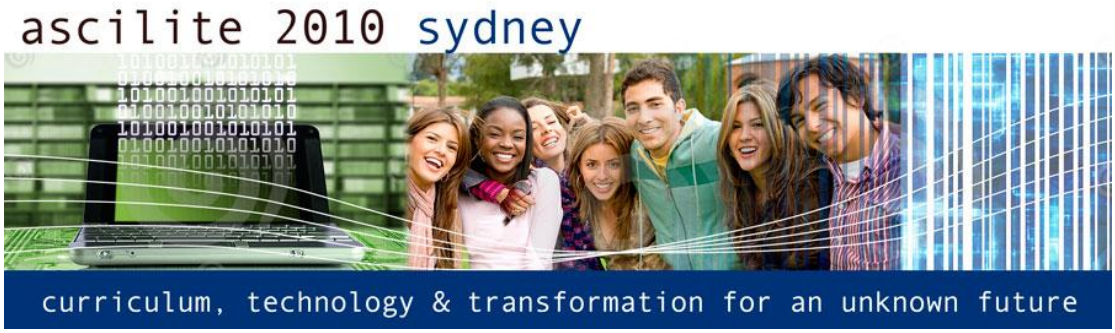

Social networking: from living technology to learning technology?

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The future that popular social network technologies have in academia is the focus of this paper. The paper presents the results of a survey of some 812 university students at the University of South Australia. The survey focuses on student's current uses, social network preferences, student preferences, student learning styles in order to determine if these living technologies can be used as learning technologies. Of particular interest are student tendencies for using such social networking for academic purposes. The study attempts to categorise the vast array of contemporary technologies and student preferences into a smaller number of factors that bring some clarity to an understanding of the relevance of these technologies to learning. As such, it provides a basis to future studies in this area. There is evidence in the paper to suggest that social network technologies are being used for informal learning practices and that the technology affordances are being used by students with a collaborative learning preference.

Keywords: social network technology, university student, informal learning, affordance

Literature

Current literature has identified that some students today are using new social technologies, such as *Facebook* to communicate with their friends and family. Walking around a university computer room will demonstrate currently how popular social network sites (SNSs) are with students. The question that arises is*; what future do popular social network technologies have in academia, and if so, to what extent and how do Higher Education Institutions (HEIs) integrate and adopt such technologies to meet student needs and wants?* HEIs invest large amounts of money into Information Communication Technology (ICT) infrastructure and software in order to meet and enhance student needs. However, new technologies are often implemented into university courses without a complete understanding of their potential role and whether their use will in fact support student learning. It is problematic to assume that all students are using new technologies in the same way, and therefore it is imperative that research investigates social technology use in regards to various student needs.

HEIs often use organised and *formal learning* methods along with efforts to engage students with collaborative tasks in order to deliver their courses. Formal learning is *'deliberate, highly structured, [and] emphasizes the acquisition of predetermined knowledge'* (Knapper & Cropley 2000, p. 12). *Informal learning*, on the other hand, is *'not deliberate, normally not structured, and learners… may not see it as learning at all*' (Knapper & Cropley 2000, p. 12). Social network affordances may be one such method that facilitates collaboration and informal learning practices and that allow students to communicate within their learning community. If HEIs are preparing students for their professional careers, it seems appropriate that they encourage students to participate and engage in collaboration and communication practices with new technologies. One way to investigate the appropriateness of social technologies could be to explore the way in which students currently use them for informal learning.

There are debates that surround the labeling of generations with assumptions that new generations are dramatically more savvy users of contemporary technologies than previous ones. Whilst technologies are ubiquitous, there have been studies recently emerging that indicate '[w]*hile some students have embraced the technologies and tools… this is by no means the universal student experience*' (Kennedy et al 2008). Conole et al (2008, p. 521) found that the use of technologies for studying was not uniform across the student cohort and that students were using ICTs for particular purposes based upon the way individuals preferred to learn, not just for the sake of using them. Geer and Barnes (2006) raise the point that students have a wide range of ICTs available, and that what needs to be considered, is whether universities should constrain that choice, or assist students in making good choices. Research has identified that despite having various ICTs available individuals tend to select ICTs they are familiar with, even if more efficient technologies are available (Geer & Barnes 2006). Huysman et al (2003) termed this notion *'media stickiness'*. This suggests that early preferences for such technologies are very difficult to change and HEIs need to be aware of these preferences.

SNSs have proven to be popular with young adults, particularly with regard to American students. Pempek et al (2008) and Ellison et al (2007) found young adults are using SNSs on average, thirty minutes per day. In a study conducted by Steinfield, Ellison and Lampe (2008, p. 441), they discovered that from 2006 to 2007 university student use of SNSs almost doubled, with students spending an additional average of 21 minutes per day on the sites. Uptake of SNSs by university students appeared to be low within Australia (Rankin 2008; Kennedy et al 2008, p. 6). In Kennedy et al's (2008) study of 2,120 Melbourne University students, only 23.8% reported engaging in SNS practices daily or weekly with 62.9% never accessing a site. This trend was consistent in a study on higher degree research students within an Australian university, whereby SNS use was low. Only 26% of students reported using SNSs primarily to maintain and keep in contact with friends and family (Rank 2008, p. 78). The majority of studies surrounding student use of SNSs are based on American college students (Ellison et al 2006; Ellison et al 2007; Joinson 2008; Lampe et al 2006; Mayer & Puller 2008; Steinfield, Ellison & Lampe 2008; Pempek et al 2009) and it is imperative that Australian research is conducted.

Snyder, Carpenter & Slauson (2007), have identified that *'the growth of the internet and especially social network sites have increased the overlap between professional and personal lives'* (p. 7). A student's social network list may consist of a combination of family, university peers, personal friends, work friends and many other important people in their lives. With this wide range of networks, individuals have to balance their personal, family, university and work lives and personas all on the one site. Due to this complex overlap of professional and personal lives that SNSs have now emphasized, it is important for research to consider and determine the circumstances and extent to which university students prefer to use their *'living technologies'* as their *'learning technologies'* (Kennedy et al 2008, p. 10). At this stage students seem unsure if they want social network software to be used for education related purposes (Kennedy 2008). With the rise of new social network sites, there is a considerable interest from academic researchers, industry researchers and practitioners concerned with understanding how people are using such tools. It is important here to distinguish between the technologies (i.e. applications, e.g. Facebook, Twitter) being used and the various affordances that the technology offers (e.g. 'wall posts', 'tweets'). A number of authors have focused on affordances and their differential value for supporting learning (Conole & Dyke 2004), Wijekumar et al (2006). However such research goals are problematic, there is little solid research on what university students actually think and do in respect of the bewildering array of these technologies and their affordances, therefore a goal of this research is to attempt to identify groupings of variables and demographics relevant to student learning and that can inform subsequent investigations.

Methodology

The PhD research described in this paper is based on a survey of students at the University of South Australia that focussed on student social networking uses and preferences. It was deployed within a broader survey which also included questions focussing on "web 2.0" technologies and that independent study is reported in a separate paper submitted to this conference. Hereafter this other study is referred to as the "sister" paper. Both studies were separately authorised and approved by the UniSA ethics committee. The research reported in this paper is the first stage of the student PhD project, it provides a baseline to see change in social networking behaviour of university students over time and its attempts to reduce the complexity of the many technologies and their technological affordances to more a manageable set of factors. This stage stands alone as a valuable and topical

contribution to the growing literature. Subsequent stages will involve qualitative methods to provide a richer perspective. Methods will involve analyses of SNS academic related activity, and focus groups.

The online survey in this paper comprised of five sections, the first being demographics and the second section was based on ICTs and web 2.0 technologies. Particular to this study are the three subsequent survey sections that explored the following: SNS use, SNS preferences, types of "friends", and the use of SNS affordances and communication technologies for informal academic purposes. As well as the last section which was concerned with learning preferences in order to determine if such preferences have an impact on student use of communication technologies for academic purposes. The online survey was delivered and collected with Filemaker server version 8. Special programming was used to allow respondents to avoid being trapped in some radio button arrays, a typical deficit in many online surveys. The data was analysed in PASW 18. All factor analysis tables use an extraction method of 'Principal Component Analysis' with rotation method: 'Oblimin with Kaiser Normalization', unless otherwise stated.

The online questionnaire was advertised to 38,297 undergraduate and graduate students enrolled at the University of South Australia in April/May of 2010 and 812 students responded. The respondents were largely female (76.1%; 22.9% male). Students were mostly born in 1991 (15.8%) and the mean birth year was 1984. This study consisted of 77% (n=625) students who were born after 1980 (21.9% born before). 42.5% of students were students currently enrolled in their first year of studies. Students who were born after 1980 and in their first year of university accounted for 35.7% of the participants (n=290). 27.3% of respondents identified themselves as completing year 12 in 2009 and beginning university in 2010. Respondents were primarily full-time students (83.7%; part-time 14.5%) and most mainly enrolled internally (82.6%; external 13.7%). A significant proportion of students (66%) are currently undertaking paid employment with full-time internal working on average 14 hours per week. 21.9% of students identified themselves as being of a non-English speaking background, 12.8% International students studying at the university, 0.6% of Aboriginal or Torres Strait Islander and 4.7% students reported having a disability of some sort. These two latter groups are insufficient numbers to be reported but not to be analysed inferentially. The Division of Education, Arts and Social Sciences represented a significant proportion of the respondents (42.7%), followed by the Division of Health Sciences (28.6%), the Division of Business (13.8%) and the Division of Information Technology, Engineering and the Environment (11.5%).

Results

Of the students who completed this survey, 99.1% identified that they use Facebook (.9% have not used the site). Facebook was identified as being the most preferred SNS by 81.5% and the most commonly used at some 14 times per week. Many other well-known social network sites were less preferred (MySpace 1.0% first preference and .8 times per week; Twitter 0.5% and 5.0 times; YouTube 6.8% and 4.1 times). Although different in its nature, YouTube received 44.8% (n=364) of second preference indications. Of the students who reported using Facebook, 54.7% (n=444) use it on average seven times a day, 17.5% (n=130) once a day and 13.1% (97) three times a week. On average, students are using their preferred SNS about 1.4 hours per day. Whether or not their time on the site is to browse, check activity or to 'idle' is unknown. Further research should determine the quality of use, or the extent to which they participate or idle on the sites.

The findings indicate that within this population some students are open to the idea of having their most preferred social networking application to be used for formal university practices (42.1% maybe; 20.9% yes). However, 31.5% of students do not welcome the concept. Some 5.5% of students said that they would possibly use a SNS that was separate to their preferred site. The most common suggestion made by students for the 'other' SNS category, was a SNS application similar to Facebook, but specifically for university. Possibly the 42.1% of students that indicated they 'maybe' were interested in using their preferred SNS, have reservations about the 'personal' versus 'education' space. This suggests that SNS use for formal studies is perhaps divided in this cohort and that students are perhaps cautious about using their 'living' technologies as formal 'learning' technologies. Whilst Facebook is the popular choice amongst the student cohort for personal use, these findings suggest that universities should proceed with caution when deciding whether to adopt popular technologies for formal learning practices.

Table 1: Perceived purpose of preferred SNS by students

	All	Born after 1980	1st year	After 1980 & 1st yr	Male	Full time	External	Inter-national	NESB	Disa-bility	Employment
Maintaining relationships.											
yes	4.1	4.1	4.1	4.1	**^3.9**	4.1	4.0	4.2	4.1	3.9	4.1
no		4.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Arranging or finding out about events or social occasions.											
yes	4.1	**#4.3**	4.2	4.2	4.0	**#4.2**	**#3.8**	4.0	4.1	**#3.6**	4.2
no		3.7	4.1	4.1	4.2	3.9	4.2	4.2	4.2	4.2	4.1
Meeting new people with similar interests to my own.											
yes	2.6	***2.6**	2.6	2.6	**#3**	2.6	2.6	**#3.3**	**#3**	2.8	2.6
no		2.8	2.7	2.7	2.6	2.7	2.7	2.6	2.5	2.6	2.7
Discussing university work, assignments, tests or other university related work with university friends.											
yes	3.6	**^3.7**	3.7	3.7	**^3.4**	**#3.7**	**^3.3**	3.4	3.5	3.3	3.7
no		3.3	3.6	3.6	3.7	3.0	3.7	3.6	3.6	3.6	3.5
Sharing ideas and information with my friends.											
yes	4.0	4.1	4.0	4.0	**^3.9**	4.0	4.1	4.0	4.0	***3.7**	4.1
no		4.0	4.1	4.1	4.1	4.0	4.0	4.0	4.0	4.1	3.9

'Yes' row= are members of a given demographic, 'No' row= are for students who are not a member of that demographic. Likert scale: 1= strongly disagree, 2= disagree, 3= neutral, 4=agree, 5=strongly agree.

Students primarily appear to find their SNS a useful tool for maintaining relationships, organising social events and sharing information. Results show that SNSs are considered a tool for maintaining relationships rather than finding new contacts. This idea is also supported by table 2, whereby students report more frequently to be communicating with personal and other known friends, rather than strangers, or people met online. However, one significant difference was that males were more likely to associate their SNS with meeting new people, whereas females tended to associate their site with maintaining relationships and sharing information with friends. Although within the 'neutral' category, students somewhat indicated that their SNS is a useful tool for discussing academic topics. This finding was more significant for internal, full-time, females, and those born after 1980. SNS appear to be a useful tool for planning and organising social occasions and events, particularly for those born after 1980, full-time and internal students. The extent of this for academic purposes is unknown, however perhaps SNS affordances such as this have potential in assisting students to plan for academic work and group tasks, and as well as be a useful medium for universities to utilise when planning university events.

Table 2: Weekly frequency (times per week) of student communication with SNS 'categories'

	All	After 1980	1st Yr	After 1980 & 1st yr	Male	Full time	Ex-ternal	Inter-national	NESB	Disa-bility	Em-ployed
Personal friends											
yes	8.2	**#9**	**^9.3**	**#9.8**	8.7	**#8.6**	***6.4**	**#11.5**	**^10.1**	***5.1**	7.9
no		4.9	7.4	7.2	8.1	5.2	8.5	7.7	7.7	8.3	8.7
Friends of friends											
yes	1.6	1.7	1.9	1.9	2.0	1.7	1.5	***2.6**	**^2.5**	1.6	1.4
no		1.1	1.4	1.4	1.5	1.1	1.6	1.4	1.3	1.6	2.0
Family Members											
yes	4.1	4.3	***4.7**	***4.7**	3.6	***4.3**	4.2	**#8.0**	**#7.2**	2.8	^3.6
no		3.2	3.7	3.7	4.3	2.8	4.0	3.5	3.3	4.2	5.3

Work friends/ colleagues											
yes	3.2	3.3	3.4	3.2	3.5	3.3	2.7	**#5.1**	**^4.5**	2.1	***2.9**
no		2.7	3.1	3.2	3.1	2.2	3.3	2.9	2.8	3.2	4.0
High School friends											
yes	3.8	**#4.2**	**#5**	**#5.3**	4.2	**^4.1**	2.7	4.8	**^5.1**	1.6	3.7
no		1.8	2.9	2.9	3.7	1.7	4.0	3.6	3.5	3.9	4.0
University friends											
yes	4.2	**^4.6**	3.9	4.1	5.1	**#4.5**	**^2.1**	**#7**	**#7.4**	2.3	^3.7
no		2.3	4.4	4.3	3.9	1.6	4.4	3.7	3.2	4.3	5.3
Sporting club friends											
yes	2.2	2.3	2.3	2.4	***3.0**	***2.3**	0.9	2.9	2.4	0.4	2.0
no		1.3	2.1	2.0	1.9	0.9	2.3	2.1	2.1	2.2	2.7
Hobby/ Interest group friends											
yes	2.3	2.6	2.7	2.7	2.2	2.5	2.1	1.7	3.0	0.6	2.0
no		1.3	2.1	2.1	2.4	1.2	2.4	2.4	2.1	2.4	2.9
Strangers											
yes	1.2	1.4	1.1	1.2	1.1	1.2	0.2	2.5	1.6	0.4	0.9
no		0.3	1.4	1.3	1.3	1.3	1.4	0.9	1.1	1.3	1.8
People you have met online											
yes	3.2	3.6	2.3	2.5	7.1	3.6	0.0	0.0	0.2	0.2	1.9
no		0.2	4.9	4.1	2.2	0.2	3.6	3.2	3.6	3.4	21.0
Bands/ Music Artists											
yes	1.8	1.7	1.7	1.5	1.9	1.8	***4**	2.9	2.0	1.5	**^1.1**
no		2.4	1.9	2.0	1.8	2.1	1.5	1.5	1.7	1.8	3.2
Teachers											
yes	1.1	0.9	1.3	0.8	1.7	1.0	1.0	***2.6**	**^2.8**	0.6	1.1
no		2.1	0.8	1.3	0.8	1.1	1.1	0.8	0.6	1.1	0.9

Significant mean differences are shown with * p<.05, ^ p<.01, #p<.001 alongside the figure.

Students report to be using their SNS to communicate most frequently with their personal friends and results confirm the idea that students are using their SNS to communicate with already established and well-known contacts (table1). International students significantly use their SNS more than local students to communicate with personal friends, family, university and work colleagues. NESB students also scored significantly higher when it came to how often they spoke with high school friends (this is consistent with their greater uptake of Web 2.0 technologies). This indicates that International and NESB students are using social networking technologies significantly more than local and English speaking students to connect with close friends and family, and this may be due to the physical distance.

A factor analysis (Varimax with Kaiser Normalisation) was conducted on the social network categories in table 2. The analysis resulted in two broad groupings emerged. One distinct component, named by the researchers as 'proximate networks', consists of 'personal friends' (p=0.968) and 'high school friends' (p=0.968). This could be due to many 'personal friends' being people they have developed friendships with from high school. Teachers' (p= -0.969) loaded strongly, but negatively to this 'proximate category' indicating that the more often a student is networking with friends, the less often they are networking with teachers. Some 68.5% (n=556) of students said that they do not have 'teachers' on their SNS. The second distinct group in this factor analysis was named 'acquaintance networks' and included all other network categories within this component (all loaded as 0.964; except 'friends of friends' which loaded as 0.763). This finding, with the table above that suggests that 'strongly proximate' students rarely talk to 'teachers' online and therefore suggests perhaps at this point in time, preferred SNSs are 'personal spaces' and that this does not necessarily extend to academics and teachers at this stage. International and NESB students scored significantly higher than their counterparts in regards to having 'teachers' on their SNS and how often they speak to teachers.

Further investigation into how International and NESB students communicate with teachers on their SNSs, may shed some light as to why this is so.

Below are two tables that report on student frequency of communication methods for general purposes (table 3) and communication methods for academic purposes (table 4). Figures are represented by use per week.

Table 3: Weekly frequency (times per week) use of communication methods for general purposes

	All	After 1980	1st Yr	After 1980 & 1st yr	Male	Full time	Ex-ternal	Inter-national	NESB	Disa-bility	Emplo yed
Mobile phone text messages											
yes	16.1	**#16.5**	16.7	***16.9**	**#13.6**	**^16.4**	15.9	**#13.6**	**#13.8**	***13.5**	**#16.9**
no		14.3	15.7	15.6	16.8	14.1	16.1	16.4	16.7	16.2	14.3
Mobile phone voice calls											
yes	10.7	10.7	10.9	10.4	10.8	10.7	10.9	**^13.5**	***12**	9.9	**#11.4**
no		10.6	10.6	10.8	10.6	10.4	10.7	10.4	10.4	10.8	9.0
Telephone (landline) phone calls											
yes	5.5	**#4.4**	5.6	5.0	**^4.1**	**#4.9**	**^7.4**	***7.4**	6.5	6.6	5.4
no		8.8	5.3	5.7	5.9	8.6	5.2	5.3	5.2	5.5	5.6
Instant Messaging Services (e.g. MSN)											
yes	7.3	**#7.9**	6.9	7.5	**#9**	7.5	5.4	**#12.1**	**#10.8**	4.3	**#6.3**
no		4.3	7.6	7.2	6.8	5.7	7.5	6.4	6.0	7.5	9.4
Email (personal or university)											
yes	12.3	**^11.8**	11.8	**^11.2**	12.1	12.0	**^14.4**	***14.1**	**^13.8**	10.9	12.3
no		14.1	12.6	13.0	12.4	14.0	12.0	12.1	11.9	12.4	12.3
Video Conferencing Tools (e.g. Skype)											
yes	2.9	3.0	2.9	3.1	3.6	3.1	2.9	**#5.4**	**#4.9**	0.9	**^2.3**
no		2.4	3.0	2.7	2.5	1.4	2.9	1.9	1.8	3.0	3.9
Social Network Sites (e.g. Facebook, Twitter)											
yes	13.0	**#13.8**	13.4	13.7	11.9	**^13.3**	11.4	14.3	12.9	9.8	13.1
no		9.5	12.7	12.5	13.3	10.5	13.2	12.8	13.0	13.1	12.6
Chat rooms											
yes	4.4	5.0	5.2	4.8	5.0	4.5	3.5	**#9**	**#7.3**	0.6	4.4
no		3.3	4.0	4.4	4.3	2.5	4.8	2.9	2.8	4.6	4.5
Blogs or Wikis											
yes	4.0	**^4.6**	4.1	4.4	4.5	4.2	2.9	**#7.4**	5.4	1.4	3.4
no		1.5	4.0	3.8	3.9	2.5	4.1	2.9	3.4	4.1	4.7

Meeting face-to-face on campus outside of class times											
yes	4.9	**^5.2**	5.4	***5.6**	5.2	**^5.1**	**^1.2**	**#8**	**#6.3**	3.1	4.5
no		3.1	4.5	4.4	4.7	2.2	5.0	4.3	4.4	5.0	5.5
Meeting face-to-face off-campus											
yes	3.6	**^3.9**	4.1	4.2	4.4	3.7	***1.7**	**^5.7**	4.4	1.5	3.5
no		2.1	3.3	3.2	3.3	2.0	3.7	3.2	3.3	3.7	3.8

Table 4: Weekly frequency (times per week) use of communication methods for academic purposes

	All	After 1980	1st Yr	After 1980 & 1st yr	Male	Full time	Ex-ternal	Inter-national	NESB	Disa-bility	Em-ployed
Mobile phone text messages											
yes	4.3	4.4	***5**	***5**	4.4	**^4.5**	3.6	**#7.2**	**^5.6**	3.2	4.2
no		3.6	3.8	3.9	4.2	2.3	4.3	3.8	3.9	4.4	4.5
Mobile phone voice calls											
yes	3.6	3.7	4.0	3.9	4.5	***3.8**	2.7	**#7.4**	**#5.4**	2.4	3.5
no		3.3	3.3	3.4	3.3	1.9	3.7	2.9	3.0	3.7	3.9
Telephone (landline) phone calls											
yes	2.6	2.9	3.3	***3.5**	2.7	2.8	2.2	**#6**	**#4.6**	1.8	**#1.8**
no		1.8	2.2	2.1	2.6	1.2	2.7	1.9	1.8	2.7	4.2
Instant Messaging Services (e.g. MSN)											
yes	5.3	5.6	5.9	6.1	5.7	5.6	3.5	**#10.3**	**#7.9**	2.7	**#4.1**
no		3.8	4.9	4.9	5.1	2.4	5.5	3.7	3.7	5.5	7.3
Email (personal or university)											
yes	6.7	6.7	7.3	7.3	6.5	***7**	6.4	**#10.2**	**#8.9**	6.3	***6.3**
no		6.9	6.3	6.4	6.8	5.0	6.8	6.2	6.1	6.8	7.6
Video Conferencing Tools (e.g. Skype)											
yes	4.2	***5.3**	4.5	5.1	4.1	4.7	2.5	**#7.2**	5.3	1.8	***2.4**
no		1.4	4.0	3.8	3.9	0.3	4.5	1.6	2.8	4.4	6.1
Social Network Sites (e.g. Facebook, Twitter)											
yes	5.6	5.5	5.9	6.0	5.9	5.8	4.5	8.7	7.2	4.7	5.0
no		6.2	5.3	5.3	5.5	3.6	5.6	**#5.1**	***5.1**	5.7	***6.9**
Chat rooms											
yes	3.7	4.1	4.0	3.1	***5.6**	3.6	3.4	**#7.7**	***5.8**	0.3	4.1
no		3.1	3.6	4.0	2.7	4.0	3.9	2.2	2.3	4.1	3.1
Blogs or Wikis											
yes	4.0	***4.7**	3.9	4.1	5.1	4.3	2.5	***6.5**	**^6.7**	1.4	3.0
no		1.5	4.2	4.0	3.6	2.7	4.2	3.3	2.8	4.2	5.3
Meeting face-to-face on campus outside of class times											
yes	3.5	***3.7**	3.9	4.0	3.8	**#3.8**	**^1.1**	**#6.1**	**#5.1**	1.7	3.2
no		2.6	3.3	3.2	3.4	0.9	3.7	3.0	3.0	3.6	4.1
Meeting face-to-face off-campus											
yes	2.5	2.8	3.0	3.2	2.6	2.7	1.0	5.2	3.9	1.0	2.1
no		1.2	2.2	2.0	2.4	0.7	2.7	2.0	2.0	2.6	3.4

Significant mean differences are shown with * p<.05, ^ p<.01, #p<.001 alongside the figure.

In regards to general communication methods (table 3), across the sample, the most frequently used methods appear to be mobile phone text messaging, SNSs and email. Whilst this may appear to be the case, a closer examination reveals there appear to be variations within the demographics. The figures that are bold and have markers (*, ^ or #) indicate a significant difference for that demographic, and by looking at both table 3 and 4 one can see that there are many variations according to demographics. In regards to age, students in this sample born after 1980 used text messaging, SNSs, instant messaging and blogs/wiki's significantly more than those born before 1980. Whereas those born before 1980 used email and telephone landline calls significantly more. However, age is not a single defining factor of technology choices in this sample. International students reported using email significantly more than local students and used mobile phone text messaging significantly less, but used mobile phone voice calls significantly more (this was also the case for NESB).

When exploring communication methods for academic purposes (table 4), email, SNSs and instant messaging tools overall appeared to be the most frequently used. However, like the table of general communication methods, upon closer inspection it is evident that within this cohort there are significant differences in regards to academic communication methods when it comes to demographics. International students are a unique group within this sample as they report using all communication technologies significantly more than local students for academic purposes. A noticeable difference between the two tables was that for general communication, international students use mobile phone text messaging significantly less than local students, however for academic purposes they used all technologies significantly more. This higher use of technologies for academic purposes may be due to international students requiring more support, however should be explored further.

Differences between male and females indicated that for general communication purposes females used mobile phone text messaging and landline phones more frequently than males, where as males used Instant Messaging tools significantly more. In the case of communication methods for academic purposes (table 4), chat room use was the only significant difference, in which males used more frequently. The reason for this may be due to the fact that courses that males dominate in promote this tool for university communication; however the reason why males select this synchronous method could be explored further. These vast variations within this sample between demographical uses of communication methods for both general communication and academic purposes confirm that there are difficulties in meeting the needs of student cohorts that are so diverse. These are reported frequencies by students, however a deeper investigation of motivations and reasons for using certain technologies for academic support may assist research in a better understanding.

Table 5: Communication methods used for *general* and *academic* purposes

Factor Analysis Components:	**General Communication**				**Academic Communication**			
Communication Methods	Organis-ational	Social	Formal		Organis-ational	Mobile phone	Social	Formal
Mobile phone text messages		0.546				0.844		
Mobile phone voice calls		0.635				0.656		
Telephone (landline) phone calls			0.862					0.856
Instant Messaging Services (e.g. MSN)		0.509					0.858	
Email (personal or university)		0.748						0.749
Video Conferencing Tools (e.g. Skype)			0.74					0.714
Social Network Sites		0.716					0.871	
Chat rooms	0.782				0.884			
Blogs or Wikis	0.627						0.648	
Meeting face-to-face on campus	0.79				0.935			
Meeting face-to-face off-campus	0.766				0.898			

A factor analysis (table 5) reveals that the communication methods for 'general' purposes can be divided into three components which have been labelled as; organisational, social and formal. The first

component requires the individual to make arrangements in order to make contact. The 'social' technologies appear to be technologies that are 'background' communication technologies. The 'formal' methods could be described as being similar to the 'organisational technologies' but are often one-to-one and arranged. However, when comparing the factor analysis between uses for 'general' and 'academic' communication, a fourth component emerges for academic purposes. Mobile phone communication becomes one component standing alone and email unites with 'formal'. This may be due to the high reported frequency use of mobile phones for study purposes. Email most likely has joined the 'formal' methods because email is often a primary method for tutors/lecturers and the university to communicate with students.

Table 6: Student perception of use of SNS affordances for academic purposes

Affordances	Contributional	Conversational
Wall posts		0.854
Private messages		0.812
Instant Chat		0.755
Commenting		0.857
Uploading, posting or sharing videos	0.852	
Uploading, posting or sharing photos	0.825	
Uploading, posting or sharing links/ files	0.759	
Status updates		0.758
Event invitations	0.826	
Creating groups	0.833	
Creating Pages	0.904	
Notes or tags	0.884	
Quizzes	0.838	
Share tool	0.880	

A factor analysis of perceived usefulness of the social network affordances for academic purposes in table 6 has emerged two components, here titled 'contributional' and 'conversational. The 'contributional' affordances enable students in uploading, formation and organisation of content (such as pictures, events, pages), whereas the 'conversational' affordances involve communication, whereby the individual may communicate one-to-many, one-to-one or partake in conversation on someone else's profile. Categorising these SNS tools will assist the researcher in exploring student practices on SNSs for educational purposes further.

Table 7: Students identify their level of preference towards the following learning methods

	All	After 1980	1st yr	After 1980 & 1st yr	Male	Full-time	External	Inter-national	NESB	Disa-bility	Employ-ment
I like to work independently.											
yes	4.1	4.1	4.1	4.1	4.0	***4.1**	4.2	**^3.9**	**#3.9**	4.1	***4.2**
no		4.2	4.2	4.2	4.2	4.3	4.1	4.2	4.2	4.1	4.0
I like to work with a friend.											
yes	3.7	**^3.7**	***3.8**	**^3.8**	3.7	3.7	**^3.4**	3.6	3.7	3.6	3.7
no		3.5	3.6	3.6	3.7	3.5	3.7	3.7	3.7	3.7	3.7
I like to work with a small group of my peers.											
yes	3.2	3.2	3.3	3.3	3.3	***3.2**	3.1	**^3.5**	**#3.4**	3.1	***3.2**
no		3.2	3.2	3.2	3.2	3.0	3.2	3.2	3.2	3.2	3.3
I will work at the issue or answer the question on my own.											
yes	3.7	3.7	3.7	3.7	***3.9**	***3.7**	3.8	3.6	**^3.6**	3.8	3.8
no		3.8	3.8	3.8	3.7	3.9	3.7	3.8	3.8	3.7	3.7

I will seek help or advice from a friend.											
yes	3.9	**^4**	4.0	***4**	3.9	**#4**	**^3.8**	4.0	4.0	4.0	3.9
no		3.8	3.9	3.9	4.0	3.7	4.0	3.9	3.9	3.9	3.9
I will seek help or advice from a study group or small group of my peers.											
yes	3.4	3.4	**^3.5**	***3.5**	***3.3**	**^3.5**	3.4	**^3.6**	**#3.6**	3.4	3.4
no		3.4	3.3	3.4	3.5	3.2	3.4	3.4	3.3	3.4	3.5
I will ask the class (online or face-to-face) for help or advice.											
yes	3.3	3.3	3.3	3.3	3.2	3.3	**#3.6**	3.5	***3.5**	3.5	3.3
no		3.4	3.2	3.3	3.3	3.4	3.2	3.3	3.2	3.3	3.3
I will ask my tutor/lecturer for help or advice.											
yes	4.0	**#3.9**	4.0	3.9	3.9	4.0	4.0	4.0	4.0	**^4.3**	4.0
no		4.2	4.0	4.0	4.0	4.1	4.0	4.0	4.0	4.0	4.0

(Likert scale: 1= strongly disagree, 2= disagree, 3= neutral, 4=agree, 5=strongly agree)

Independent t-tests revealed that there are learning preference variations amongst the student cohort (table 7). NESB students appear to significantly prefer to seek help and work with a small group of friends rather than working independently. Males will significantly prefer to work out an issue on their own (3.9, p= <.05) rather than ask peers, whereas females prefer to seek help from a small group of peers (3.3, p= <.05). Students born after 1980 and first year students significantly prefer to work with a friend and seek help from a small group of peers than those born before 1980 or in a year level other than their first. This could perhaps suggest that they welcome collaborative tasks and would benefit from having the study group networks. Students who are currently employed prefer to work independently (p= <.05) rather than working with their peers. As expected, internal students reported significantly preferring to work with a friend and seeking advice and help from a friend, where as external students reported preferring these methods significantly lower. External students also preferred the method of asking the class online, or face to face for help (3.6, p= <.001). Many external courses involve discussion boards, and therefore the fact that external students are more comfortable using this help-seeking method makes sense. This stresses the importance of universities utilising on-line communication methods that students are comfortable with using, in particular for external students.

Table 8: Factor analysis of preferred learning methods

Preferred learning method	Collaborative	Formal	Independent
I like to work independently.			0.839
I like to work with a friend.	0.778		
I like to work with a small group of my peers.	0.76		
I will work at the issue or answer the question on my own.			0.828
I will seek help or advice from a friend.	0.701		
I will seek help/advice from a study group/group of my peers.	0.656		
I will ask the class (online or face-to-face) for help or advice.		0.791	
I will ask my tutor/lecturer for help or advice.		0.766	

A factor analysis placed preferred learning methods into three components here titled; ‘collaborative’, ‘formal’ and ‘independent’ (table 8). The categorised preferred learning styles were compared against communication methods for academic purposes (table 5 and 6) and with the social network affordances (table 7). Results showed that, although weak, collaborative learners had a correlation between using SNSs (r=.199, p=<.000), instant messaging (r=.173, p=<.003) and blogs/wikis (r=.198, p=<.027). There was also a weak, but evident, correlation between collaborative learners and using SNS affordances; wall posts (r=.191, p=.000), private messages (r=.238, p=<.000), commenting (r=.198, p=.000) along with weaker correlations for the SNS affordances that involve uploading and sharing content. Collaborative learners exhibited a weak correlation with having more ‘proximate’ networks on their SNS (r=.255, p=<.001). These results, although weak, suggest that SNSs and SNS affordances have collaborative benefits, and those who are collaborative learners can possibly see the benefits of using such affordances to communicate with peers for academic purposes and therefore do so more frequently than others. It was also found that the learning preference ‘I like to work with a friend’ and

‘I like to work with peers’ had a weak correlation with blog/wiki sites (r=.253, p=< .000; r=.206, p=<.02).

Table 9: Learning preference and communication methods/SNS correlation

“I will seek help or advice from a friend.”	SNS Wall posts	r= .239	Sig. .000
	SNS Private messages	r=.258	Sig. .000
	SNS Instant chat	r=.251	Sig. .000
	SNS Commenting	r=.194	Sig. .000
	SNS Status update	r=.212	Sig. .000
	‘Conversational’ SNS affordances	r=.284	Sig. .000
“I will seek help or advice from a study group or small group of my peers.”	SNS Wall posts	r=.181	Sig. .000
	SNS Private messages	r=.238	Sig. .000
	SNS Instant chat	r=.199	Sig. .000
	SNS Commenting	r=.209	Sig. .000
	SNS Status update	r=.185	Sig. .000
	‘Conversational’ SNS affordances	r=.184	Sig. .000
	Instant Messaging (MSN etc.)	r=.207	Sig. .000
	‘Contributional’ SNS affordances	r=.253	Sig. .000

Table 9 reveals that the variables that involve seeking help from a friend, or a small group of peers, had significant correlations with some of the SNS affordances. These are mostly weak correlations, but evident nonetheless. This possibly indicates that SNS affordances are effective means for seeking help or assistance, and perhaps students are using these as a means to seek help in relation to academic studies, whether that be one-to-one or one-to-many because SNS consist of a range of both public and private affordances. The next stage of this PhD study aims to explore the richness and nature of these interactions.

Discussion and conclusion

This research has identified that communication methods for informal learning are significantly diverse across the student cohort and are influenced by demographical factors. Literature has previously identified SNS uptake by university students in Australia to be low (Kennedy et al 2008, Rankin 2008), however this study indicates that SNSs are a technology that many students within this population are frequently using. Whilst, like previous studies, SNSs appear to be used primarily for maintaining relationships, there is also evidence to suggest that students are using their preferred SNSs for informal academic purposes and that various SNS affordances have potential for collaboration, in particular instances where students are seeking help or assistance. This was evident in that students who had a collaborative preference to learning often had a weak to moderate correlation with SNS affordances. This finding supports the literature that identifies students as using ICTs for purposes based on the way they prefer to learn, not just for the sake of using them (Conole et al 2008). The factor analysis has assisted in reducing the complexity of SNS technologies and their affordances in order to make such judgements and research should continue to define these affordances according to student practices.

There is evidence to suggest that SNSs have potential to be used for collaborative educational tasks, however similarly to students in Kennedy et al’s (2008) study, students in this sample are also divided as to whether they would like their personal SNS to be used for formal education purposes. At this stage, although some students are using their ‘living technologies’ to engage with peers about academic topics, it appears that students within this HEI may not be ready to use their ‘living technologies’ as formal ‘learning technologies’. Perhaps this HEI could find a means to use collaborative SNS affordances within other educational sites, or encourage the use of SNSs for collaboration with peers, but leave the choice open for students to make. This paper contributes to the debate of concerns students express for using their ‘living’ technologies as ‘learning’ technologies. Although Facebook appears to be a popular choice, universities should proceed with caution when attempting to integrate such popular sites into courses as there are significant variations in the way students use them, as well as concerns for using them for formal academic purposes. Future research should determine the

boundaries surrounding student preferences with their personal SNSs so that university policy can be formed.

This research suggests that social network technology usage is not only defined by 'generation' and that there are differences within the demographics that are possibly based on the needs and circumstances of students. International students are a singular group that use communication technologies significantly more than local students and other groups, whilst they also demonstrate preferences towards collaborative learning. An exploration of international students within other HEIs in order to investigate whether international students in other contexts use SNS technologies more frequently than local students may be of interest to the literature surrounding international student engagement. SNS may be something that this HEI may want to consider when attempts are made to engage international students with the university community and each other. Demographical differences need to be explored in more detail and student needs and circumstances within demographics should be explored in order to determine how universities can go about meeting the needs of students, and how perhaps social network technologies may be able to enhance student learning and collaboration.

When interpreting the results in this paper it is important to note that these results are limited to students within one university in South Australia, and therefore it cannot be assumed that this is the same experience for other university contexts. The data from this survey relied on students to self-report and therefore may not necessarily be an accurate representation of their technology use. However, this study has provided a sound base for where students are at in terms of using communication technologies for informal learning within this population. This study has reported on the frequency of communication methods as identified by students, however the quality and nature of these interactions will be investigated in the next stage of the PhD. A goal of the next stage is to be able to have a clearer understanding about the pedagogical and collaborative benefits social network affordances provide by examining the naturalistic interactions within student profile pages, and through student focus group discussions. Attempting to engage with students may prove to be a difficult task, however further research into the specific area of SNSs and their affordances will be able to assist universities in developing policy and practices around student preferences, needs and uses.

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