

# Integrating tablet technology into information literacy training at CPUT libraries: a pilot project

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## Introduction

This article describes a pilot project that was rolled out to Environmental Management Extended Curriculum Program (ECP) students in the second term, from 5 to 22 May 2014. The focus at higher education institutions has been placed on embracing the ever-changing Web technologies to enhance teaching and learning. Teaching with technology has become the new short-term trend in higher education (Johnson *et al.*, 2015) for student learning and development, with a growing interest in exploring mobile technology. As Ballard and Blaine (2013, p. 252) claim: “mobile development has become one of the biggest growth sectors of web development”. However, it is impossible according to Groff (2013, p. 16) to add technology as an instructional tool in classrooms without Information and Communications Technology (ICT) support, not getting enough technological support can be a barrier in teaching and learning. On the other hand, the Generation Y being said to be more “technologically innovative” (Valentine and Powers, 2013, p. 598). However, there is still the issue of the digital divide resulting in “technology rich” and a “technology poor” situation (Groff, 2013, p. 16). It is said to be possible that in every classroom, there is at least two out of three students who have a smartphone, if not the most advanced mobile device. This is supported by academics (Herrington *et al.*, 2009, p. 15) in a survey that was conducted in 2004. In a learning and teaching environment, there should be an interaction between a learner and a teacher to avoid disengagement. Embracing mobile technology is a good tool to enable blended learning, which Anderson and May (2010, p. 497) define as a

combination of face-to-face classroom activities and online learning. Mobile devices permit users the flexibility of accessing library resources regardless of time and place, and it can be used in a formal and informal environment (Ballard and Blaine, 2013, p. 253). Thus, there is an increase in students’ preference being to use mobile devices for academic work instead of desktop computers or laptops (Aharony, 2013, p. 358; Andre *et al.*, 2013, p. 688; Nowlan, 2013, p. 142). Mobile technology allows students to access learning materials anywhere and at any time to empower them to learn, which has been identified as a trend in higher education (Johnson *et al.*, 2015). Therefore, technology enables blended learning in a classroom environment and increases student interaction (Beldarrain, 2006, p. 140). However, a problem may arise when students do not know when to use and when not to use technology in the classroom (Picardo, 2014, p. 3), making the role of the librarian as facilitator vital in this regard. The focus has shifted to teaching with technology at the Cape Peninsula University of Technology (CPUT) over the years, with many projects conducted with faculty and students to embrace technology. Information Literacy (IL) training plays an important role in student learning (Woodward, 2015, p. 12). This case study reports on a collaborative effort between faculty and librarians in 2014, where tablet technology was integrated into the Information Literacy Certificate Programme of Environmental Management Extended Curriculum Programme (ECP) students.

## Background

Since the approval of the Information Literacy Policy in 2009 at the Cape Peninsula University of Technology, it is compulsory for

faculty to integrate IL into the curriculum. This was somewhat challenging for faculty to make IL integration in their subject curriculum visible in their subject guides. In supporting this initiative, CPUT Libraries rolled out the IL Certificate Programme in 2013, which is a credit bearing course, offering faculty three models. The IL model used in the Applied Sciences faculty consists of five face-to-face modules and an online assessment, which students complete on the Online Learning Environment, Blackboard. A Certificate of Completion is issued to students who successfully completed the IL modules and assessment. The IL Certificate programme is conducted with all first-year students, mainstream and ECP in the Applied Sciences Faculty. However, it is not restricted to first-year level only and is conducted with students on all levels (second year up to PhD level) as required.

At the beginning of 2014, the Teaching and Learning support unit at CPUT, The Fundani Centre for Higher Education Development (CHED), approached faculties to test the use of tablet technology in their teaching, as the institution is considering the idea of distributing tablets to all first-year students in the future. Therefore, faculty was encouraged to conduct pilot projects with the support from the Fundani Unit, who provided training and the Nexus 7 tablets for the project. We were invited by the Applied Sciences Faculty to an ECP meeting to discuss teaching with tablet technology. The Extended Curriculum Programme (ECP) means that students complete their first year over a period of two years, the classes are much smaller, with a maximum of 20 students and support units at the institution, such as

the writing centre, student counselling, the library and Fundani, are integrated into the timetable. It was therefore ideal to conduct a project with the ECP group. We offered to conduct a pilot project where we integrate tablet technology into the IL Certificate Programme with the ECP Environmental Management students at the beginning of the second semester, as we already had IL training scheduled for the group. This gave us time to brainstorm and decide how the project will be conducted using tablet technology. The purpose of the tablet project was to ensure that students acquire the IL skills through the use of tablets. This in itself was a challenge, as we had to think of ways to adapt our existing IL modules in such a way, so that learning took place through the use of tablet technology. Some of the challenges that we faced during the planning phase were as follows:

- Time constraints – at that point we only had five lecture periods of 45 min each. We also had to ensure that devices were prepared before each session.
- Adapting IL modules – the aim was to have practical sessions, however, we needed to take into consideration the theoretical component of the programme as well.
- The compatibility of the device – identifying and testing different applications.
- Student experience and knowledge of tablet technology – training on the use of the device needed to be considered as well.
- Connectivity – unstable network is a challenge in running a completely online course with time constraints.

### **The information literacy tablet project**

To conduct a successful pilot project, collaboration with the faculty and the Fundani unit was crucial to negotiate lecture time, an appropriate assignment topic to base the IL training on and arranging that the tablets be available for the duration of the project. The project took place in the library, where Wi-Fi connection was stronger, and it gave students the opportunity to

familiarise themselves with the physical library as well. A group of 20 ECP Environmental Management students participated in the project. Participation was voluntary and each participant completed a consent form after the project was explained to them by the librarians, the lecturer and the Fundani unit. An extra module, which entailed a practical session to introduce students to the project and basic tablet training, which included setting up student profiles on the tablet was added to the IL modules. It was a requirement that students access preparatory slides and screencasts on Blackboard before attending IL sessions. The term trainer(s) in this section refers to the librarians who conducted the pilot project.

Before describing the IL modules in detail, it is important at this point to highlight the new applications and activities implemented in the IL tablet project. These initiatives have been integrated into the traditional IL Certificate Programme for the Applied Sciences Faculty as well following the IL tablet project:

- Wordle.net is an application used to create word clouds. This was useful for students to identify the main subject keywords during the practical activity.
- The Learning Diary is an online evaluation form that was created using Google Forms for students to easily post feedback after each IL session, which was valuable for both trainers and the lecturer to follow-up on areas needing more attention and also to enhance teaching with tablet technologies in the future. The Learning Diary asked students to say what they have learnt, what they liked or disliked about the session, what aspects needed to be explained again and recommendations for improving the course. Although paper evaluation forms have been completed by students after attending the traditional IL course, the Learning Diary is more effective and efficient as students provide their feedback online using the tablet at the end of each session and the trainer is alerted to areas requiring clarification immediately.

- Re-cap session acted as a way of introducing the “flipped classroom” phenomenon into the IL tablet project, allowing students to present to the class what was covered during each session. This was very interactive as students helped each other present and conduct a short demonstration on the tablet where necessary which the trainers anticipated with guided questions.
- Screencasts were created for each module beforehand for students to access in preparation for the class session. The aim of using screencasts was to explain the content of a particular module and also acted as revision.
- QR code is an acronym for Quick Response Code. The generator was used by the librarians to create the QR codes in order for students to be able to be informed and locate different items in the library. Students used the tablets to scan the QR code, read and then follow instructions provided by the QR code.

### **Module 1: topic analysis**

In the traditional classroom setting for the topic analysis module, the trainer uses a PowerPoint presentation to demonstrate the process of analysing a topic. The aim of this module is to teach students to think critically and be able to define a topic and find reliable and relevant information resources. Students are divided into groups of four to work on a generic topic provided by the trainer as a practical exercise. One example of a topic used is: “Discuss the issue of plagiarism among undergraduate students in the Faculty of Applied Science at Higher Education Institutions in South Africa”. The practical activity involved: drawing a mind map, identifying the main subject keywords in the topic, completing the table (which acts as a guide) provided by the trainer allowing students to identify broad, narrow or related terms, as well as possible synonyms for each of the main subject keywords identified in the topic. Students are also made aware of information sources such as dictionaries and thesauri available in the physical and virtual library that will

assist with defining terms and finding synonyms of keywords in the topic, as this helps to identify related terms as well. The next phase in the topic analysis module is to select terms identified and combine them by using the Boolean operators (AND, OR, NOT) to create search strategies which will be used during the IL course to retrieve relevant information on the topic. Students are encouraged to apply this method to all their assignments that they will receive from their lecturers in the future.

In the IL tablet teaching approach, we had to prepare very well in order for the topic analysis module to be fully covered, bearing in mind the time constraints. It was therefore decided to create a screencast of this module that students could access via the Online Learning Environment, Blackboard in preparation for class. This preparatory requirement for students was crucial to ensure students had insight into the module, as the aim of the class session was completing a practical exercise guided by the trainers. This entailed collaboration with the lecturer to ensure that the trainers were linked to the Blackboard course to upload the relevant resources and post announcements to students.

The tablet practical class activity for the topic analysis module was designed as follows: students used the tablets to access a short case study that was posted on Blackboard. Further instructions entailed that students read the case study, select text to paste into the Wordl.net application which allowed them to create a word cloud as a different approach to identifying the main subject keywords in the text. Students then completed the table provided on Blackboard to analyse the topic which included the steps of identifying terms and synonyms for the main subject keywords selected from the Word Cloud and creating search strategies using the Boolean Operators. Students could use the tablet to access the online dictionaries and thesauri to assist them with the topic analysis process. The practical activity allowed students to embrace tablet technologies while exposing them to Web applications to acquire the skill of analysing a topic. At the end of the session, students were asked to

complete the Online Learning Diary which could be easily accessed on Blackboard to evaluate the session. This feedback was valuable for the trainers, the lecturer and the Fundani unit (specifically regarding the tablet compatibility) to follow-up on areas that needed more attention and to enhance the tablet project for future training initiatives.

### **Module 2: library catalogue**

The traditional IL classroom session for this module entails the trainer conducting a live demonstration of first accessing the library website and providing a description of the virtual library, and second how to search the library catalogue. Passed experiences of the trainers have shown that when interacting with the class, students often responded that they were not aware of the library catalogue, and their method of locating material in the library was by browsing the shelves, which they agreed was very time-consuming. After being introduced to the library catalogue, students tended to be more enthusiastic about searching and locating relevant material on their assignment topics. Students normally do a practical exercise to search for library print material based on the topic covered in the topic analysis module, which prepared students for the next module, information sources and evaluating information. In the library catalogue module, students learn how to use keywords that they have identified on a topic in the previous module to conduct a basic keyword or subject search, use the “my library card” section of the catalogue (where the students can manage their library account and to renew their books online), retrieve the full view of records to access bibliographic details of sources (introducing referencing requirements briefly at this point), requesting items and emailing records. In preparation for the tablet activity for this module, a screencast of the library catalogue was created and uploaded on Blackboard for students to access before attending the session. The tablet activity involved the trainer talking students through using the tablet to search the library catalogue using their keywords identified in the

previous module and selecting items to email to themselves. Students received homework which prepared them for the next module on information sources. Students were also reminded to complete the Learning Diary for the day.

### **Module 3: information sources and evaluating information**

In the traditional classroom setting for this module, students receive a practical group activity that entailed going to the shelves and collecting a book from the open shelf, one journal from the bound or current journal shelves and one dictionary or encyclopaedia from the reference collection and bring it to class. These sources are then further explained by the trainer in class. The trainer would then request students to identify bibliographic details of the sources in groups and present it in class.

In preparation for the tablet activity, the trainers created QR codes which were displayed in different sections including the reference collection, open shelf and journal collection of the Library. These QR codes were especially designed for the purpose of the practical tablet activity and to inform students about the various collections and types of information sources available in the library. Students were instructed to go in groups with their tablets to the various sections of the library to access information sources by identifying and scanning the QR codes to locate specific library items which linked to the homework of the previous module. These information sources were brought to the classroom where the trainers gave further explanation for students to complete the exercise of recording the bibliographic details of the items in the table provided on Blackboard using the tablet. This module resulted in an excellent integration of library orientation, embracing mobile technologies and the identification and evaluation of information sources. An interesting observation by the trainers during the practical activity between the shelves were that other library users became curious and started scanning the QR codes with their own mobile devices,

resulting in expanding information about the library's collection to a wider library community.

#### **Module 4: databases**

In the traditional computer lab setting, the trainer conducts a live demonstration of different databases available. Students do a practical exercise using search strategies to search different databases. In the IL tablet project, the databases module required that students access a screencast in preparation for the practical activity. During the practical session, students had to use the tablet to search ScienceDirect, Sabinet Reference and Credo Reference databases, using their search strategies created during the practical exercise in Module 1 (topic analysis). In familiarising themselves with some of the features that the databases offered, students had to select items that they felt relevant from the list of results retrieved and email it to themselves in preparation for the referencing module. These databases were specifically identified to illustrate to students the information tools that can assist in analysing a topic and retrieving reliable and relevant information not only relating to the "Environmental Management" topic, but that the same technique could be applied to other assignments or research topics in the future. Students were also alerted to the vast number of other databases available via the library website that are also useful to navigate so as not to restrict themselves to the ones demonstrated in the tablet activity only.

#### **Module 5: referencing and plagiarism**

In the traditional classroom module, the trainer demonstrates how to avoid plagiarism through referencing using the CPUT Harvard Referencing Style. Students would use the information sources activity where they have recorded the bibliographic details of sources in a table and organise it into the referencing style during the class session. The tablet project involved students accessing a screencast on referencing in preparation for the practical session. Initially, the trainers planned to use Mendeley as the

referencing tool during the practical session with the aim of having students export references retrieved from the databases to Mendeley and create a reference list. However, the trainers discovered during the preparation phase of this module that Scholarley (the Mendeley App) was not compatible with the Nexus 7 device. Students therefore had to access the referencing and plagiarism PowerPoint, which was available on Blackboard via the tablet in class and follow, while the trainer explained the referencing process. Students then had an opportunity to retrieve their information sources recorded in the tables in the previous exercises on Blackboard using the tablet and to complete the IL exercise by organising the information sources according to the CPUT Harvard Referencing Style.

#### **IL assessment (Blackboard):**

The IL assessment is a multiple choice online assessment which covers all modules in the IL training course. Previously, students were allowed the freedom to complete the assessment in their own time, as it was available on Blackboard. However, due to many students experiencing challenges with the online assessment, it was suggested to the lecturer (who agreed) that it be treated as an additional module, meaning that the assessment was completed by students in the computer lab where the librarians and lecturer were available to assist students with technical challenges. As mentioned earlier, students who successfully complete these five IL modules and the assessment which is credit bearing, not only acquire the IL tools and skills they need to use in their daily lives, but also receive an official Certificate of Completion. The design of the online IL assessment made it possible for students to complete the IL assessment using mobile technologies.

#### **Reflections**

In reflecting on the integration of tablet technology into the IL Certificate Programme conducted with the Environmental Management ECP students, the following challenges were experienced:

- We had challenges with Wi-Fi connection which was unstable.
- Students had CPUT login problems and some students did not have Gmail accounts to set-up their profiles on the tablets which was a requirement, resulting in some students working in pairs.
- Preparation and training sessions were time-consuming.
- Many Web applications identified by the trainers to use during the training were not compatible with the Nexus 7 Tablet.

Despite the challenges experienced, it is of great importance to highlight the successes. The venue we chose was ideal for conducting the tablet pilot project; it was a good opportunity for students to familiarise themselves with the physical library. Students were enthusiastic about embracing mobile technologies and participated fully. There was an increase of student interaction during the IL tablet project compared to the traditional IL training. The success of the project was possible due to good collaboration between the lecturer and librarians. We also received positive feedback from students' reflections on the Learning Diary.

#### **Conclusion and recommendations**

The purpose of the tablet project was to empower students to acquire IL skills using tablet technology. All modules were adapted for this purpose meaning that students used the tablet throughout the training sessions. The main challenges faced were Wi-Fi connectivity and incompatibility of apps. The following recommendations were made:

- Purchase tablets that are compatible with the apps used in IL training.
- Develop apps that are compatible with the Nexus 7 Tablets (device used for the pilot project).
- Strong internet connection is crucial for the successful running of the IL tablet project.

The project required dedication, a huge amount of preparation time and good collaboration between all stakeholders

to ensure the successful running of the IL tablet project. It is hoped that this project would expand in the near future which will be in line with the technology trend in higher education reported on in the NMC 2015 Horizon Report, being BYOD (Bring your own device) or BYOT (Bring your own technology) to the classroom or learning environment (Johnson *et al.*, 2015, p. 36). It is an opportunity to enhance the acquisition of IL skills on the go by students using their own mobile devices anytime and anywhere. Overall, the training went well. In the end, we were successful in achieving learning to take place among students. It is hoped that this paper will give insight for academic librarians wishing to incorporate mobile technologies into their IL training programmes.

#### *Ethics statement*

This study was conducted in accordance with the Code of Ethics of the Cape Peninsula University of Technology.