Using Tech At Uni: Students Report On Their Technology Use At University

Yuwanuch Gulateee, Nakhonphanom University & Edith Cowan University, Australia
Jeremy E. Pagram, Edith Cowan University, Australia
Barbara Combes, Charles Sturt University, Australia

The Asian Conference on Education 2018
Official Conference Proceedings

Abstract
Many universities are embracing Learning Management Systems (LMS) for the delivery of programs to students. The LMS provides paperless modes of document and rich content delivery such as Microsoft Word documents and video lectures. Such delivery modes for on-campus students are becoming the norm as more blended learning environments are implemented in universities. This research examines how students make use of technologies and applications, what they think about their skill levels, and whether the online materials encourage and motivate their study. The research also reports on how and where some students and lecturers at Nakhonphanom University, Thailand use the technology and devices in their classrooms. Findings of the research will guide university educators in the improvement and change required in their physical and virtual classrooms as they move into a blended learning environment.

Keywords: E-Learning, ICT Technology, Online Learning, Learning Management System, Blended Learning
Introduction

This paper will examine and compare results obtained from a survey of all students and education students studying at Nakhonphanom University (NPU) in 2016-2017. The research examines technology facilities and applications provided by the university, as well as the use of social media in teaching and program delivery. It also explores students’ self-perceived technology capabilities and preferences at this particular Thai university. The investigation was undertaken using an online survey of students at NPU. The survey sought information from students at higher education level in order to address questions about student ownership of technology, technology use and preferences towards electronically delivered learning resources between all faculties and the Education faculty. It was anticipated that the answers to these questions would be useful to administrators, course coordinators and lecturers in tailoring resources to student preferences and thus deliver greater student engagement and satisfaction. The results will also provide a snapshot of technology trends and use by students over time to see if there are any changes.

Background

Students regard themselves as multitaskers when using technology, so how they respond to traditional textbooks and lectures is important. Lecturers need to know if traditional ways of teaching in universities are reaching and motivating students who use technology as part of their daily lives. This research study will provide educators with an insight into how this current generation of students learn in an increasingly online environment. The adoption and impact of technology use on teaching practice and learning achievement have driven and continue to drive policy makers, educators, and researchers worldwide. Tertiary education around the globe is currently trying to realise and leverage the benefits of technology in the classroom. For example, in Australia, some universities offer wholly online courses, using the delivery of course content through LMS, while many Asian countries tend to develop blended learning environments that include face-to-face as well as online (Gulatee, Clayden, & Combes, 2011; Gulatee & Combes, 2008; Gulatee & Nilsook 2014; Schwartz, 2010).

Some universities are using the Web to enhance and deliver existing teaching-learning materials, while others chose to package learning materials in an Learning Management Systems (LMS) and develop a range of online learning approaches and teaching-learning strategies which leverage the pedagogical opportunities offered by technology. However, studies conducted during the last ten years indicate that learners do not necessarily recognise online learning to be beneficial, due to the lack of peer-to-peer interactivity between learners and instructors (Combes & Carroll, 2013; Gulatee, 2010; McSporran & King, 2006; Combes & Anderson, 2006; Muilenburg & Berge, 2005; Salmon, 2002). Although most online units provide students with access to real-time chat and discussion forum facilities to encourage ongoing interaction, finding time to participate and the lack of immediacy are barriers to student participation. Discussion forums can be an effective tool to promote student interaction, by providing opportunities to share information or to explore problem-based scenarios (Gulatee & Nilsook, 2015), especially since they provide a permanent record of the discussion that students can review at a later date. However, if students and instructors do not use and actively participate in the discussion forums regularly, the benefits of this type of communication channel will remain under-utilised. In
addition, even when lecturers utilise a range of communications technologies such as discussion forums or bulletin boards, email, chat, blogs and wikis to encourage student discussion and information sharing, peer-to-peer communication and active interactive engagement remains an issue in the online learning environment (Gulatee & Pongthanoo, 2015). Perhaps it is time to review how teachers embed this peer-to-peer engagement in subjects by using alternative delivery modes such as mobile devices.

Research about the use of technology by young people has revealed that one in four go online using their mobile phones. They also study while listening to mp3 players, engage in texting and chatting online with friends, and reading and posting Facebook messages (Rosen, Carrier, & Cheever, 2010). This American research also reports that 78% of teens now have a mobile phone, and almost half (47%) of them own smartphones. In this study young people tended to use handheld (mobile) devices for both study and non-study activities. Research into the experiences of students and practitioners have indicated that engagement in the participation and the provision of online education respectively, improves the capacity of both groups to cope with change (Pagram & Cooper, 2012).

The uptake of technology by Thai higher education organisations has meant that the LMS has become an essential tool for students’ learning both inside and outside the classroom (Pagram & Cooper, 2012). A variety of technologies have been used for instruction in education, including digital cameras, laptops and interactive whiteboards (Cassidy et al. 2011). In 2017, the LMS may contain links to Youtube videos by experts, Facebook Live, a range of presentation tools (for example Slideshare, Voicethread and Prezi), online chats and webinars with experts in the field of study, simulations and virtual worlds. The use of a range of web-based tools and utilities has also led to the production of better quality, locally produced resources which has resulted in positive outcomes for students (Schwartz, 2010; Gulatee & Pongthanoo, 2015). Taking the above into account, these studies highlight the importance of investigating how students utilise and respond to online materials that are delivered to them throughout their courses. Also of interest are the technologies owned by students and the modes and places of internet access. There is also a belief that education students are unique in that they have the added incentive when learning technology in their course, to apply their skills & knowledge of these technologies when they begin their teaching profession. This assumption has been contested in earlier research (Lei, 2009) which suggests that:

“… growing up with technology, digital natives as preservice teachers are savvy with basic technologies and social-communication technologies. However, their technology proficiency is limited by both the narrow scope and the lack of depth of their technology activities” (Lei, 2009, p.94).

Taking the above into account, the premise for this research study was underpinned by a belief in the importance of investigating how NPU Education students and students from other faculties utilised and responded to the online materials that were delivered to them throughout their courses.
Research Method

Population and Participants

Participants in this study included students enrolled across all courses from NPU. The total number of students surveyed online in 2017 was 380 (76% female and 24% male) using convenience sampling technique. ‘Convenience sampling (also known as availability sampling) is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in study’ (Dudovskiy, 2016), in this case the students at NPU. Of the 380 students in the sample from across the university, 165 (43%) were from the Department of Education. Despite the disadvantages attached to using convenience sampling, a reasonably large spread of students from across the NPU courses participated in the survey. The large number of Education students meant that this reasonably large subset could be compared with other students at NPU. Approximately 80% of participating samples were between ages of 19 and 22 years old.

Research Instruments

Students were surveyed using an online survey. There were 15 questions in the survey that were grouped according to the following categories: demographics, digital lifestyle: perceived skills, ownership and access, file formats, Learning Management System (Moodle). Due to the technology focus of the study, the administration of the student survey online via the internet was considered appropriate. Moreover, the size of the potential target population also required an efficient means of data collection. The university students were informed of the survey via a link placed on NPU websites, which all the students could see after logging in to the university student portal. Students were encouraged to do the survey via information on the portal page about the importance of the research, as well as the possibility of being awarded a gift card to top up their phone cards (selection using a random snowball technique). The investigation of the survey results was developed using Qualtrics software.

Data Collection

The survey was conducted using constructed questionnaires comprising of close-ended questions. Both Thai and English language versions were used, and respondent data was fed into a common database for analysis. Students were informed of the survey via a link placed on NPU websites. The survey and data entry included drop down menus and radio buttons to ensure an uncluttered layout and accurate data entry. Finally, a progress bar indicated how far participants were through the survey to encourage them to complete the survey to the end.

Findings

The focus of the data collection was on examining trends of technology between Education students and students across the university. What follows below is a breakdown of the results from the various sections of the survey.
Ownership and Access

The dataset above indicates that Education students’ ownership of devices was in general higher than other students in the university. Almost 100% of Education students owned a laptop or a tablet and a mobile phone. Only Education students owned a scanner and less than 20% of students in other areas of the university owned a desktop, a tablet and a printer. Results indicate higher ownership of technologies for Education students than others across the university. These results could be due to the fact that Education in Thailand is now considered to be a desirable profession with students studying for five years and the guarantee of a job at the end of their studies.

The dataset above is interesting as it indicates that except for the smartphone, Education students keep their devices longer than other students. Although the average length of time for renewing their smartphones is four years for all students, updating their Laptops and handheld mobile devices has become more affordable and provides students with access to resources, people, and their community (Pornwasin, 2013). Hence, many students now possess or have access to a handheld device that can be used as a learning tool. Most users were using older devices which are more stable, predictable and reliable, a condition known as "comfortable to use". The results also show that students were not printing as much, possibly due to the fact that printed lecture notes are usually provided to students across the university.
Participants were also asked to indicate their frequency of use for study purposes during the previous 12 months for both their tablet and their smartphone. Although results were not conclusive, using a Chi-square to analyse the results suggested that Education students who owned both a laptop and a smartphone were also using them for study purposes. Current trends for ownership of a smart phone and laptop device indicate that demand for these devices will increase in the near future because students use them for both academic and for personal use.

In Figure 3 show that it is the Education students who are using mobile technologies such as a tablet and a smartphone for study purposes, while other students use a greater variety of technologies for their study. Use of the printer is also notable with 40% of Education students and more than 50% of other students reporting high levels of printer use when studying. Other studies have indicated high levels of printer use by students when studying (Pagram, et al., 2015).

![Figure 3: Percentage of students that own a device and use it for study purposes](image1)

Students reported that staff do not use technology in the classroom for teaching and learning purposes and Education staff use technology less than staff in other faculties.

![Figure 4: Staff use of devices in the classroom](image2)
In both cases staff are more likely to use either a laptop or tablet in the classroom, probably to present their lectures via a digital projector. Students also indicated that staff from other faculties used their smartphones much more than those in Education. These results may also indicate that other faculties are more likely to provide computer facilities in the classroom than the Education Faculty’s teachers. Students also reported limited use and application of other technologies in teaching practice such as smartboards and tablets (Windows and iPads). The consistent application and the integration of other devices such as scanners, printers, digital cameras, DVD players and smartboards was also reported by students to be almost non-existent. The following of results are for all students across the university and examine technology use in class as reported by the students.

Figure 5: Education Faculty students’ use of technologies during class

Figure 5 shows that students do use their devices during class to enhance their own learning. However, the last response in this dataset is problematic and requires further investigation as it implies that lecturers are using technology at a greater depth than indicated in Figure 4. The response by students reported in Figure 5 refers to lecturers using powerpoint slides, audio or video examples or demonstrations of learning concepts (71.09%). While this is using technology for instruction it is still passive and not far removed from the traditional lecture format (present and deliver), rather than interactive. Students also reported that their lecturers often used technology during class to break up lectures (57.03%). Students said they used online collaboration tools to communicate/collaborate with the lecturer and other students in or outside the class (59.06%) and used their own technology devices by themselves to enhance learning during class (59.84%). It would appear that technology use by lecturers in class is limited to the presentation of content and as a motivational tool, while students self-direct and use technology for creative or critical thinking tasks, and collaboration or to enhance their own learning. As a result, students seemed very satisfied with the technology used by their lecturers, even though they did not take advantage of the full affordances of the technology as educational tools. It appears that the Education faculty staff were not experienced in the use of Internet technologies as a teaching tools, as confirmed in research by Aduwa-Ogiebaen and Wwameiye (2006) who
found that the faculties of Education and Agriculture were the least experienced in the use of the Internet.

Students indicated that they would like their lecturers to use a range of digital utilities and tools that are more interactive and to enhance learning (Figure 6). Students wanted staff to use more electronic resources such as tutorials and quizzes, search tools to find references or other online information for class work, academic validation software (i.e. Turnitin), greater use of the LMS, simulations and educational games and software to make videos or multimedia resources. The results indicate that lecturers appear to have been using the LMS as a repository for student materials, rather than an interactive teaching and learning tool. These results also indicate that students would like to have more technology in the classroom.

![Figure 6: Student preference for technology use in class.](image)

**Skills**

Figures 6 and 7 examine student perceptions of their own skill levels when using technology.

![Figure 7: Software skills of students across the University](image)
Figure 8: Software skills of Education students


For the software skill question, students were asked to rate themselves on what they considered to be their skill levels using particular devices. Education students considered they were advanced users of social networking tools. Although this generation of students belong to the so-called digital natives, their perceived levels of competence when using digital tools is actually quite low across the university for all students. Other research has also produced similar findings (Combes, 2012). These results indicate that even students recognize that their expertise when using technology for study and learning purposes is limited.

Figure 9: Percentage of students that use applications at least 2-3 times a week

The results in figure 9 indicate that Education students were using a range of technologies slightly more than other students across the university. Use of spreadsheets, video editing, social media, email and the LMS are very similar between the two groups. While Internet browsing, word processing and using digital photography is slightly higher for Education.
Table 1: Location of students when using the Internet

<table>
<thead>
<tr>
<th>Location</th>
<th>Education students</th>
<th>Whole University students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>42</td>
<td>61</td>
</tr>
<tr>
<td>3G mobile wifi</td>
<td>64</td>
<td>76</td>
</tr>
<tr>
<td>University lab</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>University wifi</td>
<td>39</td>
<td>61</td>
</tr>
<tr>
<td>Internet cafe</td>
<td>36</td>
<td>25</td>
</tr>
</tbody>
</table>

The results in Table 1 indicate that Education students use their mobile devices to be connected both inside and outside the university more than the other group who use their devices at home and at various locations around the university (wifi and lab).

The majority of students studying at the university come from rural areas, so they have to rent their accommodation while studying at the university which may explain the high use of the 3G wifi and the use of university facilities to be connected.

Figure 10 indicates how students across the university feel about using technology for learning. Most students agree that technology can be a useful teaching-learning tool in the classroom.

![Figure 10: How students feel about technology at university](image)

Note: SA=strongly disagree, D=disagree, N=Neutral, A=Agree, SA=strongly agree

Results from Figure 10 show that 94.92% of students very strongly agreed or agreed that technology makes learning experiences more authentic (closer to real life), while 92.37% felt that technology use in class helps to develop relevant skills that are useful beyond university. 91.53% felt that technology enriched their learning experiences, helped them to understand basic concepts (90.68%), and make connections between subjects (87.29%). However, only 81.35% felt that technology helped them to achieve subject objectives. These results indicate that students perceive technology as very important for their study and their success at university.
Figure 11 describes how students felt about themselves as users of new technology. Only 54% indicated that they are usually among the first people to check out a new electronic device or gadget, while 36% said that they usually wait until they see others trying new technology and then they will try it themselves. 10% tend to wait a long time before trying new technology. These results are supported by earlier research studies which reveal young people as confident technology users (Combes, 2012). The other 46% of students who tend to wait before trying new technology may be inhibited by cost. Further research is needed here to determine whether cost of new technologies is an issue, especially since earlier results in this research indicate that students across the university do not update their devices on a regular basis or when a new version of a device is released.

Conclusion

This research demonstrated that students at university consider themselves skilled in the use of a reasonably wide range of technologies and devices. Of interest is the fact that Education students appear to be more conversant with technology than other students at this particular university. Students across the university say they are confident users of basic web applications such as social media, email and the Internet. However, these confidence levels do not equate to proficiency when using technology, a fact recognized by the students themselves. Students were using more recent (creative?) applications such as web authoring, digital photography and video editing. There may be a chicken and egg scenario going on here. Do students develop software skills by using applications in their studies or do the students choose which applications to use based on existing skills? Naturally the answer is likely to be a mix of these questions, but one suspects that skill level may be the determining factor when considered alongside a student’s busy lifestyle.

Overall, the results indicate that for the most part Education students at NPU are not embracing “cutting edge” technologies, but neither are other students. Technology use by lecturers across the university appears to be low and at a very basic level that does not go beyond the traditional lecture format. While computer ownership amongst students (including laptops, tablets and mobile phones) is high, students’ desire to use technologies in the classroom outstrips how their lecturers use it. Printing is still an activity pursued by most students.
It is clear from the evidence that students at NPU want to engage with technology at a more interactive level than supplied by the university infrastructure (LMS) and their lecturers, but they also recognize that their skill levels when using technology for learning (information literacy) are not advanced. While students indicated a desire to acquire higher order technology skills and to use a range of formats, there is no place within either the Education courses or across NPU to learn these skills. This fact is likely to result in under-used materials and student frustration in being unable to optimally access and use the technologies available to them. The authors believe that when technologies are embedded into curriculum programs at university and new skills taught at the point of delivery, students will have opportunities to increase their skill levels. Certainly, when new ways (technologies, file-formats) for distributing learning materials are introduced, some form of student support/training is required that is demonstrative of the manner in which the students can optimally utilise these new methods to enhance their learning.

The findings of this research are interesting in the context of training the next generation of teachers. Other studies have shown that pre-service teachers and teachers are not big users of technology in their classrooms (Lei, 2009; Pagram, & Cooper, 2012). The current study also indicates that not just Education students, but all students at NPU exhibit a comparatively low uptake of new technologies and have basic skill levels when using technology for learning. If change is going to occur in how young people use technology in schools and university, then new teachers coming into the profession need to have opportunities to use a range of technologies for learning at university. They also need lecturers to be good role models so they can transfer how they learn at university to other teaching environments.

Overall the study has shown that there is an ongoing need to examine student use of ICT at NPU, how this is related to the learning materials provided by the university and how technology use is modelled by lecturers. It is can be concluded that it is incumbent upon a university of the 21st century to monitor students’ technology ownership and use, and how they use technology for learning, thus ensuring that the university has an adaptive approach to both technology and pedagogy.
References


Gulatee, Y. & Pongthanoo, P. (2015). The Usage of Facebook and NPU-ELEarning Case study In Faculty of Management and Information Technology, Faculty of Art and Science at Nakhon Phanom University. *Nakhon Phanom University Journal*, 5, 3, 89-96.


Lei, J. (2009). Digital natives as preservice teachers: What technology preparation is


Contact emails: Yuwanuch Gulatee, y.gulatee@ecu.edu.au
Jeremy E. Pagram, j.pagram@ecu.edu.au
Barbara Combes, bcombes@csu.edu.au