

# Evaluation of Tablets for Teaching and Learning for Information Technology Extended Programme at Walter Sisulu University

Short Paper

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**Abstract:** Information and Communication Technologies have become an integral part within the Teaching and Learning environment especially in Higher Education. Despite the growth of these technologies, less research has been done to evaluate the effectiveness of tablets for teaching and learning. In this paper, we have considered tablets as the common device used at Walter Sisulu University for Extended Programme students in the Information Technology (IT) Department. The authors wanted to evaluate the usage of tablets towards teaching and learning among students and lecturers. Mixed methods approach was considered where both qualitative and quantitative methods were utilized. Data was collected through online questionnaires, focus groups and interviews. Findings show that students use tablets for sending and receiving e-mail messages, access course material posted by their lecturers and also search for information. The paper provides details on what and how the engaged participants are utilizing tablets for teaching and learning.

**Keywords:** Higher Education, Information Technology, Tablet, Technology Evaluation.

## 1. Introduction and Background

The growth of technology utilization to enhance service delivery has been witnessed in many sectors. Within the education sector, mobile technologies have been adopted to enhance teaching and learning. There are numerous devices that have been introduced and considered for teaching and learning, however this paper is limited to only one of the common mobile devices that is used by both students and lecturers, which are tablets. According to [1], mobile devices especially tablets are rapidly becoming popular within the teaching and learning environment.

The paper is based on the Extended Programme students from the IT Department at Walter Sisulu University. As of 2016, approximately 1000 students from WSUs four campuses have benefitted from a multi-million Rand tablet initiative designed to enhance teaching and learning in the institutions' extended curricular programmes [2]. These numbers have continuously increased. Students and lecturers use the devices for different purposes and services. The use of these tablets in lecture halls enables easy dissemination of information. These tablets are also likely to improve and support learning for extended IT students in Chiselhurst Campus since students are able to download E-books and study through their tablets. Tablets are becoming a current and dominant learning tool for the teaching space [3]. A recent study in "German second-level schools" described a tablet as a portable tool appropriate to act as an all in one tool anyplace, anytime" [4]. Tablets have the potential to motivate, inspire and enable learners to enjoy their studies, outside a classroom environment, while at the same time can cause destruction to students [5].

As explained in the WSU prospectus, an Extended programme is meant to equip students who do not meet the minimum admission requirements, with the skills to assist them in completing their studies with ease. The students enrolled under this programme are at high risk of dropping out in their first year. Initiatives such as the issuing of tablets does play a major role in motivating some of the students to enjoy their IT studies. Despite the growth of mobile technologies for teaching and learning, less research has been done to evaluate the effectiveness of the devices to improve teaching and learning. The paper answers the question: How are tablets helping WSU extended programme students at Chiselhurst campus in academic purposes?

This paper focuses on evaluating the effectiveness of tablets for teaching and learning at Walter Sisulu University in Chislehurst Campus for IT extended programme students who were given tablets. The paper comprises of a number of sections including: literature on ICTs in education, the approach used, findings and recommendations proposed. The following section provides an overview of the current literature available on mobile technologies.

## **2. Related Literature**

Mobile devices are becoming a current and dominant learning tool for the teaching space [6]. According to [7] a tablet is a mobile computer that has touch screen capabilities and lacks a physical keyboard. Tablets are viewed as an extra 'always-on' device to boost and increase connectivity of learners, provide flexibility and manageable touch-screen capabilities to supplement teaching and learning improvement demanded for smartphones and laptops. There is sufficient literature on mobile devices and tablets. For this paper, we have considered sufficient literature that explains mobile devices, usage and common challenges experienced when using tablets.

### **2.1 Technologies for Teaching and Learning**

Researchers have explained a number of technologies available for teaching and learning. These technologies are in the form of applications, devices and systems. This paper has focused more on the devices. Commonly used devices in educational institutions are divided into 3 main groups [8]:

- Digital media players, are compact devices which can play both audio and video files.
- Smartphones, offer internet access, allowing users to download apps. An app is a piece of specialized software typically obtained through an app store.
- Tablets, generally feature a touchscreen with an onscreen keyboard and a digital pen alongside, with the ability to take photos, make calls and make video recordings.

## 2.2 Benefits of Tablets for Teaching and Learning

Tablets allow learning everywhere and anytime, letting education to be moved away from the usual student-lecturer classroom setup, where teaching is limited and restricted to teaching within the university's time [9]. According to [10] the possible advantage of a tablet would be the manageability and small feature which would improve the "man on the street" or "student on the quad" method. According to [11] Using tablets in higher education provides single and self-determining method of education. Learners have the ability to take classes, make assignments, transmit chats, and take evaluations. Learners enjoy the free will of tablets which are intended to help them learn how to prioritize and also manage their time more efficiently, without any supervision from lecturers during class. [12].

From a study by [6] it was highlighted that learners define the benefits of tablets in education as encouraging the class in terms of empowering the implementation of shared lessons. Usage of tablets in studying or while undertaking schoolwork can offer both learners and lecturers with fast response time and improved class interaction as a result of better access to information which can also then lead to the lessening of lecture time [13].

From the findings by [14], learners quoted numerous benefits of tablets, these include: enhanced learners' structural and "note-taking skills", improvement in learners' capability to inspire themselves in being more creative, and finally keep learners' individuality and communication capabilities. Learning with tablets allows students to expand discussions and investigate beyond the walls of the classroom. Tablets also allow learners to work together, share information and acquire skills using a great variety of content from various sources [15].

## 2.3 Challenges of Using Tablets for Academic Purposes

The challenges faced by learners and lecturers when it comes to technology utilization is usually disruption to learners, which is also a major challenge to lecturers. Students use these devices for social networks with the access to internet while in class instead of paying attention and participating in class and follow the lecturer's guidelines. Certain applications and websites should be blocked in educational institutions and lecturers should also monitor and control the use of these tablets by learners [16]. Students could get off track while looking up information on a website or attempt to use apps that are likely to be more entertaining and not central to the given task [17].

According to [16] the use of tablets in class requires "internet connectivity", for learners to login and out of each time they use. Lecturers stated that they occasionally face disturbance in their teaching schedule due to corrupt network or connectivity challenges of the "wireless network". Regardless of the development in the field of "mobile broadband connectivity", "broadband" right of entry remains costly or even unreachable for some causes [18]. Operation of consistent, maintainable and pull-out of "wireless network infrastructure" is the

key issue for applying “tablets for e-learning” within the teaching space. Lack of technical support is also an issue. Technical support is a necessary element while attempting to adopt teaching technologies as educators will usually want some assistance while “they use such equipment” in teaching [13].

Issues with tablets as summarized by [9] are:

- The infrastructure necessary to run portable device.
- Protection and confidentiality of learner information.
- Lecturer expert education compulsory to assist the approval of these tools.
- Technical problems and battery life are the most common issues

## **2.4 Uses of Tablets for Academic Purposes**

There are so many uses of tablets for academic purpose. Tablets can be used for [5]:

- Independent learning
- Collaboration of students
- Communication among students and lecturers
- Communication between students also for feedback.
- Inspire institutions of higher learning’s students regarding education.

### **2.4.1 Learning Using a Tablet**

“Mobile learning through the use of tablets presents new opportunities for strengthening the learning experiences in ways that simply other devices cannot achieve” [19]. According to [20] mobile learning is exceptional as it permits anyplace, anytime, modified education. It can similarly be utilized to improve, brighten or add different ranges to predictable teaching. The key purpose of mobile devices such as tablets in learning is mobility, by providing better learning experience. Gathered work on mobile learning cited mobile learning an advantageous method in the dissemination of lecturer’s knowledge, skills and understanding while also improving “their mobile technology integration” abilities [21].

## **3. Methodological Approach**

This study uses mixed approach to collect data from IT extended programme students in Chiselhurst in order to gain a detailed understanding on the effectiveness of tablets for teaching and learning. Both qualitative and quantitative methods were considered. Pragmatic paradigm is also used in this study which is a combination of interpretivist and positivism paradigm to understand the students’ experience and views in using tablet devices. According to [22], pragmatic investigators are anxious about the study’s problem rather than the technique to use, hence the investigators have the flexibility to combine and match some of the study methods. According to [23] pragmatic researcher is equally capable of keeping both partialities in their own images of the study and impartiality in information collected. Significantly, it has been presented as a method instead of a paradigm. Research instruments for this study are: online questionnaires, semi-structured interviews and focus group interviews.

There was a specific criteria used to choose participants who took part in this study. The participants had to meet the following criteria to be part of the study: they should be of any gender, willing to participate, must be IT extended programme students, have a tablet, and

be of any ethnic group. Participants in the study were randomly selected. A total of 40 students were given an online questionnaire. Participation in the study was voluntary and anyone was able to withdraw from participation at any time. We also complied and adhered to the WSU ethical research processes of engaging students in the research.

Primary data was collected from Semi- structured interviews where one lecturer from the IT department was interviewed and two focus group interviews were conducted with IT extended programme students. Each group was made up of 5 students. Interviews were arranged with all participants, carried out in English and audio recorded using a smartphone and notes were also taken throughout the entire interview process. A link with the online questionnaire was sent to all participants via WhatsApp and the type of questions that were asked in online questionnaire includes; closed questions, multiple choice questions and scale items.

## 4. Findings

### 4.1 Questionnaire Results

An online questionnaire was sent via WhatsApp to IT students at Walter Sisulu University Chiselhurst campus, 40 students responded to the questionnaire. The data was added into a Microsoft Excel spreadsheet and analysed. The results show that 87,5% of students use their tablets for reading notes, 85% use their tablets to do assignments, 92% use their tablets to send and receive emails, 77% use their tablet to access the blackboard where they get notifications and course materials, 70% use their tablets for communication purposes via WhatsApp, 65% use their tablets for social networks such as Facebook, 82.5% use their tablets for watching and uploading videos through YouTube, whereas another 85% of the students use their tablets for searching information and lastly 42.5% use their tablets for playing games.

### 4.2 Likert-type Scale

According to [24], in a Likert scale the respondent is requested to reply to one of the statements with items based on points, normally 5 points of agreement or disagreements. For example, in Table 1 respondents were asked to rate their views about the effective usage of tablets for learning. Respondents responded in one of the following ways: (1) Strongly agree, (2) Agree, (3) Sometimes, (4) Disagree, (5) Strongly disagree.

**Table 1:** Likert-type scale table on the effectiveness of tablets.

Q3. Effective usage of tablets	Strongly agree	Agree	Sometimes	Disagree	Strongly disagree
Easy to use a tablet in class	16	10	13	0	1
Learning anywhere, anytime	30	5	4	0	1
Easier learning	28	9	2	0	1
Storage of Notes & Assignments	24	13	2	0	1
Easy access of notes	28	11	0	0	1
Engaging with Lecturer	14	18	7	0	1
In contact with classmates	23	12	3	1	1

### 4.3 Challenges Faced Students in Using Tablet for Learning

These results shows that tablets are a destruction to students because most students spend too much time on the internet rather than doing their schoolwork. 70% of student's access social networking sites during lectures, they send and receive WhatsApp messages, use Facebook which makes them lose focus in class. Battery life is another challenge faced by students in using their tablets because 50% of students said they sometimes run low on battery during a lecture and 27.5% of students agreed and strongly agreed that battery life is a challenge. 45% of students mentioned that software problems they faced made them lose their work because they had no backup. Low connectivity seemed to be a major challenge as well because 47.5% of students agreed and strongly agreed that they were unable to search for information due to lack of internet access.

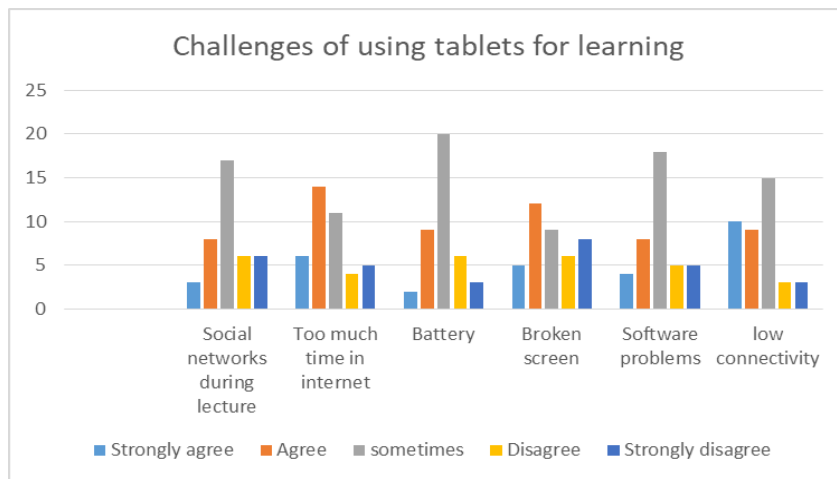


Fig. 1. Challenges faced by students in using tablet for learning.

### 4.4 Results Obtained from Interviews

On the 15<sup>th</sup> of October 2018 the researcher approached a group of IT extended year 2 students, outlined the objective of the research, students understood the objectives and interested students were requested to avail themselves. Students were then divided into 2 groups. Each group was made up of 5 students. The first group interviews took place the same day students were approached. The interviews were conducted in English and the researcher took notes while recording the interviewee's responses with a smartphone. The second group of interviews were conducted on the 18<sup>th</sup> of October 2018. The following section discusses the results of the focus group interviews focusing on the advantages and challenges of using tablets for learning purposes.

#### **4.4.1 Tablets Enables Access Anywhere and Anytime**

Tablets are seemingly beneficial for students in learning because of their usability. Students mentioned the portability of the tablets as a great advantage by allowing them to carry their notes anywhere and access them anytime. Another benefit is the ability to do their school work even if they are not within the university's premises. Students are able to see their grades, do activities and communicate with their peers and lecturer on Wiseup (blackboard). They can download course materials such as lecture notes, past question papers from the blackboard and save them on their tablets. Students can also submit their assignments via e-mail or upload them through blackboard even if they are out of the university, they do not necessarily have to hand-in their assignments.

### **5. Recommendations**

This study has assessed the effectiveness of tablets for teaching and learning therefore the following recommendations are offered to support the practicality of tablets for academic purposes:

- Students should be determined to use tablets and inspired to co-operate and communicate with other students.
- Students in the focus group interviews stated that tablets are sometimes problematic to use because of technical problems and the lack of internet connectivity, so, technical problems of tablets and poor internet connection should be taken into consideration. It would be ideal for Walter Sisulu University to improve students' experience by solving the problems identified.
- More interaction during the lectures via the tablets and offering learning activities related to the student's interests and must try to deliver instant feedback, to students.
- Designers to consider solar chip enabled tablets for students.

### **6. Conclusion**

The study is significant, as it has evaluated how tertiary institutions are in the process of a major technological shift in the way teaching and learning takes place through the acceptance of the mobile technologies in the education sector. The usage of tablet devices can benefit students in the education environment in terms of their needs, collaboration and increasing their skills. In this paper the provision of tablets to Extended students is an important initiative that motivates many of these students, thus reducing the dropout rate of students. Considering the background of most students at WSU, where the majority of them are from disadvantaged backgrounds, tablets come as an important motivational device for the students. There is significant evidence that both students and lecturers engaged are using tablets for academic purposes and this has caused major changes in the way teaching and learning takes place.

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