Effectiveness of Tablet Learning in Online Courses at University of the South Pacific

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***Abstract*- In recent years, technology has become the game changer in the world of higher education. The handheld mobile devices are emerging as one of the most promising technologies and tools to support learning and venture into new pedagogies. This provides uncharted opportunities for educationists and facilitators to make learning pervasive and boost lifelong learning. Mobile devices like tablet computers have proven to be effective in accelerating student engagement, enhancing focus and supporting teacher interaction. To evaluate the effectiveness of tablet learning in a higher education institution, a study was conducted on a sample of 10 students who were picked on voluntarily basis from a seven weeks online course. The attitude of students to the new technological device was analysed. The study also considered the quality of tasks and assessments produced by the students and their success rate. The results of this study showed that students have a positive attitude towards tablet learning and there was an agreement that the mobile device was a good learning tool for the online courses. Interestingly, there was no significant difference noted with the success rates and the grades of the two groups**.

***Keywords- effectiveness, tablet learning, online, Pacific***

1. Introduction

Internet information and communication technologies are transforming higher education in the 21st century. The learning environment is now being shifted from physical and structural location like lecture theatres and tutorial blocks to more technology driven world of virtual or online learning. The advances in Web 2.0 technologies, network and communication technologies have made possible the delivery of quality education content to remote learners. Together with the new and innovative methods of teaching and learning, the ICT integration has seemingly given rise to the use of mobile devices for learning. According to [1] mobile learning refers to learning mediated through the use of interactive wireless devices such as cell phones, smartphones, palmtops, laptops, tablet PCs and iPads. Due to the fact that the usage of mobile devices has accelerated in the recent years, mobile learning has been heavily leveraged to facilitate distance teaching [2][3].This learning paradigm benefitted distance learning in the following ways [2][4][5][6]:

1. content access anytime and anywhere,
2. supported student learning needs,
3. active and collaborative learning,
4. provision of timely support services and feedback
5. continuous and situated learning support,
6. learning - just in time, just – enough and just for me.

Since the arrival of tablets in 2010, the education sector has seen the use of the new technological device- the iPads promoting an enticing and intuitive learning experience [7]. The use of iPads for education has reduced the digital divide [8], increased information literacy and made learning more sustainable due to the reduced printing cost [9]. The iPads also act as an effective learning tool (recording and recalling), enhances active group collaboration (communication and sharing) and enable leaners to do more creative thinking hence creates new knowledge [10].

The younger generation has become accustomed to the use of internet and mobile devices in their daily life and due to this high level of penetration and adoption to internet, online teaching and learning has become an excellent medium of content delivery at higher education institutes[11].The online education increases access to quality resources, is more convenient and flexible in terms of delivery, promotes student-centred learning and has consequently increased student enrolment at higher education institutes thus turning out to be the most promising method of learning in this ICT era [12][13].

1. Distance Education

Distance learning takes place when the facilitators and the learners are separated by physical distance and technology in form of voice, video, data or print is used to bridge the instructional gap [14]. Distance learning allows students to study at their own time and pace without face-to-face interaction with facilitators. However, relevant technology dovetailed with the delivery of distance education is essential [15].

The distance education includes benefits such as it [16][17][6]:

1. supports and promotes learning pleasure and effectiveness,
2. provides opportunities for distance learners to continue with their education,
3. provides support services just in time such as SMS services which notifies students with important course information, exam timetable information, course mark information, library book due dates, and enables students to attempt quizzes in their courses via SMS,
4. provides flexibility to students.

On the other hand [18][19][20] state that despite the inherent promises and obvious advantages to distance learning, there are problems like the:

1. possibility of compromising the quality of education that is delivered through internet to the learners,
2. costly maintenance of distance programmes,
3. technological misuses and problems,
4. students low acceptance of distance learning,
5. lack of social and academic integration.

[15] states that distance education has gone through several stages of development. Today’s distance learning is categorised as the 5th generation learning as it is based on the use of Web 2.0 tools that allow learners to control asynchronous online learning and interactive multimedia tools such as YouTube, podcasting, online presentations and use of software’s like Animoto and typing web. The concepts of online learning on web-based learning emerged after the introduction of new ICT technologies in education. [21] categorised distance learning in the following categories;

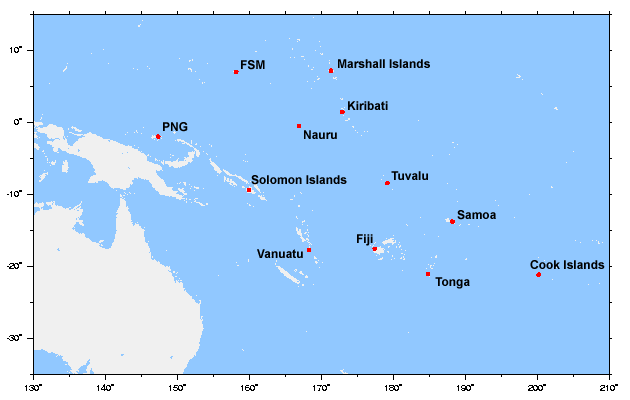
1. Traditional Course – where the proportion of content delivered online is 0%. The traditional courses do not use any type of technology to deliver the content. The content delivered is either orally or in printed form.
2. Web Facilitated - where the proportion of content delivered online is between 1- 29 %. This type of courses uses web based technology to facilitate a course by the use of a Course Management System.
3. Blended – where the proportion of content delivered online is around 30-79%. A substantial portion of the content is delivered online; there are online discussion forums and few face to face meetings as well.
4. Online – the proportion of content delivered online is more than 80%. This type of courses has most if not all of the content delivered online and there are almost no face to face meetings.

The online education’s charm has penetrated to all aspects of higher education and challenged the education providers to find the means and ways of meeting the growing demand from their learners of quality education. The universities and colleges have not only recognised that ICT driven education can enrich and enhance traditional learning but can also open up newer and bigger markets through exciting and sustainable distance education [15]. There has been a major conversion of face-to-face to online courses, open education, MOOC, and the inclusion of mobile devices in course delivery to support in parallel. Integrating mobile devices into teaching and learning is one of the ways many higher education institutes make the content delivery of their courses and learning support more effective. The use of PDA’s, androids and iPads are seen more in classroom or outside nowadays for more interactive and collaborative learning [21]. The portability, availability and reachability of the mobile devices have immensely influenced the shift to newer and better pedagogies in universities worldwide [11].

The University of the South Pacific had piloted the use of tablet devices for its distance education in 2013 where it distributed tablets to around 600 students from selected regional campuses who received tablet devices to use for their distance education [22]. This study evaluates the effectiveness and acceptance of the use of iPads in an online course at the university.

1. Background

The University of the South Pacific (USP) is the pioneer institution of higher learning in the South Pacific region. Established in 1968, the university is jointly owned by the governments of 12 member countries; Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Samoa geographically isolated from each other and 33 million km² of ocean (see Fig. 1). The university has campus in all member countries while the main campus is in Laucala, Suva, Fiji. The university offers a wide range of academic programs at the undergraduate and postgraduate levels. It also offers programs through distance and flexible learning in a variety of modes and technologies with the commitment to meet the academic requirements of the region [23]. The reader is referred to the homepage of the University for more information <http://www.usp.ac.fj/index.php?id=about_usp>



*Fig.1: A map outlining the University of the South Pacific’s 12 member countries.*

The University offers courses in one or more of the following modes; face to face, print, blended and online. Over the recent years, the university is shifting its courses to online mode in order to reach more students in the region. The university has also up taken various ICT initiatives to provide flexible, more interactive and quality learning to their students. The use of mLearning services (edutainment, SMS notification) that USP provides, is seen to be one of the potential mediums that has enabled the university to facilitate a more collaborative and reflective learning over the recent years.

1. Methodology

For the purpose of this study, a sample of 10 students enrolled in a first year fully online course was studied to evaluate the effectiveness of tablet learning (in particular iPads) in online courses. All students were selected from one campus.

The description of ICT services at the *Test Campus* is as follows:

* The **USPNet**- is a satellite-communications network connecting all 12 member countries of the University of the South Pacific and is used to reach distance and flexible learning students. The services hosted include provision for video conferencing, audio/video satellite, broadcasting, eMentoring services and communication by e-mail with a lecturer/tutor or another student through Moodle.
* **The mLearning services** include; SMS notification, mark sheet, exam timetable, quizzes, library and course finder applications, and entertainment modules.

The students were invited to participate in the survey and the interested students were provided with an iPad each (iPad 2) which the students had to return at the end of the survey period. Table 1 describes the features of the iPad device.

|  |  |
| --- | --- |
| Dual-core A5 chip (twice as fast as the original iPad) | 3G support on AT&T and Verizon networks |
| Both front-facing and back-facing cameras capable of shooting HD video | Compatible with iPad apps and all iPhone apps |
| 9.7 inch IPS display with LED backlight | iOS 4.3 with AirPlay support |
| 1024x768 resolution support 720p | WiFi 802.11n, Bluetooth 2.1 EDR |
| Supports 1080p video via HDMI when combined with the HDMI-out adapter | Accelerometer, Gyroscope, Compass, External speaker, Microphone |

Table 1: Features of the iPad utilised for the research.

For data collection two sets of questionnaires a pre-course and a post-course were distributed to the students and the Students were interviewed (semi – structured) to give their feedback on the use of the device for the course. The objective of this study was two-fold:

1. To evaluate the effectiveness of tablet learning in a higher education institute.
2. To test the attitude of students to iPad for online learning.

The study was conducted for seven weeks, which was the actual duration of the course. The control group for the study was made up of students from the same campus but these who did not utilise an iPad. The survey descriptors for the study are provided in Table 2. We note that because of the sample size, the nonparametric analysis was carried out.

|  |  |  |
| --- | --- | --- |
|  | *Test Campus* | *Control Group* |
| Number of participants | 10 | 10 |
| Number of females | 6 | 3 |
| Number of male | 4 | 7 |
| Software used for analysis | SPSS Software | SPSS Software |
| Test conducted | Mann-Whitney U Test;  Nonparametric statistical analysis and chi- square test. | Mann-Whitney U Test;  Nonparametric statistical analysis and chi- square test. |

Table 2: Survey Particulars for the test group and the control group.

1. Results
2. **Student Experience**

*Fig. 2: Student Experience using the iPads by gender.*

Fig. 2 shows student experience with using the iPads before the research. Interestingly, 50% of the students had no experience with the use of iPads with no significant difference at gender level.The cost high of the iPads was found to be the major reason for students not using the iPads.Also, since the students were from different geographical locations in the South Pacific, the students were not exposed to learning with technology, hence given the opportunity these students participated in the survey to get exposed to using technology for learning (60 % of the students).

1. Face to Face versus Online

|  |  |  |
| --- | --- | --- |
| Response | Male | Female |
| Yes | 1 | 1 |
| No | 2 | 4 |
| No idea | 1 | 1 |

Table 3: Student views whether face to face courses are same as online course.

During the pre- course survey the students were also asked whether face-to-face courses were similar to online courses. According to the results 60% of the student’s disagreed while 20% of the students agreed that face to face courses were same as online courses. From the 60% who disagreed,66.7% of the students stated that in online courses there is less interaction with the course facilitators hence less examples are provided while 33.3% of the students stated that more computer knowledge is required by the students to complete their assigned online tasks and hence they need to put their own initiative to complete their online activities which is time consuming.

From the 20% of the students who disagreed, 10% stated that face-to-face courses are same as online courses as the concepts taught are same while the other 10% stated that though the mode is different the concepts learnt are the same and if the students manage their time well in online courses, the assessments will be less time consuming. From an observation during the survey, the students especially the first year students at the university face difficulty in adjusting to the different modes of learning due the fact that they are used to learning in teacher-centred learning environment at their secondary level of education.

1. Student satisfaction level

From the data analysis about 80% (100% males and 66.7% females) of the students were satisfied with using the iPads in their seven weeks learning journey while 20% of the students were somewhat not satisfied. The reasons provided for the dissatisfaction were that the device did not allow downloading of and saving of notes, scrolling through the device, and the frequent internet access at some places at the campus. Fig. 3 illustrates how the iPad supported the students in their academic work.

Fig. 3: Student Responses to how the iPad support their academic work.

From the post course survey, 90% of the participants agree that iPads are the best devices to be used for online learning for the future. Fig. 4 illustrates the reasons provided by the students.

*Fig. 4: Participants views as to why iPads were best for online learning.*

The feedback from the students was positive for using the iPads for online courses in the future. This is due to the fact that they have optimised the maximum usability of the device throughout their seven weeks learning journey. The portable nature, ease and speed of use and multi-tasking nature of the device unleashed student learning for the surveyed course.

From the 10% who thought it is not a good idea to use iPads for online course stated that the device had problems in connecting to wi-fi, did not have Microsoft suite installed and downloading of documents was a problem.

1. Success Rates and the Quality of Grades

To evaluate the success rates and the quality of grades, a *Mann-Whitney U* test and a*chi-square* test was carried out to compare the results of the test and control groups. The results are provided in Table 5.

|  |  |  |  |
| --- | --- | --- | --- |
|  | CCourse\_Total | ePortfolio\_Marks | FFinal\_ Marks |
| Mann-Whitney U | 43.000 | 37.500 | 44.000 |
| Wilcoxon W | 98.000 | 92.500 | 99.000 |
| Z | -.530 | -.946 | -.454 |
| Asymp. Sig. (2-tailed) | .596 | .344 | .650 |
| Exact Sig. [2\*(1-tailed Sig.)] | .631b | .353b | .684b |

Table 4: Success rate of the students for their three assessments.

The success rates were measured for three different assessments; course total, eportfolio marks and final marks. The *p-value* was taken as <=0.05. From the *Mann-Whitney U* test, the *p-value* for each is >0.05 therefore it can be stated that there was no significant difference noted in the success rate between the test and the control groups.

Now, to test and compare the grades between the two groups a *chi-square* test was conducted.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Vvalue | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 7.733a | 4 | .102 |
| Likelihood Ratio | 8.895 | 4 | .064 |

Table 5:Chi- Square result for the quality of the assessments.

For this again the p- value was taken as <= 0.05. Since the p-value from the test was >0.05, it can also be stated that there was no significant difference in the quality of grades produced by the students of the test and the control groups. There was no significant difference noted. This is invariably due to the fact that the students had the freedom to use substitute (laptops and desktop computers) for the tested device (iPad) if they faced any difficulty in completing their given online assessments.

1. Conclusion and Recommendation

The passionate adaptation and sincere usage of iPads and other mobile devices is making a significant impact and a pedagogical shift in the higher education landscape. The integration has inter alia, fostered life-long learning amongst students and has boosted their learning experiences through the empowerment of their creative thinking skills.

This study provides an insight to the effectiveness of the iPads as a learning tool for online courses in the Pacific region. The assistive device was well accepted by the students to be used for the online course. The iPads were seen to be a good medium for active collaboration amongst the students and the facilitator and also amongst the students themselves. In addition to this the device also provided easy access to the course resources and was economically sustainable. However, the study showed that there was no significant difference in the success rate and quality of assessments produced at the end of the course.

Although the uptake of iPads is exponential in the developed countries there is a significant low uptake of the device in the Pacific region due to the fact that there is a lack of significant awareness about the use of the device for learning and that securing the apps is quite expensive. The success with iPads increases when the following is in place; awareness and access to relevant apps. Once the students get to know about its multi-usage, it is easy to see the change in their attitude and subsequent adoption of the iPads for education.

Hence, in future the study can be replicated with a larger sample size and with defined instructions to evaluate the effectiveness of using iPads on the quality and success rate of the learners.

The results of this study can be used by the educators of higher education to realise the fact that an iPad has the potential to be utilised as a good learning tool in the Pacific Region. Though the device is costly and securing apps in the Pacific Region can be a hindrance to its possible growth of usability, this however should not detract the use of iPads for learning.

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