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Pedagogical affordances, challenges & limitations of the iPad as it was used in the foundation program of two federal educational institutions in the United Arab Emirates

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ABSTRACT

The purpose of this study is to explore the integration of the iPad as a learning and teaching technology into the Foundations Program at the two Higher Colleges of Technology in Fujairah: Fujairah Men's College (FMC) and Fujairah Women's College (FWC) in the United Arab Emirates. The new technology was introduced to enable the Program's teachers and students to support their teaching and learning of English as a foreign language. Specifically, the study investigates how these teachers and students used the iPad's technical affordances to create pedagogical affordances designed to construct and promote English language teaching and learning. The data for the research were drawn from class observations, interviews and surveys. Six Foundations Program classes were observed, five teachers were interviewed, five more teachers were asked one written research question, and ten students were asked another written research question. In addition, two surveys – one for the teachers and one for the students – were conducted to obtain further data. The study finds that the Foundations Program's teachers and students used the iPad's technical affordances effectively to construct activities that largely enhanced their teaching and learning by making it more interesting, and engaging.

1. Introduction

The Initiative

In the autumn of 2012, His Highness Sheikh Mohammed bin Rashid Al Maktoom, UAE Vice President, Prime Minister and Ruler of Dubai, announced that students in the UAE federal institutions of higher and further education would be using iPads. The Mohammed bin Rashid Initiative for Smart Learning seeks to integrate mobile technology in the classroom to meet a number of challenges faced by teachers and learners in UAE. As a result, the iPad was introduced as the primary means of instruction in the English and Math classes of the foundations programs in these institutions. My employer, the Higher Colleges of Technology, was one of these federal institutions. The date for implementation was 9th September 2012.

To achieve the goals of the initiative, His Excellency Sheikh Nahayan Mubarek Al Nahyan, the United Arab Emirates Minister of Higher Education and Scientific Research and the Chancellor of the Higher Colleges of Technology at that time, stressed that the implementation of the initiative should be founded on rigorous pedagogical principles (Hargis et al, 2013).

The core objectives of the initiative were to advance active learning methods that would provide the students with the skills and experiences needed in a flexible work environment, achieve individualized and collaborative student learning in the post PC era and introduce challenge and task-based learning. Moreover, the initiative was designed to enhance cross-institutional collaboration between faculty members, increase faculty collaboration through cross-institutional repositories of learning objects and facilitate the migration to e-books (Cavanaugh et al, 2012).

Preparations

The timeline for the adoption of the iPad was ambitious and challenging. It was carried out by the UAE three federal higher education institutions (the UAE University, Zayed University and the Higher Colleges of Technology) in partnership with Apple Inc. The adoption and planning stages consisted of a nine-week period before the summer break in the education calendar in which the HCT campuses prepared for the launch of the iPad at the start of the 2012-2013 academic year scheduled for September 9. During this period, the faculty of these institutions focused on preparations for the creation of innovative teaching pedagogy the aim of which was to engage students, make them the centre of their learning and provide them with a challenge-based curriculum (Cavanaugh et al, 2012).

The guiding principle of the preparation effort was to engage staff early and often from the start of the iPad implementation. Therefore, in early May 2012, a National Pedagogy Team was created. The team called on all the federal higher education institutions in the country to nominate individuals as iChampions. The institutions responded by nominating ten iChapmions who soon began extensive training with Apple World Education leaders in mobile learning technologies and active learning techniques. The goal of such training was to prepare the iChampions to be leaders in their respective institutions and to cascade their learning to their colleagues. This was followed by the iCelebrate Teaching and Learning Conference that took place in June 2012 at one of the Higher Colleges of Technology. The aim of the conference was to bring together faculty members to discuss their ideas and the progress they had made. It was attended by 450 participants and it had 68 presenters and 51 sessions. In these sessions the participants discussed ways to use the iPad in teaching and learning as well as ways to engage the students in active learning. In late August, a Challenge-Based Learning workshop was organized in which an additional 90 iChampions took part. In September, the iPad program was officially launched for Foundations Program students across the country (Hargis et al, 2013).

Program Structure

Using TPACK, the Technological Pedagogical and Content Knowledge model (Koehler & Mishra, 2009), three key planning and implementation priorities were identified: provision of "robust wireless connectivity for the iPad and supporting learning technologies on campuses, procurement and engagement with hardware partners and development and management processes for the deployment of iPads" (Hargis et al, 2013, p 3).

At every designated institution of higher education, structured iPad training sessions and informal faculty sharing activities took place. These efforts were guided by Apple stages of technology adoption: Entry, Adoption, Adaptation, Infusion and Transformation. For the new iPad pedagogy to be effective, faculty needed to adopt and adapt the technology as a teaching and learning tool. However, such changes would not be possible without "sustained faculty development, access to devices, appropriate apps and evaluation rubrics" (Cavanaugh et al, 2012, p. 2). Moreover, new paradigms of learning would be needed if the iPad were to be fully infused into higher education.

The success which the initiative had achieved so far had not been without its challenges and teething problems. Although more and more of these challenges were being resolved, an in-depth look at them and the initiative as a whole would yield some valuable insights into efforts to push the boundaries of teaching and learning in UAE.

The Fujairah colleges (Fujairah Men's College, thereafter referred to as FMC, and Fujairah Women's College, thereafter referred to as FWC) were two of a nation-wide system of colleges in the United Arab Emirates (UAE) called the Higher Colleges of Technology (HCT). This system was a community of more than 19,000 students and almost 2,000 staff based in 17 campuses throughout the UAE and was the largest higher education institution in the country. The colleges in the system offered a range of workplace-related programs (Business Administration, Applied Communications, Office Management, Customer Service, Communications Skills, Computer & Information Science, Education, Engineering Technology and Health Sciences) that mix theory with practice and were developed in consultation with leading UAE corporate and governmental employers. All courses were delivered in English and were monitored to ensure that they kept pace with industrial and technological change. More than 90 different programs were on offer in a range of diplomas and bachelor's degrees. The students had to complete a foundations program before entering their chosen program major to ensure that they had a level of proficiency that would enable them to pursue a bachelor's degree.

The HCT General Education Division had two primary units: The Foundations Studies Program and Liberal Studies. The Foundations Program, in which I taught English as a foreign language, provided support for students needing assistance in meeting the academic admission standards for HCT Diploma and Bachelor's degree programs. It consisted of four levels of English preparation and two levels of Mathematics. Depending on the student's entry-level scores, a student might spend between one semester (entering at the highest level) and four semesters (entering at the lowest level) or more in the case of Pre-Foundations students preparing to meet degree admission criteria. To exit Foundations, students should earn an overall band 5.0 score in the International English Language Testing System (IELTS).

Prior to the launch of the iPad initiative, laptops had been introduced to the Foundations Program. The initiative was in line with the colleges' mission of preparing their students to face the technological challenges that they would encounter in an increasingly technological and globalized world. This objective was enshrined in HCT mission statement that reads:

> The Higher Colleges of Technology is dedicated to the delivery of technical and professional programs of the highest quality to students, within the context of sincere respect for diverse beliefs and values. Graduates will have the linguistic ability to function effectively in an international environment, the technical skills to operate in

> an increasingly technological world, the intellectual capacity to adapt to constant change, the commitment to sustainable development and the leadership potential to make the fullest contribution to the community for the good of all its people (Higher Colleges of Technology, 2015, fjw.hct.ac.ae).

The introduction of the laptops was also considered a natural and logical addition to classrooms that were equipped with technological tools – teacher desktop computers, smart boards, overhead projectors, document readers and fast and reliable internet link in addition to a wealth of online teaching and learning material.

The laptops were purchased by the students in accordance with a set of criteria set by the Higher Colleges of Technology's IT Department. The students who could not afford to buy their own laptops were given loans by the colleges to enable them to buy the machines. The same procedure was followed with the iPad; those who had the money purchased their own iPads and those who could not afford them received financial help in the form of loans given to them by their colleges.

2. Literature Review

Theory of Affordances

The American psychologist James Jerome Gibson first coined the term "affordance" (Gibson, 1997). The theory was complex and disputed, but at its simplest we could say that according to Gibson, perception of the environment by animals was bound up with taking action. The environment had clues that indicate possibilities for action. These were affordances that were perceived in a direct and immediate way without any sensory processing – buttons for pushing and levers for sliding were good examples of affordances. The Affordance Theory had various implications for design, human-computer interaction, human engineering (ergonomics) and visualization. Educational technologists and Computer-Assisted Language Learning (CALL) researchers frequently called upon the concept of affordance (Guichon et al, 2012). The analysis of the emergence of affordances in technology-supported language learning environments could provide useful information on human-machine and human-human interactions and by extension on language learning processes.

Discussing the concept of affordance in education, Lee (2009) stated that educational affordances were the relationships between the properties of an educational intervention or technology and the characteristics of the learner that enabled a certain kind of learning to take place (Lee, 2009). Here, Lee focuses on both the inherent properties of an educational intervention or technology and the learner. To focus on inherent properties alone was to neglect the opportunities for learning provided by the learner and the total context in which the intervention or technology was embedded.

It was worth stating that an affordance of a technology was not the same as the use of that technology in a manner that would enable it to create a learning activity or task. An affordance was often perceived as an inherent property of the technology, but it was the manner in which this affordance was used that provides learning opportunities. For example, the iPad video camera was an affordance, which could be used to create a learning activity such as role-play aimed at improving learners' speaking skills.

In Affordances of Online Technologies: More than the Properties of the Technology, Day and Lloyd (2007) argued that concepts derived from affordances theories were highly useful in understanding the role of online technologies in learning. However, they suggested that the value of the approach could be maximized when the focus was moved away from the inherent properties of the technologies to the opportunities for learning offered by the total context in which these technologies were used. Furthermore, they stressed that to view learning outcomes as depending solely on the properties of technologies was to ignore the fact that these outcomes were the result of a complex interaction of factors that contribute to a learning context. These factors included the learners, teachers and physical environment. To support their claim, they cited recent examples from educational literature to illustrate this approach to the interpretation and application of affordance theories (Day & Lloyd, 2007).

Conole and Dyke's discussion (2004) of the notion of affordances and their taxonomy of Information and Communication Technologies (ICT) affordances was relevant in this context. They cited Salomon's description (1993) of Gibson's concept of affordances as follows: 'Affordances' refered to the perceived and actual properties of a thing, primarily functional properties that determine just how the thing could be used (Salomon, 1993).

They then stated that this concept had been developed and in particular the notion that the affordances of many objects such as microwaves and car instruments often restricted their accessibility to users, but that better design of artifacts would make it easier to accomplish certain functions. They went on to argue that this concept could be developed further and as such could have both positive and negative impacts on the users when applied to current ICT applications (Conole & Dyke, 2004).

Analysing the relevant current social theory and critique as well as the literature on the current use of technologies, Conole and Dyke drew up a taxonomy of ICT affordances, which was outlined below:

Accessibility: The range of ICT now available offered relatively easy access to vast amounts of information. However, this led to issues of information overload, quality assurance and the need for more critical evaluation of this information.

Speed of Change: Abundant and rapidly changing information was mediated through extensive communication technologies. Living in a modern society, it was, therefore, essential to continuously reassess the experiences and the information that was part of these experiences. This speed of change, however, raised issues of quality, lack of authority of sources and lack of reflection. The speed of change might preclude reflective and critical thought giving rise to surface approaches to learning. Furthermore, conflicting and changing information challenges the use of these technologies for educational purposes.

Diversity: ICT offered a vast range of diverse and different experiences of others, which were key to effective learning and a potential affordance of these technologies. However, exposure to the experiences of others raised issues around authenticity and power in the virtual reality that could be accessed. How could one distinguish between what was real and what was rendered real via the technology?

Communication & Collaboration: The new technologies had the potential to enrich learning through new forms of dialogue, collaboration and communication. The downside of this was the question of the individual being 'spread too thinly' across communities as well as issues of lack of identity and peripheral engagement.

Reflection: Asynchronous technologies had been used successfully in discussion forums to support learning, research and teaching activities of academic staff. Thus, they had the potential to enhance reflection and criticality. In equal measure, the speed and pace of information change undermined reflection and promoted a more pragmatic and reflexive response to new information. This was no more clear than in the case of e-mail whose users were bombarded with so much information that they were more likely to skim read and react superficially to responses and requests.

Multimodal & Non-linear: Information and Communication Technologies provided the learner with non-linear and multi-modal approaches to learning and the ability to adopt more individualized strategies and pathways. However, ICT, as they were used today, seem to follow a linear, assembly line mode of learning. This made multi-modal and non-linear learning modes an under-utilized affordance of ICT.

Risk, Fragility and Uncertainty: ICT are intrinsically fragile. They were vulnerable to abuses and to disruption because of viruses and SPAM or to breakdowns. There were also unintended consequences of the increased use of these technologies. Examples of these consequences were the new forms of plagiarism, commercial exploitation of e-mail and unwelcome mail.

Immediacy: Users of these technologies had higher expectations in terms of response time to requests from other users. This meant that nowadays users were under greater pressure to respond almost immediately to requests which would have been taken considerably longer time to respond to in the past.

Monopolization: The convergence and divergence of various technologies were gaining importance. As a result, issues linked to scalability and globalization and the standards required to back up interoperability had emerged together with a critical look at convergence verses standardization relating to technical, pedagogical, human and organizational aspects. Tension now existed between the benefits offered by diversification with those provided by monopolization and co-modification.

Surveillance: Using the new technologies, those in power could secure greater knowledge and control over others. This created the possibility of infringements of individuals' rights with the aid of technology. The inclusion of monitoring tools within virtual learning environments, the blind copying of e-mail and the inclusion of smart devices and personal tags in commercial products were examples of these risks (Conole & Dyke, 2004).

Discussing the importance of Information & Communication Technologies, Web and Cox (2004) stated that of particular importance were the teacher's values and beliefs with respect to ICT, his or her understanding of the affordances of ICT resources and how these resources might support the students in making use of those affordances in learning interactions. They also believed that incorporating ICT affordances in learning environments had made the teacher's pedagogical reasoning needed in their planning and teaching more complex (Webb & Cox, 2004).

Conole and Dyke (2004) claimed that there were a number of problems, which impeded the widespread and effective use of Information and communication Technologies (ICT) to enhance learning. They pointed to the necessity of exploring a theoretical basis for the use of ICT to support learning. Furthermore, they argued that this endeavour could be helped by the important contribution made by the notion of affordances and that the development of a taxonomy can communicate the potential effect of these affordances.

Commenting on Conole and Dyke's paper, Boyle and Cook stated that the notion of affordances was not well comprehended and that the use of the term was plagued by considerable vagueness and misunderstanding. The authors then proceed to offer a brief account of how the concept had been used in the psychological and human computer interaction (HCI) literature in the belief that such an account helps clarified the important issues relating to the use of term 'affordances' (Boyle & Cook, 2004).

Boyle and Cook were critical of Conole and Dyke's taxonomy of affordances. They pointed out that, for example, the authors had used 'accessibility', which refered to the Internet affording opportunities for reaching information and knowledge in a new way - in "a non-standard way" which "diverged from the standard concern with accessibility as access by everyone regardless of disability" (Boyle & Cook, 2004, p. 297).

Another example was the 'Speed of change' affordance. Conole and Dyke used this to refer to the question of how technology could be utilized to enable students to find their way through a host of changing information and to make informed decisions. However, Boyle and Cook were critical of the authors for failing to explain how this could act as an affordance. They also criticized them for their failure to explain how any of their affordances could be relevant to a learner or a practitioner and accuse them of indulging in "a certain amount of hopeful expectation that the affordances and abilities would simply emerge" (Boyle & Cook, 2004, p. 297).

Boyle and Cook concluded their commentary by highlighting the potential limits in the scope of the application of the concept of affordances to e- Learning and offering a substitute. While acknowledging that developing taxonomies might prove useful in making affordances clear so that practitioners could make educated choices about current technology, they suggested the development of "a framework that allowed us to envisage new tools for learning and to describe the communicative contexts in which these tools could be used" (Boyle & Cook, 2004, p. 298).

The concept of affordances was the focus of interest by Wright and Parchoma (2011) who conducted a literature review that took a critical look at how the concept of affordances was a current theme in contemporary research on mobile learning. Their review also considered how this concept was used to place mobile devices as technologies for learning (Wright & Parchoma, 2011).

The authors believed that the concept of 'affordances for learning' for mobile devices was imprecise and had various meanings to the extent that they questioned its validity and sought other accounts that supported their stand on the issue. They cited Oliver (2005) who, after extensive examination of the shortcomings of the concept, concluded that the term was "highly problematic in both its origin and its application" (Wright & Parchoma, 2011, p. 249).

Next, they discussed how Norman (1988) subsequently adopted the term and moved from Gibson's 'real affordances' to considering 'perceived affordances. They believed that this shift "incorporates subjective interpretation and mental activity, which were explicitly rejected by Gibson" (Wright & Parchoma, 2011, p. 249).

After that, the authors turned to the use of the term 'affordance' claiming that it was highly inconsistent. They stated that the term was sometimes used to refer to the portability of mobile devices and the ubiquitous nature of mobile learning. However, in the research concentrating on the assessment of mobile devices for distance learning, the affordances of laptops and even desktops were considered. In another place in the literature, the term was used as synonymous with technical features such as GPS tagging and built-in cameras. Furthermore, the authors argued that the term did more than suggest simple causal relationships between technological device and use. They posit "it constructed and positioned the device in a particular discursive way, as a technology for learning" (Wright & Parchoma, 2011, p. 250).

Wright & Parchoma conclude that despite its positivistic origin, unclear, inconsistent usage and logical contradictions, the term 'affordance' was widespread and persistent in the literature on mobile learning.

Mobile Learning

Although mobile learning (or M-learning as it is often called) could have different meanings to different communities (the term sometimes covers e-learning, educational technology and distance education), there was a near consensus that it refered to learning across contexts using mobile devices. This meant that regardless of where the learners were and the time they chose to learn, they could take advantage of the learning opportunities offered to them by mobile technologies. Therefore, it was suggested that this type of learning reflected efforts by society and its institutions to accommodate and support an increasingly mobile population. Another important aspect of M-learning was its ability to afford the teacher more mobility and flexibility in creating learning material both on the spot and in the field using mobile technologies.

Mobile devices like smart phones and tablets had become so commonplace that they were now considered mainstream in some countries. They became more powerful as time went by and were easier to connect to the Internet and other portable devices. Many students in higher education had adopted these devices as essential tools for learning and many universities had already integrated them in their courses or were planning to do so. Mobile devices enthusiasts claimed that these devices had enabled students to connect with the contents of their courses anywhere and anytime and immerse themselves in them. They also claimed that the students could do so individually or in groups and they could interact with each other and their teachers via these platforms. They went on to also claim that because of the above, these mobile technologies had created a learning environment where the technology was just the tool in the hands of the learner who created and structured his or her own learning (Sharples et al, 2005).

It was largely true that mobile technologies enabled the learner to construct his or her own learning. However, this type of learning was likely to lack scaffolding, cohesion and consistency. The absence of a formal setting did provide freedom and

convenience, but informal learning often lacked direction and structure, which was usually provided by conventional classroom setting.

Although mobile technologies were now ubiquitous and the interest in them was increasing dramatically judging by the large numbers of articles written about them in academic and scientific publications, there was no consensus in the academic and professional community on a definition of M-learning. Ferreira (2013) cited a commonly accepted definition advanced by Hwang and Tsai (2011): M-learning was "using mobile technology to facilitate learning" (Ferreira et al, 2013, p. 49). Being too concise and too general, this definition overlooked other aspects of mobile learning technologies: they were easy to carry, convenient and were said to increase learner engagement and motivation.

A better definition might be "any educational provision where the sole or dominant technologies were handheld or palmtop devices" (Traxler, 2005, p. 262). This definition could cover phones, smartphones, personal digital assistants (PDAs) and their peripherals and it could also include tablets and laptops (Traxler, 2005).

3. Methodology

3.1 Design of the study

The study employed a case study design. I proceeded with the case study approach in the belief that the two surveys I would conduct would not capture the length and breadth of the iPad initiative because of their inability to fully explain the complexites of this phenomenon. In contrast, the qualtitative accounts I would obtain from the class observations and teacher interviews I would conduct not only would help to explore and describe the data in a real-life environment, but also would help to explain the intricacies of this real-life situation (Zainal, 2007).

3.2 Sampling

I used two sampling strategies for this study: cluster sampling for the students and convenience sampling for the teachers. When the population was large and widely dispersed (the Foundations Program students in 17 Higher Colleges of Technology dotted around the country), cluster sampling seemed the appropriate strategy to adopt. It would have been very time consuming to select all the Foundations Program students in the HCT system to survey for the research. As a result, I selected the two Fujairah colleges where I work and which are geographically close to each other.

3.3 Research Participants

The research participants were drawn from the teachers and students of the Foundations Program at FWC & FMC who had been using the iPad's technical affordances to create pedagogical affordances in order to enhance their teaching and learning of English as a foreign language. Twenty-eight teachers received the teacher survey, but only fourteen (14) responded. The student survey was sent to 578 students (FMC = 89 and FWC = 491) and out of these a hundred and ninety-four (194) responded. Five teachers

conducted six classes, which I observed, and the five teachers were interviewed after the observations. One of them had delivered two classes.

The data for this research were collected by means of two online surveys involving the Foundations Program's teachers and students, six class observations and five interviews of the teachers who conducted the classes.

3.4 Data Analysis

For this study a manual process of analysis was used and for which I followed the model prescribed by Taylor-Powel & Renner (2003). This involved reading and re-reading the data in order to acquire familiarity with it and to identify meaningful and potentially insightful chunks, which refered to possible answers to the research questions. Next, all relevant chunks were placed into categories and given descriptive labels. As many categories and sub-categories as needed were added to reflect the nuances in the data and to enable clear interpretation. The data were searched and coded manually rather than using computer applications. Although this process was time-consuming and required a high level of concentration, it kept me close to the data and made it possible for me to constantly compare data within and across class observations and interviews. To interpret the data a list of key points and important findings was created. This was the result of categorizing and sorting out the data. Quotes and descriptive examples were added in order to illustrate key points and bring data to life. Abbreviations and codes were used to tag key themes – ideas, concepts, beliefs, incidents and terminology used. Once the data were sorted out, attempts were made to make connections between the categories and put aside exceptions that did not seem to fit into their categories (Taylor-Powell & Renner, 2003).

4. Results and Discussion

Results

Pedagogical Affordances

In the literature review of this study, the concept and theory of affordances were discussed in some detail. In introducing this section, it was useful to reproduce the opinion of Lee (2009) who stated that "educational affordances were the relationships between the properties of an educational intervention or technology and the characteristics of the learner that enable a certain kind of learning to take place" (Lee, 2009, p. 151).

Lee's definition covered two elements: the properties of an educational intervention or technology and the characteristics of the learner. It was useful to add a third element: the learning context. In other words, for effective learning to take place, three elements had to be present: technology's inherent properties, the learner and what he or she brought to the process of learning as well as the context in which learning took place.

Multimedia

The teachers conducting the six classes I observed used a variety of iPad technical affordances to create pedagogical affordances designed to facilitate their teaching and promote their students' learning. The pedagogy created this way involved the use of multimedia (images, audio, video). Apps such as Creative Book Builder, Pic Collage, Popplet, iMovie, Sound Note make use of images, audio and video to create teaching and learning artifacts that were visually appealing. They engaged the learner emotionally, thus accelerating the acquisition of learning material.

In the first class I observed, TEACHER 1 (who taught the first and second classes I observed) used apps to enable the students to do online research, communicate and collaborate with each other as well as create and edit text. The objective of the activity was to build a story through which grammar was taught. Two stories were created: one with material obtained online and was based on cues given by the teacher. The other was built through questions and answers. These answers were used to construct the story. The apps used were Pic Collage and Creative Book Builder, which enabled the students to record their voices narrating the stories.

In the fourth-class TEACHER 3 used iBook Author to create a holiday book to show his/her students how the past simple is used for narration. He/She then instructed his/her students to use Creative Book Builder to author similar books in which they would describe their mid-semester break using the simple past. He/She also asked them to include pictures they had taken with their iPad built-in cameras of the events and activities in which they were involved during the break.

In the fifth class TEACHER 4 focused on practicing the techniques designed to improve the students' performance at the IELTS Speaking Part 2. The objective of the class was to teach the students to give long answers to the questions they would be asked in that part of the test. In this activity the students used their iPads to access a PDF document that had been posted online by their teacher. To annotate the document, they used the neu. Annotate app to make notes and highlight the PDF text. Next, they used the Sound Note app to record themselves asking and answering questions in practice interviews.

This teacher felt that the students were aware that the quality of the iPad material he/she gave them was both engaging and visually appealing. He/She gave the example of Keynote that he/she claimed could produce more visually appealing presentations than those done using MS Office PowerPoint.

In the 6th class, TEACHER 5's objective was to teach his/her students how to scan texts and read for details. He/She blended a number of activities to achieve that goal. First, he/she asked his/her students to use the Popplet app to guess information about sharks. Having scanned the text looking for specific information and vocabulary items, the students had to do a comprehension-checking quiz built using the Socrative app.

Collaboration

In his/her interview TEACHER 1 declared that the iPad did not make collaboration any easier. In fact, he/she stated that one 'inherent weaknesses' of the iPad was that it did not lend itself to collaboration easily. In support of his/her argument he/she cited the difficulty some students had in emailing each other the pictures they had obtained online for a story building activity adding that he/she had to spend some time helping them learn how to use e-mail.

In the latter part of his/her interview, the same teacher admitted that the iPad did promote collaboration, but only in a limited way. To back up his/her claim he/she cited the example of two of his/her students who were asked to divide a task between themselves: one would write a story and the other would edit it. However, in this instance, each student wrote her own story, thus duplicating the work and making mistakes that were not going to be corrected by either. This was contrary to their teacher's explicit instructions and it thwarted his/her attempt to teach them to write, edit and proofread their work and not just write it.

(In the above paragraph the teacher claimed that the iPad promoted only a limited amount of collaboration. However, what the two students did was the opposite of collaboration. Each wrote her own story instead of one writing a story and the other editing and proofreading it).

The three other teachers (3, 4 & 5) offered a different perspective on whether the iPad had made it easier for the students to collaborate with each other. TEACHER 3 had instructed his/her students to build a holiday e-book in which they would describe their mid-semester break in words and pictures. He/She stated that in creating their individual books the students chose to work with each other and being user-friendly the iPad helped their effort. He/She observed:

> Some of the students had no idea of what to do although they were familiar with the app. Therefore, when one student did not know what to do even after watching the teacher's instructional videos, but the one next to him did, the former would ask the latter to help. Information was shared and they were helping each other.

His/her colleague TEACHER 4 made a similar observation about his/her students who worked in pairs on a PDF document they had received from the teacher. Both students had the same document on their iPads and they, therefore, were able to use it to do the role-play activity. He/She stated:

> Much of what I had done with my Level 4 repeating students was collaborative writing. Working in small groups of three or four the girls produced a piece of writing, whether it was a paragraph or a whole essay. The iPad allowed this sort of activity to be easily conducted; they collaborated with each other and at the same time learned from each other. This was a positive outcome of their collaboration.

TEACHER 5 offered a slightly different perspective on how the iPad facilitated collaboration. He/She pointed out that because the iPad was more mobile than a laptop, it could be easily shared and used by two or more students, thus making collaboration easier.

The importance of activities and tasks involving multimedia and independent and collaborative learning was reflected in the teacher survey (Chart 1: iPad Uses, p. 104) which was conducted to find out what tasks and activities the teachers used the iPad for and how often.

Brainstorming

As with collaboration above, there were two opposing views regarding brainstorming. TEACHER 1 thought that it was not easy to brainstorm using the iPad. He/She had based his/her observation on the behaviour of his/her Pre-Foundations class in which he/she noticed that the students were using their notebooks rather than their iPads to jot down notes for the story they were going to write. He/She thought the reason behind his/her students' reluctance to use the iPad was that they found it difficult to focus on the small iPad screen. However, he/she followed that by offering a different reason for their reluctance to use the iPad: some of the students may have learning difficulties, which had not been diagnosed. However, he/she did not elaborate on the nature or scope of these difficulties.

In contrast, TEACHER 5, who taught a Level 3 class, asked his/her students to use the Popplet app to brainstorm ideas about sharks. He/She asked them to put the word 'shark' in a popplet in the middle and put in the four popplets around it the words 'Length', 'Weight', 'Food', and 'Teeth'. He/She then asked them to guess the information that would fit in the four outside popplets (squares). The students put in each one of these squares relevant information about sharks before they listened to a recording on the subject.

Here the app Popplet helped the students focus on the subject under discussion by providing a tool that accommodates the ideas they generated in the discussion about sharks.

Discussion

Pedagogical Affordances

This was perhaps the most important issue by which the iPad success as a pedagogical tool was measured and judged. There was very little doubt that the iPad was a technological innovation that had assumed a prominent place in the world of mobile technology. However, there was still doubt in the world of education regarding its benefits as the educational tool that would revolutionize education. The literature on the subject was replete with studies that explored the use of the iPad in the education of children, young people and higher education, which highlighted the pedagogical affordances of the technology.

This study, which was confined to the Foundations Program of the two colleges of higher education in Fujairah, UAE, showed that the iPad technical affordances were used to create tasks and activities involving the use of multimedia, i.e. images, videos, audio and animation artifacts, designed to increase student engagement in their learning and consequently improve the students' learning outcomes.

The question of increased engagement and motivation of young learners and today's millennial learners (born between 1981 and 1999) had been discussed in the literature on mobile learning. While Prensky (2001) claimed that these learners were no longer satisfied with being passive; they wanted to act and do, Price (2010) found a gap between students' expectations for success and the amount of effort they put in their school work. However, she also found common characteristics among these learners such as a preference for active learning, technology driven learning, creative and collaborative learning (Price, 2010).

In discussing whether the iPad had promoted collaboration among their students, three out of the five Foundations Program's teachers interviewed for this inquiry offered a positive perspective on the ability of the iPad to facilitate learner collaboration. Furthermore, the results of the two surveys conducted in the course of this study indicate that collaborative learning is one of the main activities the iPad was used for by both teachers and students.

The claims made by the three teachers above, who stated that the iPad had promoted collaboration in their classes, were generally consistent with similar claims reported in the literature. Conole & Dyke (2004) believed that the new technologies had the potential to enrich learning through new forms of dialogue, collaboration and communication. These new forms were connected to Habermas's critical social theory. In 1970s and 1980s, Habermas redefined critical social theory as a theory of communication, i.e. communicative competence and communicative rationality on the one hand and distorted communication on the other (Sim & Van Loon, 2014). They were also connected to Vygotsky's approaches to learning, especially his Social Development Theory, which argued that social interaction preceded development and that consciousness and cognition were the end product of socialization and social behaviour (John-Steiner & Mahn, 1996).

In discussing mobile learning and research, Power (2013) proposed the term Collaborative Situated Active mLearning and offered a new perspective whereby regardless of the apps or applications used, learning should involve collaboration among learners and with their teachers. In this context, Power maintained that learning should be situated in a realistic context as this would improve motivation and made learning more relevant to the learner (Power, 2013)

The literature on the use of iPad in education suggested that, compared to desktop computers and laptop, the iPad allowed a higher level of collaboration among learners and teachers because of its portability and ease of use. For example, small groups of learners could listen to their recordings and gave constructive feedback to each other. They could also share data, websites, multimedia material and apps. In this, the teachers acted as facilitators whose job was to offer solutions to problems, share expertise and promote higher level of collaboration and critical thinking (Falloon & Melhuish, 2010).

In opposing the above view, El-Hussein et al (2010) argued that mobile technologies did not necessarily replace PCs, laptops and smart boards, as there was no guarantee that they could achieve effective learning results in the absence of other factors that had to exist for these technologies to enhance learning. Wagner (2005) supported the above supposition by claiming that new practices and new pedagogical approaches had to be there for effective learning to take place via these technologies.

To sum up, the participating teachers all but one stated their belief that the iPad had aided collaboration in their classes thanks to its mobile nature and ease of use. To support their statements, they cited examples from these classes in which their students used the iPad. Even the teacher who disagreed with the other participants had to acknowledge that the iPad did facilitate collaboration in his/her class albeit in a limited way.

Brainstorming was an activity designed to generate ideas, opinions and suggestions and it was an important element in the learner-centered class. The goal of the activity was to encourage learners to think for themselves, share ideas then use these ideas to

carry out certain learning tasks and activities. Even when brainstorming was done using the learners' first language rather the target language – as with classes of absolute or false beginners -- it remained a useful and productive activity. To engage in brainstorming and promote creativity and critical thinking the participating teachers stated that their students used Pic Collage to describe jobs, compare and contrast cultural differences like food, clothing or story characters. They also used Educreations to brainstorm topics and compare and contrast, for instance, types of vacations.

TEACHER 8 encouraged his/her students to use Educreations for brainstorming and on this he/she states:

> … Students useed (it) to brainstorm topics with pictures and text and instantly recorded their thoughts and feelings, for topics like "The Kind of Music I Like", "Compare and Contrast Different Types of Vacations". I had used this app to practice IELTS speaking topics – students would have one minute to brainstorm (scribble ideas), speak for two minutes and record their voices. Later these recordings were used for correction of errors or assessment purposes.

An iPad app called *Simplemind* was used successfully for brainstorming and mapping within a lending program launched by Weigle Information Commons (WIG) at the University of Pennsylvania. The program provided iPads for class projects. Faculty could request iPads to be pre-loaded with special apps and WIC staff provided training.

A faculty member teaching a freshman writing seminar used *Simplemind* for brainstorming and classification. Specifically, he used the app with his students to complete literature reviews for a large research paper. Using the iPad the students created colourful mind-maps of articles and drew connections across articles and authors. In addition, they planned out arguments and shared mind-maps by passing the iPads around a seminar room table (Vedantham & Shanely, 2012).

5. Conclusion

The study had found that in teaching their classes, the Foundations teachers used the iPad's technical affordances such as the camera, video and the many learning apps installed on the iPad to create tasks and activities which enriched their teaching and their students' learning. Among these tasks and activities were those that involved the use of multimedia – images, video and audio files. Examples of the apps that made this possible are PicCollage, iBook Author and SoundNote.

The study had also shown that the Foundations teachers and their students found that the iPad facilitated collaborative learning activities. This was mainly attributed to the portability of the iPad and its user-friendly functions. These provided the students with a suitable platform to practise and promote the skills of reading, writing, listening and speaking. On the other hand, if the students chose to work independently of each other, the iPad affordances and apps were there to help them engage in this style of learning. It was also possible for a student using the iPad to do both: work independently first then contribute his or her work to a collaborative group task.

Another activity the iPad facilitated and the study highlighted was brainstorming. Prior to starting a learning task or project, the students were able to use their iPads to generate ideas, suggestions, etc. on a specific topic or topics. To do this, they would use the iPad's Notes or Popplet, an app that allowed learners to create bubbles or square inside which they put their ideas and

suggestions. Not only did brainstorming facilitate the generation of useful knowledge and ideas, but it also promoted collaboration and teamwork among learners.

References

Boyle, T. & Cook, J. (2004). Understanding & using technological affordances: A commentary on Conole & Dyke. Research in Learning Technology, Carifax Publishing, 12 (3), 295 – 299.

Cavanaugh, C., Hargis, J., Munns, S., & Kamali, T. (2012). iCelebrate teaching & learning: Sharing the iPad experience. Journal of Teaching and Learning with Technology, 1(2), 1-12.

Conole G., & Dyke, M. (2004). What are the affordances of information & commuication technologies? Association for Learning Technology Journal, 12(2), 113-124.

Day, D., &. Llyod, M. (2007). Affordances of online technologies: More than the properties of the technology. Australian Educational Computing, 22(2), 17-21.

El-Hussein, M. O. M., & Cronje, J. C. (2010). Defining mobile learning in the higher education landscape. Educational Technology & Society, 13(3), 12-21.

Falloon, G., & Melhuish, K. (2010). Looking to the future: M-learning with the iPad. Computers in New Zealand Schools: Learning, Leading, Technology, 33(3), 1-2.

Ferreira, J. B., Klein, A. Z., Freitas, A., & Schlemmer, E. (2013). Mobile learning: Definition, uses & challenges. Cutting-edge Technologies in Higher Education, 6, 47-82.

Gibson, E. J. (1997). An ecological psychologist's prolegomena for perceptual development: A functional approach.

Guichon, N., Betrancourt, M., & Prie, Y. (2012). Managing written and oral negative feedback in a synchronous online teaching situation. Computer Assisted Language Learning, 25(2), 181-197.

Hargis, J., Cavanaugh, C., Kamali, T., & Soto, M. (2013). A federal higher education iPad mobile learning initiative: Triangulation of data to determine early effectiveness. Innovative Higher Education, 1-13.

Higher Colleges of Technology. (2015). Fujairah Colleges. Retrieved April 17, 2015 from fjw.hct.ac.ae

John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian framework. Educational Psychologist, 31(3-4), 191-206.

Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? Contemporary Issues in Technology and Teacher Education, 9(1), 60-70.

Lee, M. (2009). How can virtual worlds be used to support collaborative learning? An analysis of cases from the literature. Journal of E-Learning and Knowledge, 5(1), 15.

Power, M. (2013). Collaborative situated active mobile learning strategies: A new perspective on effective mobile learning. Learning & Teaching in Higher Education: Gulf Perspectives, Zayed University, 10 (2), 1-18.

Prensky, M. (2001). Digital natives, nigital immigrants. On the Horizon, 9(5), 1-6.

Price, C. (2010). Why don't my students think I'm groovy? The new "R"s for engaging millenial learners. Essays from e-xcellence in teaching, 9, 29-34.

Salomon, G. (1993). No distribution without individuals' cognition: A dynamic interactional view. Distributed cognitions: Psychological and educational considerations, 111-138.

Sharples, M., Taylor, J., & Vavoula, G. (2005). Towards a theory of mobile learning. Proceedings of mLearn. 1, pp. 1-9. Birmingham & Milton Keynes: University of Birmingham & The Open University. Retrieved April 25, 2013.

Sim, S., & Van Loon, B. (2014). Introducting critical theory: A graphic guide. Icon Books.

Taylor-Powell, E., & Renner, M. (2003). Analyzing qualitative data. Program Development & Evaluation Series, 1-10. Wisconsin, USA: University of Wisconsin.

Traxler, J. (2005). Defining mobile learning. In IADIS International Conference Mobile Learning, pp. 261-266

Vedantham, A., & Shanley, C. (2012). iPads in the classroom pilot project.

Wagner, E. (2005). Enabling mobile learning. EDUCAUSE Review, 40(3), 40-53.

Webb, M. E., & Cox, M. (2004). A review of pedagogy related to information & communications technology. Technology, Pedagogy & Education, 13(3), 235-286.

Wright, S., & Parchoma, G. (2011). Technologies for learning? An actor-network theory critique of 'affordances' in research on mobile learning. Research in Learning Technology, Routledge, 19 (3), 247-0258.

Zainal, Z. (2007). Case Study as a research method. Jurnal Kemanusiaan, (9), 2.