EXPLORING PREFERENCES AND BARRIERS IN LEARNING WITH TABLET COMPUTERS BY UNIVERSITY STUDENTS

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Abstract- Most students nowadays have mobile technology devices including tablet computers and use them in their every day life. Whether students use the technology for learning or not is the question. The purpose of this study is to investigate students’ preferred ways as well as barriers to tablet computer use for learning in higher education. The study sample are consisted of 20 student interviewees and a further 343 students who answered open-ended questionnaires. Thematic analysis is used to analyse the data. The results indicated that the students’ preferred ways of using tablets for learning are to accomplish their academic tasks, for communication, and for online discussion. They use the tablet as a learning tool as well as to search online for information both inside and outside the classroom, and in ways that support their individual learning styles. The findings showed that the barriers to students’ tablet use for learning are sight worries, limited resources, limited support, boredom, distraction, the mobile device characteristics, discipline, experience, knowledge and personal preference.

Keywords- Higher Education, Mobile Learning (M-Learning), Tablet Computers

I. INTRODUCTION

Amongst mobile devices and other technologies, researchers agree that tablet computers are useful tools for educational purposes and that it can be used very effectively to enhance student learning and interaction, and to increase student motivation and engagement (Fischer et al., 2013; Kothaneth et al., 2012; Mohseni, 2014). The tablet computer has recently become a very popular tool in education. The Apple iPad, launched in 2010, was the initial market leader in tablet technology, and since then other manufacturers including Samsung, Motorola, Lenovo, Toshiba, Acer and Asus have been quick to launch their own tablets with Google’s mobile operating system, Android. Motion’s Blackberry Playbook and HP’s TouchPad are also in the category of “tablet”. Compared with desktop technology, the mobile technologies are better able to enhance and support learning, a fact which has proved attractive to the current generation of students because they are easier and faster. The reasons for using technological devices, and particularly mobile devices, are to enhance, support and transform the learning experience in order to improve learning outcomes for students (Context, 2014).

II. LITERATURE REVIEW

Paris(2005) has defined tablet computers (tablets) as “based on laptop computers but with extra functionality...the tablet is essentially a fully functional computer which enables a user to write directly on the screen with a stylus, or switch to keyboard input, and to connect to the Internet or set up ad-hoc, peer-to-peer wireless networks”. Todays Laptops are touchable but they are not handheld devices. Johnson et al.(2013) define the tablet computer as a device that does not require a mouse or a keyboard although these can be easily plugged into a tablet and are preferred by some users. Therefore, amongst mobile devices and other technologies, researchers agree that the tablet computer is a useful tool for educational purposes and that it can be used very effectively to facilitate student learning and interaction, and to increase student motivation and engagement (Fischer et al., 2013; Kothaneth et al., 2012; Mohseni, 2014). However, its use in the learning process can be problematic (Butcher, 2014; Mang & Wardle, 2012; Schnackenberg, 2013).

Tablets are now acknowledged to be useful in education (Mohseni, 2014). There are many applications (apps) that facilitate learning such as those for email, web browsing, calendars and diaries, e-books, educational games, multimedia, writing, presentation, social media, video conferencing, cloud storage, and much more. There were more than twenty thousand educational apps in the App Store in 2012 (Mohseni, 2014). The NMC Horizon report showed that tablets are considered as powerful tools for learning either inside or outside of the classrooms (Johnson et al., 2013) because they have WiFi and cellular network connectivity, large touchscreens, and include a lot of mobile apps. Against the fixed type of ICT tools, these devices can facilitate learning in a mobile or portable form, which is favoured by the current student generation (Almarwani, 2011; Prensky, 2001). The quick access feature of tablets makes them easier and faster than PCs and laptops, and is of particular use during outdoor learning sessions. So, the flexibility of tablets provides the potential to change the learning experience of students (Liaw & Huang, 2012). Therefore, a tablet device has the potential to give satisfaction to students by allowing them to interact with the course contents and retrieve information from the internet at any time (Liaw & Huang, 2011).

Tablets can support learning as they can be used as a portable personalised learning environment (Clarke & Svanaes, 2014; Johnson et al., 2013). Users/learners
can easily share content such as videos, images, and presentations and can choose their own learning apps. Furthermore, students can carry tablets from class to class very easily, and can use them to access textbooks and other course materials (Johnson et al., 2013). All of these resources, tools and other materials are on a single device which facilitates learners to take and share notes, create to-do lists, store all of their files, and organise their academic schedules. Tablets not only make productivity more efficient, but also support students in creating projects, managing time, assigning tasks, and organising ideas (Schnackenberg, 2013). Moreover, tablets can be used with different learning styles to enhance the educational experience (Kothaneth et al., 2012; Schnackenberg, 2013). Using tablets in learning can enhance interaction and collaboration between students (Butcher, 2014; Fischer et al., 2013; Mang & Wardley, 2012). Moreover, if tablets combine with wireless classrooms, learning could be enhanced through enhanced collaboration (Ali, 2012; Mehdipour & Zerehkafi, 2013). The electronic versions of textbooks on tablets reduces the amount of paper students need to carry around as well as lowering textbook costs (Mang & Wardley, 2012). In addition, the main features of tablets are their mobility and portability (Butcher, 2014; Fischer et al., 2013; Paris, 2005). They are light, can connect to Wi-Fi, have a long battery life, support different tools, are considered as suitable tools for mobile learning, can be used both inside and outside the classroom and on-the-go and are interactive and support many convenient educational applications (Butcher, 2014; Fischer et al., 2013; Mohseni, 2014).

Despite the fact that tablet computers in education are very much part of life now (Mohseni, 2014) and are useful tools in learning (Clarke & Svanaes, 2014; Johnson et al., 2013), it has been found that some students perceive tablets as frustrating and a distraction from learning (Butcher, 2014). Thus, their use in the learning process can be problematic (Schnackenberg, 2013). Tablets are generally considered as an advancement in teaching and learning technology but there are still a number of challenges to overcome (Mang & Wardley, 2012; Mohseni, 2014). The main challenges of using tablets in learning are the security setup, and app administration (Fabian & MacLean, 2014) and internet access (Ali, 2012; Mehdipour & Zerehkafi, 2013). Students have registered concern about how they can store files on a hard drive or a flash when using a tablet, as currently these devices cannot be connected to external drives for transferring and/or saving files (Schnackenberg, 2013). According to Fischer et al. (2013), tablets are not always the best tool to meet all of the computing needs of students. There is also the issue that students can and do use tablets inappropriately by playing with applications during lectures and seminars rather than using the tablet as a learning aid (Schnackenberg, 2013). However, the development of cloud technology whereby students can upload their files and store them virtually has provided one solution to this problem. Another disadvantage of tablets is that they are less user-friendly for work on large scale projects or papers (Schnackenberg, 2013). Two studies have shown that other drawbacks of tablets include difficulty in typing on a virtual keyboard and in writing or drawing with one’s finger-tip (Weider, 2011). However, the Apple website (Apple, 2016) and Mang and Wardley (2012) show that physical keyboards and stylus pens are now available for many kinds of tablets, thus solving this problem. Qualitative research by Bennett et al. (2011) concluded that handheld devices were too expensive and could easily be lost, according to the views of participants in the study. However, there are now many inexpensive tablets available, and since adult learners are more likely to take care of their equipment, tablet use in higher education does not suffer from these issues.

Mang and Wardley (2012), however, concluded that tablets presented much less of a distraction to the students than laptops, as their findings showed that students who used tablets were less likely than laptop users to engage in off-task activities such as instant messaging, social network usage, and watching videos during a lecture. Moreover, in a University of Ulster project, it was found that the price of the tablet was not an issue for students, and it was expected that this would encourage its adoption (Paris, 2005). It is argued that tablets do not have a significant effect on learning outcomes (Mohseni, 2014). Fischer et al. (2013) argue, however, that researchers have neglected the potential benefits of tablets in higher education. Despite this, interest in the potential benefits of tablets in education has grown globally in recent years (Butcher, 2014) as the new technology of augmented reality appeared. Augmented reality (AR) may become an important technology in m-learning which can be used and applied in classrooms with the aid of tablet computers (Zheng, 2015). Tablets allow learners to interact with digital information embedded within the physical environment (Dunleavy & Dede, n.d.).

III. RESEARCH QUESTIONS

1. What are the students’ preferred ways of learning with tablets?
2. What are the barriers to tablet use in higher education according to students’ perspectives?

IV. METHODS

This study adopts a purely qualitative approach. The methods used in this study are semi-structured interview and open-ended questionnaire. 20 students
took part in the interviews and 343 answered the questionnaires.

V. RESULTS AND DISCUSSION

Based on the results of the student interview and questionnaire, the barriers are as follows: sight worries, limited resources and support, boredom and distraction, mobile device characteristics, discipline, and personal preference and knowledge. Previous studies have shown that using tablets for learning can cause a sense of frustration and be a distraction from learning (Butcher, 2014; Mehdipour & Zerehkafi, 2013; Schnackenberg, 2013). This study would agree, since the data shows that tablets have the capacity to distract students and that this negatively affects tablet use for learning.

Another barriers deterring students from using tablets for learning is tablet characteristics. One of the main challenges of using tablets in learning is the security setup, and app administration (Fabian & MacLean, 2014). Moreover, students have observed that tablets suffer from limited battery life and small memory capacity (Mehdipour & Zerehkafi, 2013; Narayanasamy & Mohamed, 2013), as well as having complicated security setup, and app administration (Fabian & MacLean, 2014). In addition, students have expressed concern about how they can store files on a hard drive or a flash drive when using a tablet, as most tablets cannot be connected to external drives for transferring and/or saving files (Schnackenberg, 2013). However, tablets with USB ports are now available, or alternatively, cloud technology could be used.

The findings showed that limited resources and university/teacher support can be barriers to tablet use for learning in HE. This is consistent with previous studies which found that when educational institutions offer full support and resources to students using digital technology for learning, the students tend to have a positive view of its success in the classroom (Corbell & Valdes-Corbell, 2007; Demb et al., 2004). Pintrich & Schunk (2002) and Martin et al. (2013) have pointed out that the attitudes of lecturers or teachers towards technological innovations may affect students’ perceptions of using technology to support their learning. The findings of this study are contrary to those of a previous study by Park (2009), who suggested that university provision of computer access was not an issue for students when using technology for learning. Here, it was found that students are very much concerned about having good internet access whenever they use tablets for learning with specific regard to university programmes.

One of the barriers to tablet use for learning according to students’ perspectives is academic discipline. This agrees with a previous study by Orji (2010) who found that the use of mobile devices for learning was different to three disciplines. However, (Pynoo et al., 2011) found that faculty did not present a barrier as there was no real difference when accepting technology per faculty. Additionally, concern about eyesight was found to be a barrier to tablet use, which supports the ideas of Hocann and Iscioglu (2014), who recognised that using tablets for learning may cause eyesight problems. Personal knowledge, skill and experience were also found to be deterrents to tablet use. This agrees with Pajo & Wallace (2001), who identified that university tutors’ lack of technological knowledge was a barrier to implementing web-based teaching, and with Black & Lynch. (2001), who stated that if students have the essential skills, they will have the ability to use the technology.

As Prensky (2001) states, students have changed radically in the ways they use technology, and so the tools of the traditional educational system may no longer suit them. Additionally, Halverson & Smith (2009) point out that technologies have always held great promise for changing an individual’s way of teaching, thinking, and learning. However, based on both the results of interview and questionnaire, it was found that some of the students still preferred not to use tablets for learning and that they favoured traditional classroom learning using textbooks and stationery (Liaw et al., 2010).

On the other hand, based on the results of the student interview and questionnaire, many students seem to prefer using tablets for learning both inside and outside the classrooms. They use them to accomplish academic tasks, to communicate in online discussions in a way that supports their learning styles, and as an aid to searching and learning through online platforms. It was revealed that most students would use a tablet for learning if the university were to provide them, and indeed it was clear that many students already use their own tablets for learning. Additionally, the findings identified that students use tablet applications that are related to their study field in order to find out more information or for other academic purposes. Thus, the findings of this research support the previous results of Fabian and MacLean (2014), which indicated that students use tablets in many different ways. In terms of learning content, students used tablets to read, create and share content; in terms of the range of learning activities, students were able to simulate activities (Fabian & MacLean, 2014).

The findings showed that students are able to consider their own learning styles when using tablets and were found to prefer mobile applications to aid learning, which is in agreement with several different study findings (Kothaneth et al., 2012; Pollara, 2011; Schnackenberg, 2013). Moreover, it seems that students use their tablets in order to engage in supplemental activities and tasks in addition to accessing course materials and information inside the classroom (Hylén, 2015). Furthermore, it has been
shown that students use tablets as study tools, for activities such as downloading mobile applications to learn concepts related to coursework (Pollara, 2011). Other research has identified that students use tablets to write or complete their assignments, access information, work with digital video and images, surf the web, make reflective notes, and use instant messaging and email (Clarke & Svaes, 2014; Martin, 2011; Pollara, 2011). Specifically, the study findings indicate that students use tablets to read available course e-books, as found by Romney (2011), and that tablets can be useful for reading because the screen is large, touch-enabled and rotatable.

The findings indicated that students use many mobile applications to support and enhance their learning such as those for email, web browsing, e-books, multimedia, writing notes, presentation, social media, video conferencing, cloud storage, and much more (Mohseni, 2014). The findings about tablet use for learning in higher education ascertained that tablets support and enhance learning processes (Alsaadat, 2009; Habler et al., 2015; Narayanasamy & Mohamed, 2013). Foti (2014) claimed that there is limited research supporting the use of mobile devices in higher education. The findings of this study indicated that students use tablets in order to enhance learning inside and outside of the classroom. The findings of this study are consistent with the study of Bennett et al. (2011), who found that their participants all used computer technology for communication and accessing information, and that they considered ease of use to be an important factor.

CONCLUSION

Although we can find useful overviews of m-learning, we still need a better representation of the educational potential of m-learning with which to approach educational policy makers. Mobile technologies have improved dramatically in recent years, attracting considerable interest from the education sectors. It is important that educational institutions provide full support to the students and faculty members who use mobile learning. For example, universities need to provide training to both students and teachers on how to use tablets effectively in teaching and learning. It has been suggested that institutions should improve their technological infrastructures such as accessibility and connectivity. Moreover, higher education institutions should not only focus on delivering content to students, they should also motivate students to find, identify, manipulate and evaluate existing knowledge, and to integrate this knowledge in their world in order to solve problems and communicate with others. By implementing mobile learning environments, students can be motivated to do all of this. Although numerous universities have already designed software to be used with tablets, along with best practice guidelines for educators and students, tablets are gradually making their way into higher education contexts.

REFERENCES

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