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Cross-cultural probing: An examination of university student ICT ownership and use of e-learning materials in Thai and Australian contexts.

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ABSTRACT

This paper reports on the second phase of an ongoing project being carried out at Edith Cowan University (ECU) in Western Australia examining ECU Education students' ownership and use of information and communication technologies (ICT). It is critical that modern universities understand their students' ICT capabilities in terms of hardware ownership, software facility, and preferences in order that online course and content delivery may be tailored to deliver effective, usable and engaging learning resources (Smith & Caruso, 2010). In addition, with universities placing greater focus upon attracting students from beyond the borders of any one country though e-learning, it is equally important that we understand these basic capabilities more globally. In this second phase data was collected at a Thai university as well as in Australia. The objective being to both inform the individual institutions, and to provide comparative data. In particular the study gathered information concerning students' self-perceived software skills and frequency of use, hardware ownership and frequency of use, access to and location of Internet use, preference for various types of online learning materials, and access and use of university email and university online learning environments. An online survey consisting of both Thai and English language versions was used that fed respondent data into a common database for analysis.

Keywords: E-learning, Educational technology, ICT readiness, online learning, cross-cultural

INTRODUCTION

In the first phase of the study (2007) the researchers undertook an online survey to try and determine the skills, ownership and use of ICT by ECU education students (Pagram & Cooper, 2009). This survey showed that in 2007 these students were not early adopters of new technologies, nor were they making use of its potential in their studies. In the second phase (2010) a modified but related survey was used to determine what had changed, and in order to contextualise the data from a cultural point of view, a partner Thai University, Sakon Nakhon Rajabhat University (SNRU) was contacted and a Thai translation of the survey was developed. It is the results from these two surveys that are the subject of this paper.

ICT use by education students is of particular importance, as it is these students who form the next-generation of classroom teachers. Other research undertaken by the Centre for Teaching and

Learning Technologies has shown that in Western Australia at least, the vast majority of school teachers are not using ICT effectively within their classrooms. The authors theorise that if student teachers are reticent to use ICT to support their own learning then it is unlikely that they will see it as a tool to support the learning of their own students. By comparing the results from both the Thai and Australian universities is hoped to determine if there is any difference between the ICT preferences of their respective education students.

BACKGROUND

Edith Cowan University (ECU), situated in the metropolitan area of Perth Western Australia, is a large university with approximately 24,000 students. These students are spread over four campuses and about 20% of all students are international. Historically, ECU has its foundations in teacher education and training and its Faculty of Education and the Arts is the largest in Western Australia, with 7298 students (6074 equivalent full-time student load) and 268 academic staff (ECU, 2007). Sakon Nakhon Rajabhat University (SNRU) is located just outside Sakon Nakhon province, in North Eastern Thailand, It is a medium sized university with one campus and approximately 15,000 students of which approximately 1% are international (SNRU, 2011). The Training of pre-service teachers is an important part of both the Thai and Australian universities as historically they both began as Teachers colleges.

Previous research had shown that whereas new teachers may be competent users of information and communication technology (ICT), they do not necessarily utilise them in their own classrooms (Russell, et al., 2003). It is also known that students' own pedagogical beliefs and values that are generated during their education (including tertiary) play an important part in whether or not they choose to implement technology for their own students (Cox, et al., 2004; Minaidi & Hlpanis, 2005). This suggests that if students do not have positive experiences with ICT and its applications to education while at university, they are unlikely to employ ICT in their own teaching. We are also mindful that web technologies (including those touted as 'web *2.0*') are developing at a rapid pace (Anderson, 2007) and that the 'online' aspect of ICT use is likely to become of greater importance in education in the future (Salaway, Caruso & Nelson, 2007). Additionally, and significantly, in 2011 the Faculty of the Education and the Arts at ECU began work on a project funded by the Australian Department of Education, Employment, and Workplace Relations called the *Teaching Teachers for the Future* (TTF) project. This project is a nationwide initiative in order to "... enable pre-service teachers to achieve and demonstrate (upon graduation) competence in the effective and innovative use of ICT in education to improve student learning" (ACD, 2011, para. 1). The results of the current investigation into students' ICT use and preferences will inform the TTF project in terms of the most effective ways to engage ECU Education students with online learning resources. Partly as a result of the previous research the school of Education at ECU is moving towards a '*Bring Your Own Digital Device*' (BYODD) policy, in which students will be encouraged to bring a computer or tablet to class so that the use of technology in education becomes ingrained and natural to them.

METHOD AND PARTICIPANTS

The investigation was undertaken via an online survey developed and delivered via Filemaker Pro 8.5 and housed on a university web-server. ECU Education students were informed of the survey via a link placed on Blackboard and SNRU students via their lecturer. Figure 1 shows screen captures from the survey in both English and Thai languages. Data entry was via 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 continue through to the end. Further an iPod Nano was offered as a prize to a random student that completed the survey. It is acknowledged that this method of recruiting students for the survey skewed the sample towards the more ICT capable members of the ECU target group as they were required to use the online learning

management system to access the survey. It is therefore reasonable to assume that the ECU sample represented the middle to upper end of students in terms of ICT ability.


Figure 1. Example screens from the online survey in English and Thai

The survey contained the following sections.
- About you – demographics
- Your Skills – perceived software skills and frequency of use
- Your Stuff – hardware ownership and frequency of use
- Your Access – type of internet access, location of internet access
- Your Learning – Preferences for various formats of online materials (Word, PDF etc), frequency of access to university email and Blackboard, frequency of saving, printing online learning materials

In all 158 undergraduate, 3 postgraduate, and 11 unidentified students from the School of Education at ECU completed the survey. Twenty one percent of the respondents were male. This ratio of male to female students fairly accurately reflects the actual ratio mong Education students at ECU. The Thai sample consisted of 360 undergraduate students and 4 postgraduate students of which 31% were male.

Overall the samples were a reasonable representation of the student populations under examination. Figure 2 illustrates the two samples when broken down by years of study completed and shows that a satisfactory spread of students from various years was achieved for the Australian sample but with a much higher (40%) number of first year students in the Thai sample.
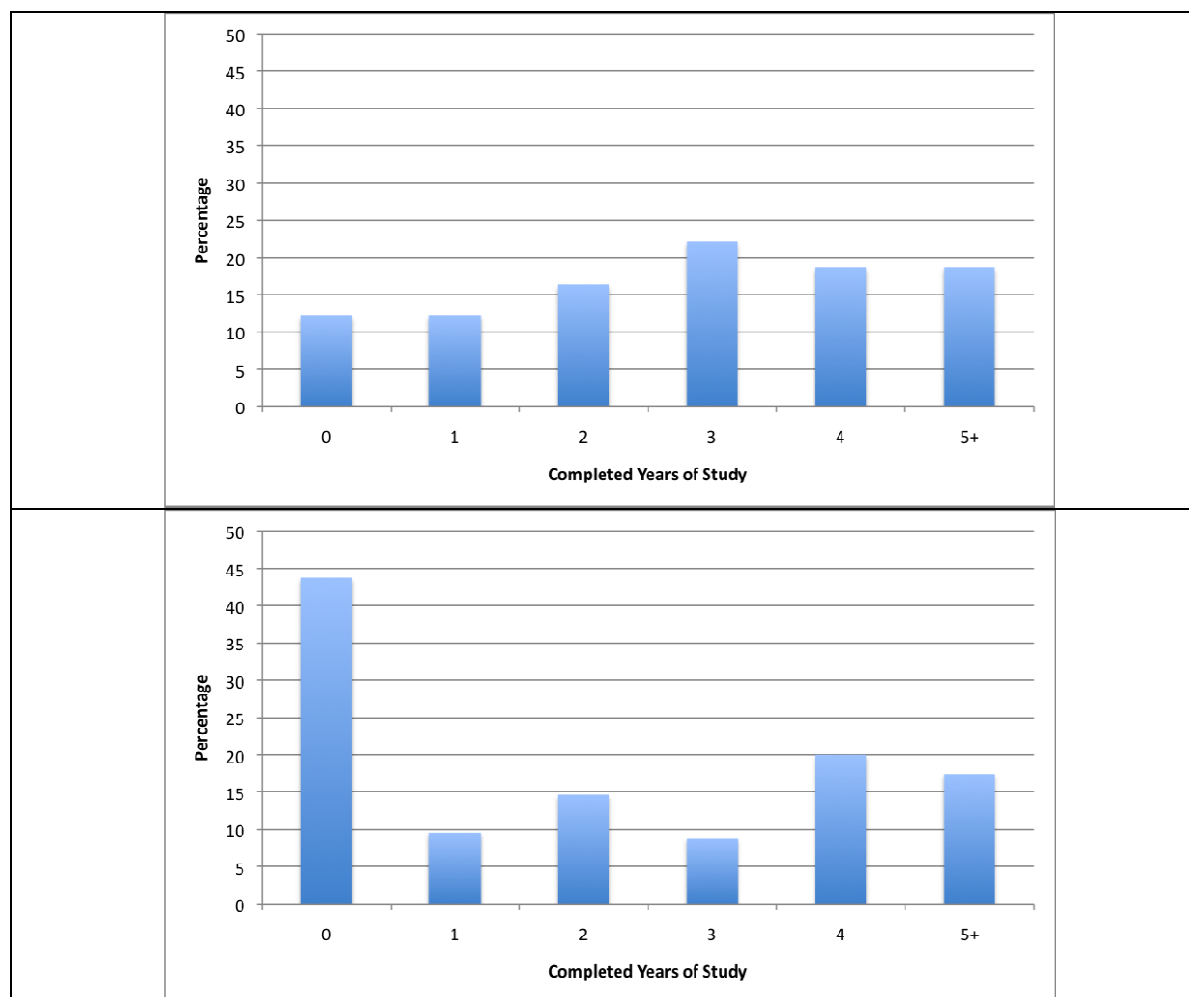
Figure 2. Distribution of sample by years of study completed (Australian university – upper, Thai university – lower).

FINDINGS

Student Software Skills and Frequency of Use

The survey collected data on students' self-perceived skill with a variety of software. The survey was constructed such that for each piece of software a number of descriptors were developed indicating the respondent's level of skills with the software. Table 1 illustrates two examples from the survey for Word processing and Spreadsheeting (e.g. Microsoft Excel). The student selected the rightmost category in which they could complete all listed skills. For the Thai version a Thai native-speaker translated the English text.

Table 1

Sample from the survey where students indicated self-perceived skill level for a variety of software.

	Little	Introductory	Competent	Advanced
Word processor	I can't do much	I can print a document, change fonts, spell check, insert a footer and page numbers.	I can insert images, create tables, change Page Setup, change margins.	I can use columns and sections, set up styles, use mail merge for labels or letters.
Spreadsheets (e.g. Excel)	I can't do much	I can enter data, use Sort, create charts [graphs] and modify them.	I can insert some calculations, format cells, insert and delete rows and columns.	I can use complex formulae, use absolute and relative cell references.
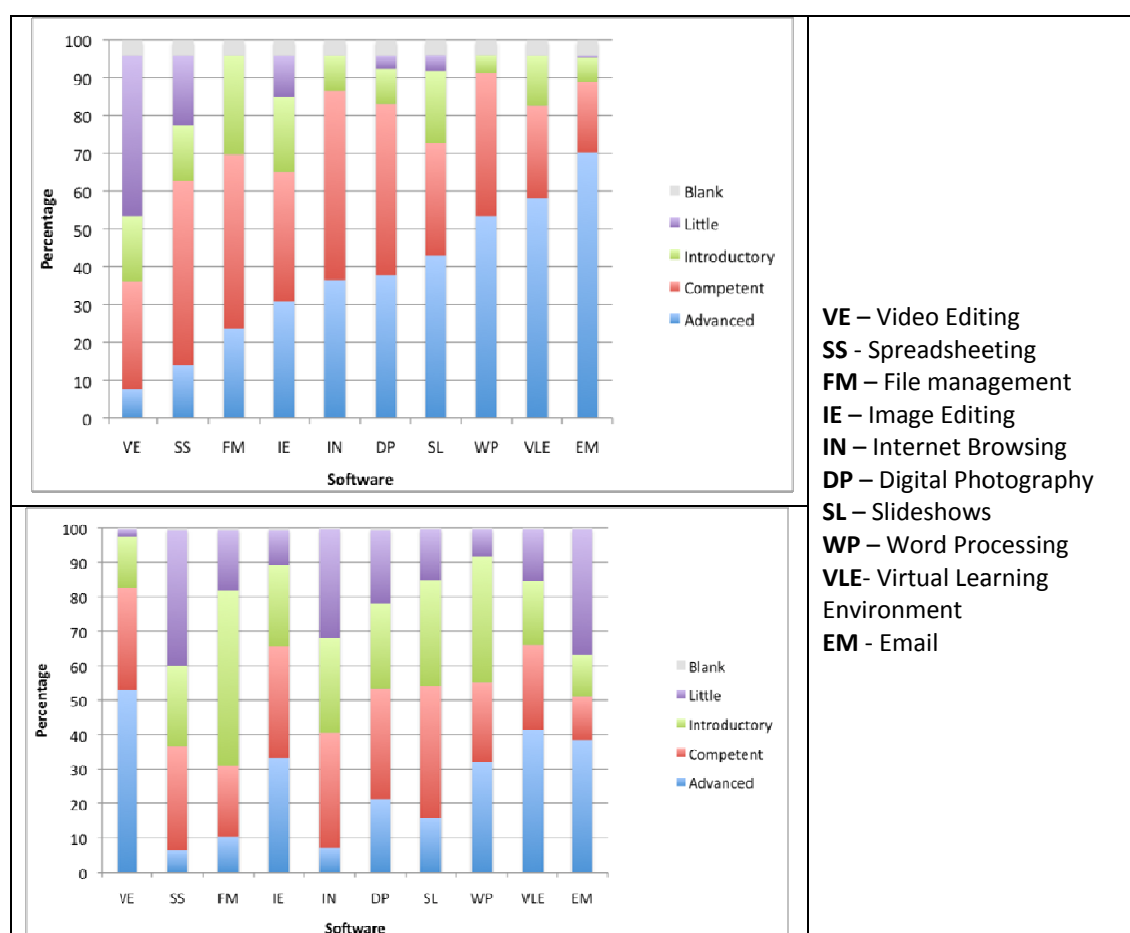
Figure 3. Student self-perceived skills with a variety of software (Australian university – upper, Thai university – lower).

As can be seen in Figure 3 at least 50% of the Australian students indicated competency (or better) in all categories excepting video editing, Thai students however indicated a much higher percentage of students (>80%) indicating competence in this category, which may reflect coverage within the course. Looking at the advanced category in Figure 3, for Australian students, the greatest self-perceived skills with software were in email, virtual learning environment (Blackboard), word processing, and slideshows (e.g. Powerpoint). This is consistent with the types of software they are

most likely to be using in their Education course. For Thai students overall perceived skills are lower and this may reflect that the Thai sample had a greater proportion of first year students who were just starting their course.

In the 2007 survey students were asked to rate themselves as either very skilled, skilled, unskilled, or very unskilled. Although a less satisfactory measure than the current descriptor-based method (as illustrated in Table 1) the types of software that students ranked themselves as skilful in remained approximately the same with minor changes in rankings probably due to the variation in question technique adopted by the different surveys.
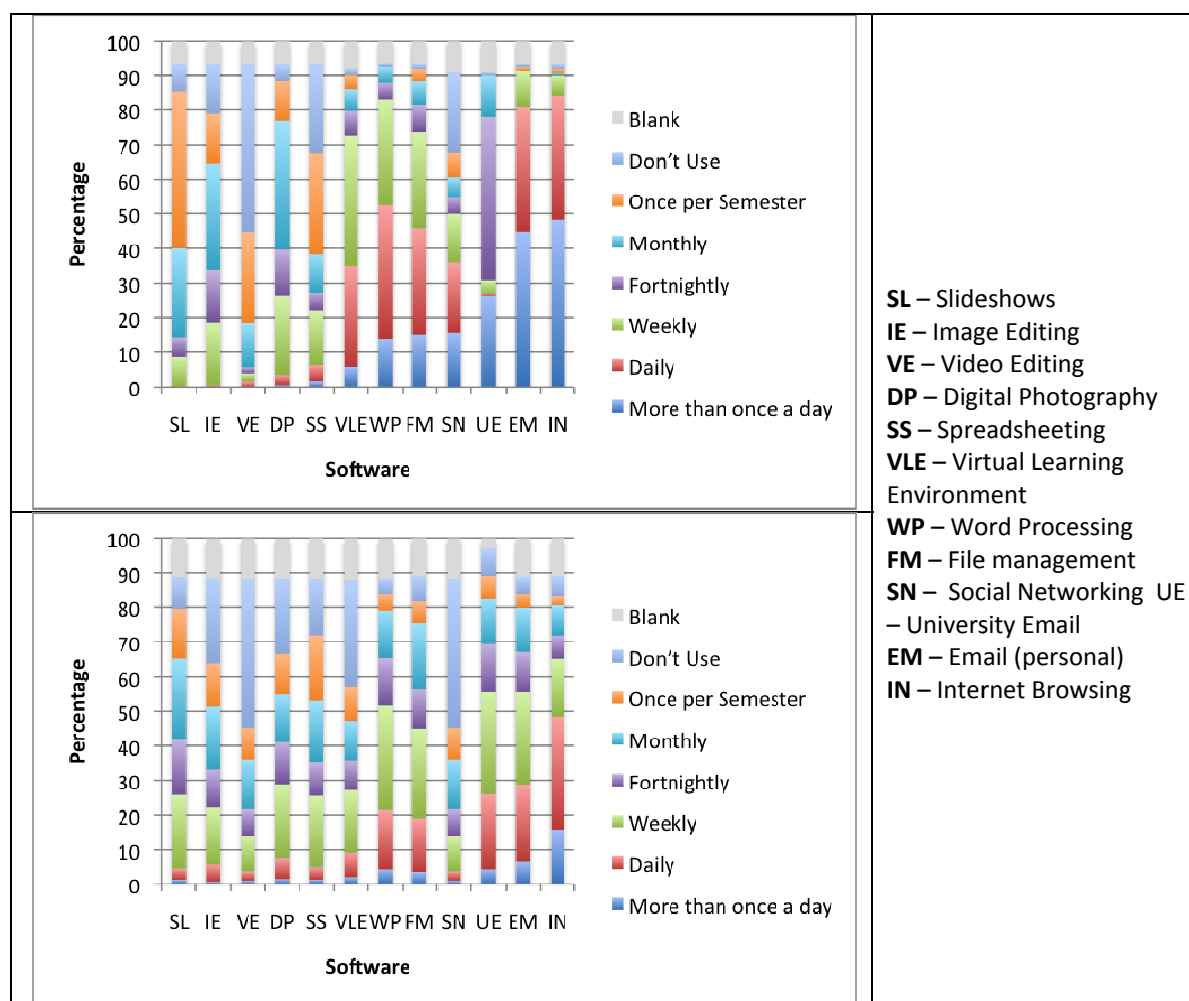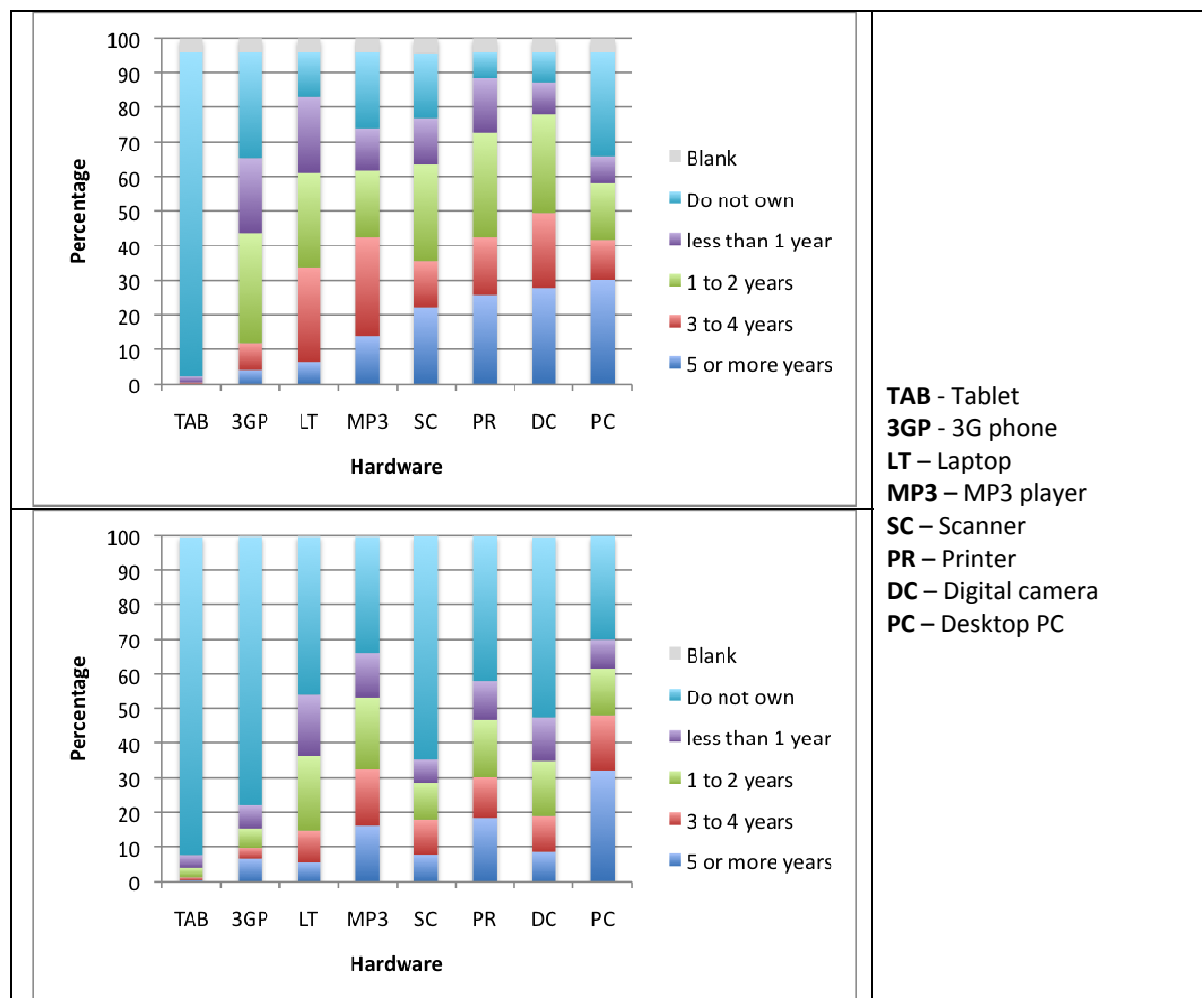

Figure 4. Software frequency of use indicated by the students for the various software types (Australian university – upper, Thai university – lower).

Figure 4 shows the results of the survey with regard how often the students utilised the various types of software. Interestingly the only software indicated to be used on at least a daily basis by the majority of students was Internet browsing, email, and word processing. For most of the Australian Students University email was accessed on only a fortnightly basis. Overall the Australian students reported using the various software types more on a daily or greater basis. This may reflect the move within Australian universities to paper -free courses where all communications and course materials are only distributed in an electronic form.
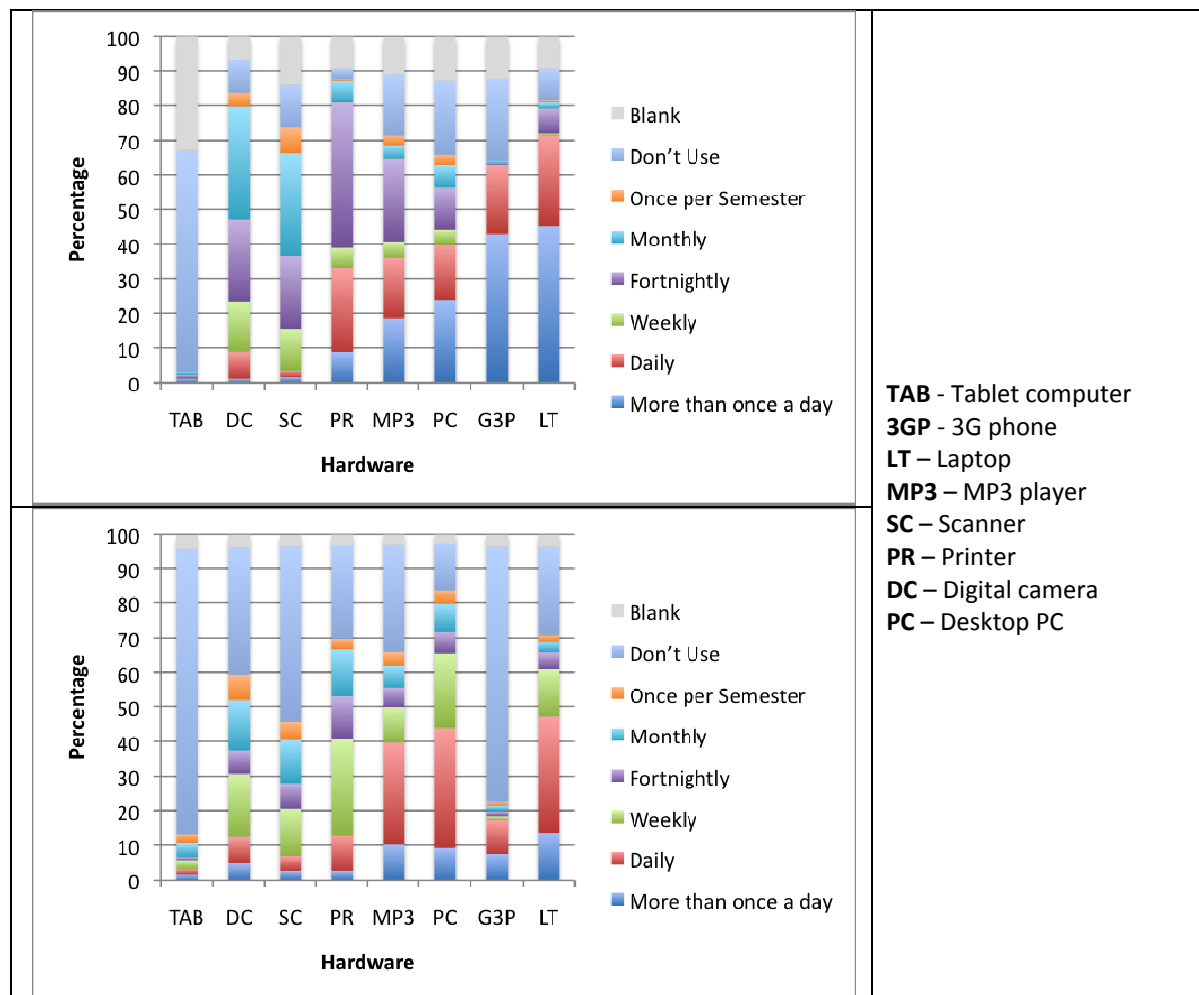
Student ownership and use of technology

The survey asked students to identify what hardware they owned, how old it was, and how frequently the hardware was utilised and this data is charted in Figure 5. In terms of computers over 83% of Australian students owned a laptop (Thai 55 %) with 20% of these obtaining it in the last year whereas 66% of Australian Students owned a desktop PC (Thai 70 %) with 8% obtaining this in the last year (Figure 5). In the previous study from 2007 less than 65% owned a laptop and just over 70% owned a desktop PC. The greatest change however occurred in the smart phone (3G phone) area with less than 10% owning such a device in 2007 and over 65% of Australian students indicating ownership in the current survey with over 50% of students purchasing one in the last 2 years. For Thai Students this was much lower with 22% Smart phone ownership with 12% purchased in the last two years. The data shows a very significant move toward mobile technologies both in terms of current ownership and purchasing pattern. It can safely be assumed that the student population of the future will be armed with laptops and 3G enabled mobile devices. The current study occurred too early for the trend toward Tablets such as the iPad to be observed clearly in the statistics but already 8% of Thai students had purchased one (Australian 2%). It is likely, however, that tablets will be an important factor in future surveys. MP3 ownership is similar in both countries but there is a lower level of digital camera, printer and scanner ownership in the Thai group and this is also reflected in the usage figures.

TAB - Tablet
3GP - 3G phone
LT – Laptop
MP3 – MP3 player
SC – Scanner
PR – Printer
DC – Digital camera
PC – Desktop PC

Figure 5. Student hardware ownership (Australian university – upper, Thai university – lower).

Figure 6 shows the reported frequency of use of each of the hardware types. For Australian students, the mobile devices (laptops and G3 phones) are the most frequently used followed by desktop PCs and mp3 players. Over 70% of students responding to the survey use a laptop at least daily.

For Thai students Laptops (47% daily), PCs and MP3 players are the most used. But Smartphones, Scanners Digital cameras and Printers are used less and Tablets more, reflecting ownership. Overall it can be said that while Australian students own a lot of technology they only use it occasionally.

TAB - Tablet computer
3GP - 3G phone
LT – Laptop
MP3 – MP3 player
SC – Scanner
PR – Printer
DC – Digital camera
PC – Desktop PC

*Figure 6*. Student hardware frequency of use (Australian university – upper, Thai university – lower).

Accessing and using online materials

Figure 7 illustrates the variety of ways that students access the Internet. For Australian students this pattern is drastically different to the distribution from the 2007 survey with regard to both university wireless and 3G-phone access to the internet. In 2007 just over 20% indicated using university wireless and just over 10% indicated using 3G devices to access the Internet. By 2010 this has changed to 35% accessing the Internet using university wireless and over 45% indicating the use of 3G devices (Thai 21%). Once again this indicates a huge shift toward mobile devices for student use. For Thai students there is a clear trend towards accessing the internet in public locations rather than home with 68% using the university Labs (Australian 44%), 56% University Wi-Fi (Australian 35%) and 73% internet Cafés (Australian 7%).
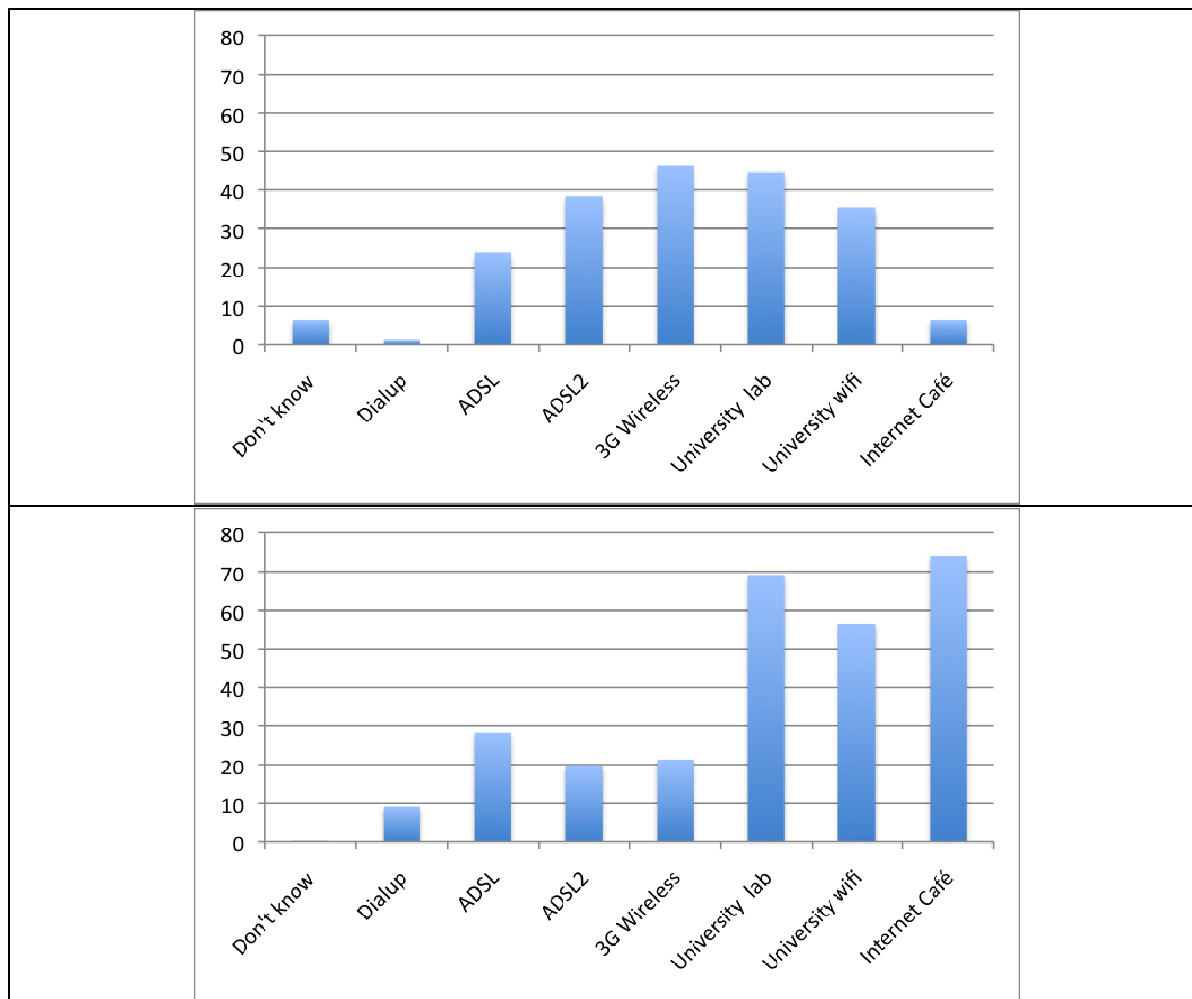
Figure 7. Type of student Internet access (adds to more than 100 as students could choose multiple options, Australian university – upper, Thai university – lower).

For the Australian students the authors were also interested in how frequently students access online learning materials and this is shown in Figure 8 with the majority of the students indicating fortnightly access. This would seem to be a worrying statistic when more and more of course materials are being presented online. For the Thai students access is more spread which reflects the use of the VLE as an occasional learning tool and resource.
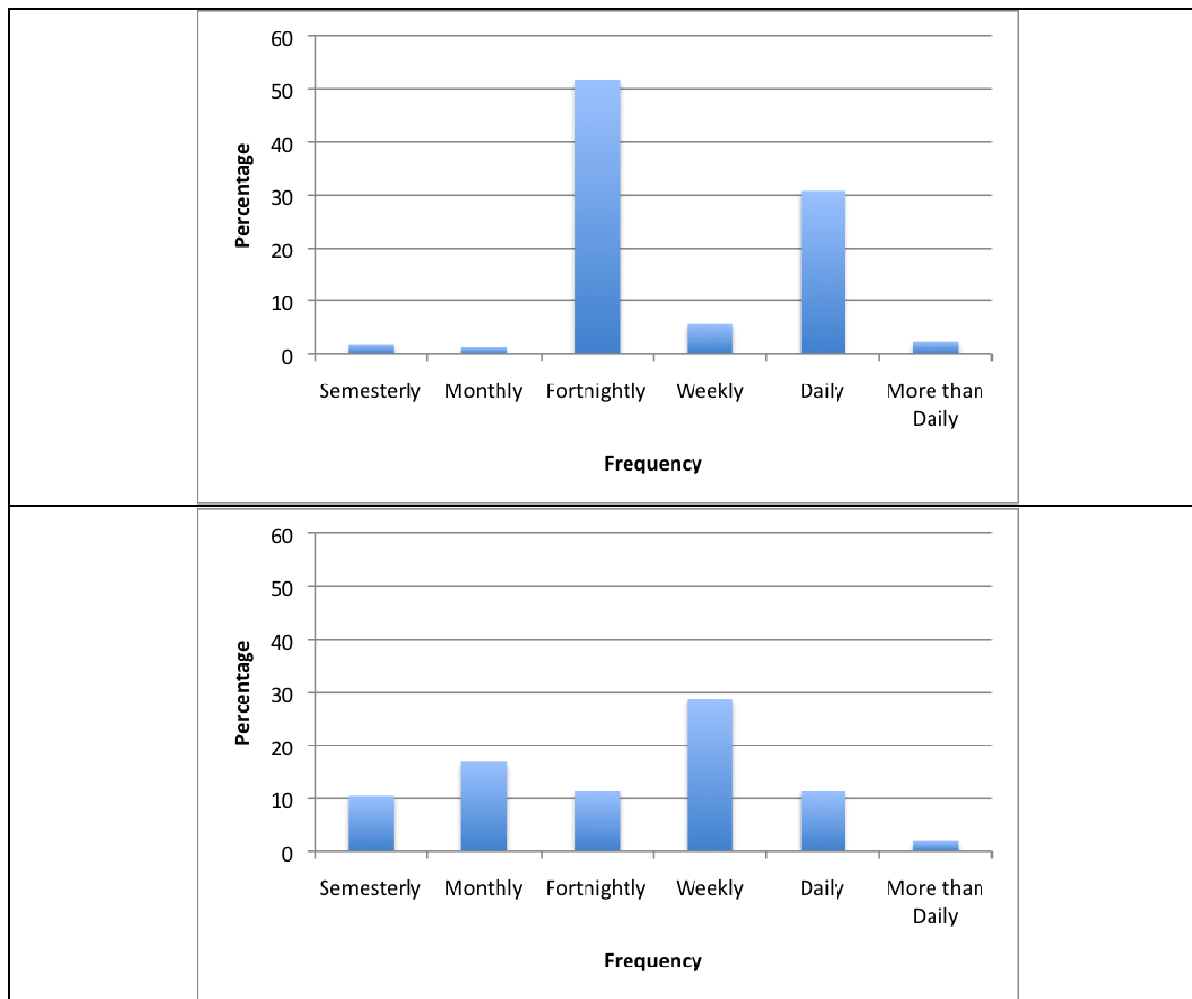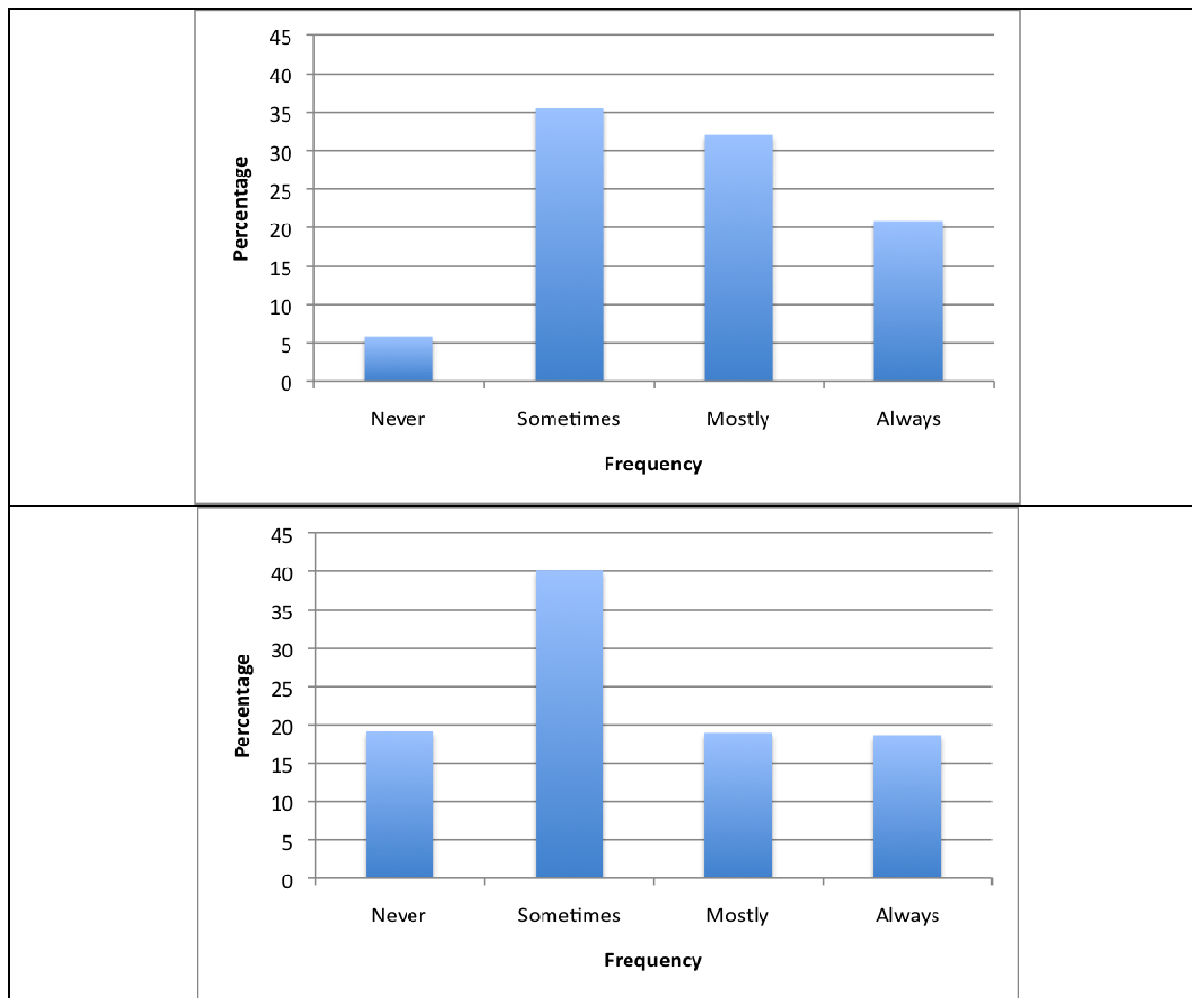
Figure 8. Frequency of accessing online learning materials (Australian university – upper, Thai university – lower).

For Australian students in particular this picture is worsened by the fact that many more students still print or save online learning materials compared to their Thai counterparts (Figures 9 and 10) which suggests that these materials are of a traditional printable form and do not require any interaction beyond reading. This would not be the case if they were, for example, simulations or materials that were not primarily information-based and that required interaction on the part of the student. The Thai figures are interesting as more students *never print* which may just reflect less printer access, also 20% of Thai students *never save*, which may reflect their access locations as it is more difficult to save on university lab machine or at internet café.
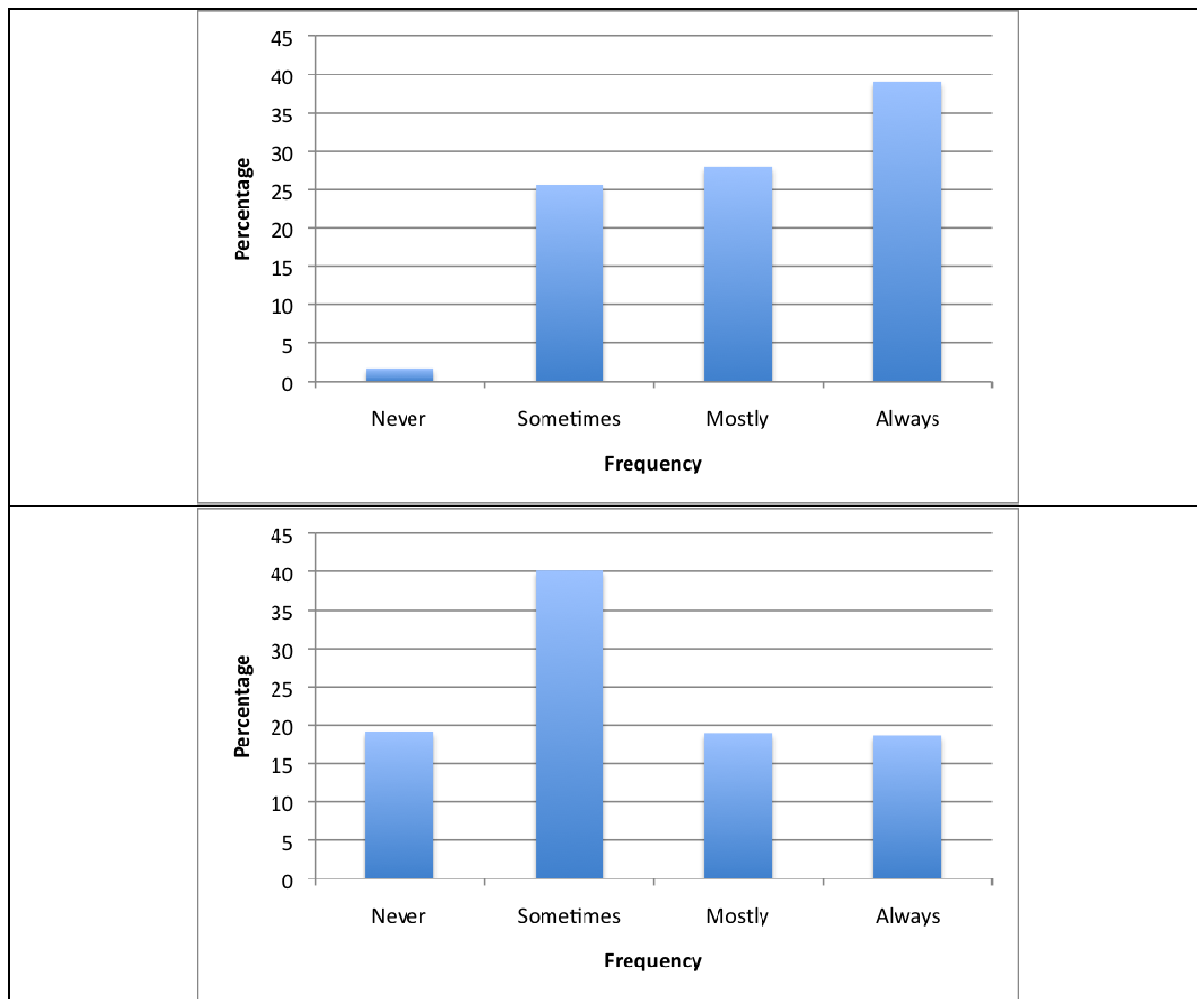
Figure 9. Frequency of saving online learning materials (Australian university – upper, Thai university – lower).

Figure 10. Frequency of printing online learning materials (Australian university – upper, Thai university – lower).

Finally the students were asked whether or not they required any training in order to use the technologies required of them in their courses (Figure 11). For Australian students the answer to this was a resounding *no* with approximately 70% of students disagreeing with the statement, *I need more training in the information technologies I am required to use in my study*. For the Thai students however the answer was a resounding *yes* with 90% of students requesting more training. Even allowing for the large first year (possibly less skilled) Thai sample this is interesting, with the Australian students appearing to say *leave me alone, I will work it out for myself*.
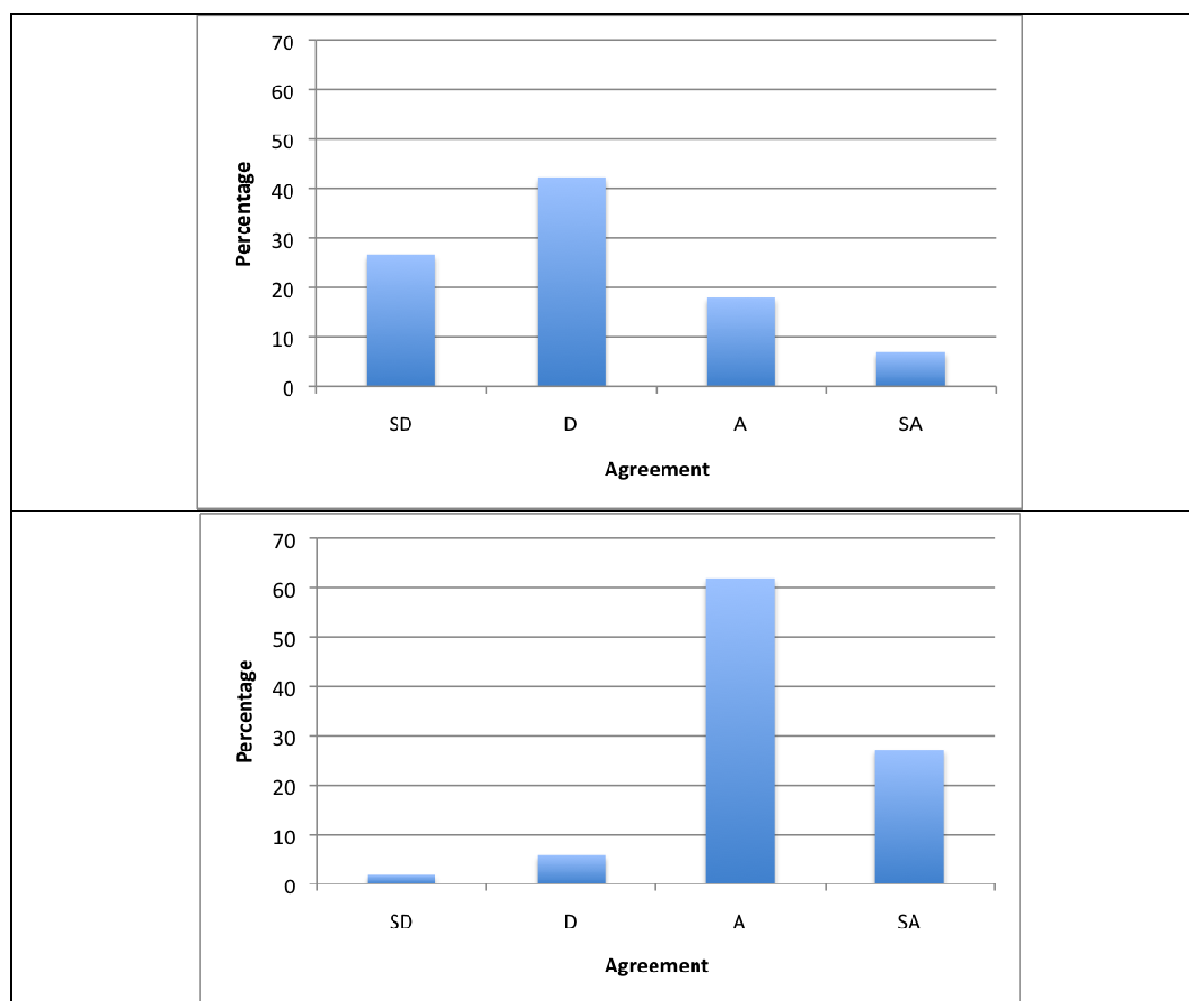
Figure 11. Student responses to the statement *I need more training in the information technologies I am required to use in my study* (Australian university – upper, Thai university – lower).

CONCLUSIONS

Overall, for the Australian students the outcomes from the 2010 survey, are far more positive than those obtained in 2007. Increases in technology ownership by education students have been quite dramatic particularly the ownership of laptop computers and 3G mobile phones. Generally the trends are in a positive direction towards students who not only own technology are comfortable using it for the tasks of life and students are making more use of technology in their learning. This fact augurs well for a future where students will likely bring their own digital device to use during their university education and especially well for universities such as ECU that are considering the possibility of implementing a policy along these lines.

Perhaps the biggest surprise for the researchers were the Thai results, which showed that on most measures the Thai students were on par with their Australian counterparts in terms of ICT use and that ICT ownership is growing at a similar rate. With the Thai university being located in a traditionally less affluent part of the country this is particularly encouraging.

However, the survey also reveals, as it did in 2007, another large group of education students who are technology adverse. For while universities, ECU included, have steamed headlong into the production of digital content online lessons and/or communications in a digital form it would appear that many students still prefer printed materials (as they did in 2007), Perhaps more worrying (for university educators in particular) is that there are a significant group of students for whom online

technologies are not being used. Those education students who rarely, or never, make use of their University e-mail address and/or make little use of the University learning management system, present a particular challenge.

The authors believe that these students are unlikely to make use of technology when they graduate, for they do not value it in their own education. Currently such students are able to flourish at University as we are in a transition period between digital and analogue worlds. The authors believe that as the transition closes these students will either decide tertiary education is not for them or embrace the digital world.

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