

## Using Mobile Devices to Support Online Collaborative Learning

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### ABSTRACT

*The paper discusses the effect of mobile learning on students, especially the tablets and smartphones. These gadgets have become a research interest of education to encourage and facilitate learning. Mobile devices assist in build closer connection between students and teachers. There are several options of mobile devices such as Ipod, personal digital assistant, smart phone, laptop or tablet PC, MP3 Players, pen drive and so on. Mobile learning involves the use of mobile technology either alone or combination with other information and communication technology (ICT). The benefits of mobile learning expand the reach and quality of education, facilitate personalized learning, power anytime, anywhere learning, provide immediate feedback and assessment, ensure productive use of time spent in classrooms, build new community of students, support selected learning, enhance seamless learning, bridge formal and informal learning, improve communication and administration, maximize cost efficiency and update policies related to mobile learning. It is concluded that the benefits overshadow the challenges. Using mobile devices allow students to extend learning beyond the classroom walls. Students are highly engaged and are able to demonstrate unique and creative way to respond to the use of technology that offers some distinctive affordance to users.*

### Introduction

Mobile devices, particularly tablets and smartphones, are quickly becoming powerful technologies enough to override personal computers in several tasks with the advancement of wireless and mobile technology. While these technologies have dramatically transformed our society in the way we communicate, create, retrieve and share information, collaborate and socialize with each other, the application of these technologies is still relatively young (Alberta, 2011). Mobile learning has become a research field of interest of practitioners in the different phases of education to facilitate learning in different contexts (Burden, et al. 2012). The key aspect of this interest are the growing impor-

tance and their use day-by-day by students in several activities, and the increasing portability of these technologies, as well as the reduction in their cost and services (Clark, & Luckin, . (n.d.). Learning supported by mobile technologies is becoming a new approach towards education, and it is single way that offers opportunities to learn anywhere and collaborative learning has long been believed to hold great value for education, but creating a collaborative e-learning experience inside and outside of the classroom is a challenge with which lecturers continue to struggle, since there are several obstacles like their own preparation for the introduction of this learning approach (Godwin, 2012). Additionally, there are no consensus in interpreting collaborative learning however, new educational application- educational

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apps (Hutchison, & Reinking, 2011) have, at least in some contexts, begun to transform the way lecturers teach, students learn, and lecturers and students interact.

According to a UNESCO report (2013), mobile devices include any portable, connected technology, such as basic mobile phones, smartphones, e-readers, netbooks, tablets, iPads and computers. Marc (2001) pointed out that today students have not just changed incrementally when compared to those of the past. They are the first generation to grow up with electric devices of new technology. It is believed that by allowing students to use mobile devices in the classroom, motivation to learn and to achieve increases (Kunzler, 2011). Hepple (1998) pointed out that just in the development of technology where these devices are becoming a reality, however, it is yet to be understood how learning and teaching will change with the access and use of these devices. Without such understanding, we are left with an insufficient analysis that creates the conditions for ill-informed policy decisions at educational institutes. It is of vital importance for lecturers to augment or change the way they teach in order to entirely educate students and prepare them for scientific and technological global competitiveness.

## Educational implications of mobile learning

Mobile learning involves the use of mobile technology, either alone or in combination with other information and communication technology (ICT), to enable learning anytime and anywhere. Learning can unfold in a variety of ways; people can use mobile devices to access educational resources, connect with others, and create content, both inside and outside classrooms. Mobile learning also encompasses efforts to support broad educational goals such as effective administration of school systems through the use of mobile devices. Mobile technologies are constantly evolving; the diversity of devices on the market is huge and includes, in broad strokes, mobile phones, tablet computers, e-readers, portable audio players, and hand held gaming consoles. UNESCO chooses to embrace a purposefully broad definition of mobile devices, recognizing simply that they are digital, easily portable, usually connected to a network, and can facilitate any number of tasks including communication, data storage, video and audio recording, and more. There were over 6 billion mobile phone subscriptions worldwide and over 70% of these subscriptions come from the developing world (ITU, 2011). Mobile learning is fundamentally different from earlier models of e-learning because it employs hardware that is far more affordable and thus more easily self-procured and managed than tethered computers. Where e-learning has historically been constrained by technology that is expensive, fragile, heavy, and kept in tightly controlled computer labs, mobile learning projects tend to assume that students have uninterrupted and largely unregulated access to technology. It therefore demands that policy makers re-conceptualize the potentialities of ICT in education as well as practical strategies for technology implementation and use. Learning in the 21st century is omnipresent

with computer and technology and is gaining momentum in the lives of the young and becoming a part of education at schools. Student use technology on a daily basis and this has an impact on their education. Technology used effectively in the classroom enables students to be innovative while developing new skills and provides students with futuristic information. (Saxena, 2013). In recent time, the increase in use of technology is shifting traditional teaching methods in the classroom by facilitating learning in new ways.

In order to understand how people learn, the progression of behaviorism, cognitive science and constructivism serves as the foundation in guiding the migration of implementing technologies in learning and, hence mobile learning too. **Learning Types Behaviorism** propounds feedback and reinforcement. Mobile devices can facilitate these when faculty and students are using the devices in tandem. **Constructivism** demands rich media, simulations and immersive environments. Simulations, visualization and gaming environments could be provided through mobile devices at the convenience of students. **Informal or situated learning** talks of using education in “context aware” environments relevant to the field of study. Mobile devices allow content portability into “context aware” environments. **Collaborative learning** propagates recording and sharing instantly. With the handy and portable mobile devices, there are many possibilities of creating and sharing student and teacher authored resources. It is true that there is a developing trend in information technologies that provide interactive mechanism among the learners, instructors and the learning material. But effective learning could happen only when the learner decides to engage himself actively and cognitively in the learning activities.

The flexibility, instant connectivity, mobility associated with mobile learning has given rise to new delivery platforms for teaching and learning and ultimately the attractive learning environments. Some of the improvements in the learning environment include; faculty and staff have access to ubiquitous learning environments, students have access to the same hardware and software as faculty, cost savings result in replacing desktop computers with laptops and hard wired networks with wireless ones, and standardization of platforms maximizes access and minimizes need for technical support.

Mobile devices help build closer connections between student and teacher. Both lecturers and students have learned and developed effectively through exploration and by wanting to share knowledge with each other (Burden et al, 2012). Lecturers, students and parents report that the multiple communication features, routine availability and easy accessibility of tablets in the classroom and in students’ homes make communication between lecturers and students, and school and home easier. Positive evidence from parents such as; increased engagement and interest in learning, gaining knowledge and technology skills, more time spent on homework and more opportunity to make learning relevant and authentic. Parents’ state that home-school communication improves with the introduction of mobile devices and lighter school bags is a major benefit. The portability of mobile devices provides users with access to a broader and greater flex-

ible source of learning materials than what is offered in current classroom settings. In addition, it can be used anywhere, in physical education, music, dance or even in the swimming lesson. With over thousands of apps available to download, lecturers have access to an abundance of learning materials for use on mobile devices such as the tablet. The teacher can easily update the student's data even when outside class that is without going to the desk or school. Tablets and iPad are fitted with sensors, cameras, microphones, accelerometer, touch screen, on-screen typing, Voiceover and Talkback. These features have made these devices a popular device for teaching and learning for students of special needs such as students with autism or speech disorder, motor skills impairments, attention deficit hyperactivity disorder, dyslexia and visual impairment. The touch screen enables them to access tablet effectively specially the student with motor skill impairments and voice output offers advantage to autism or speech disorder students. Mobile devices contribute to the development of skills and connect students with and without disabilities (Dwight, 2013).

Tablets and iPads have been overestimated as 'revolutionary' devices that hold great potential for transforming learning (Goodwin, 2012). One of the chief benefits of these mobile devices is that they enable learning anywhere, anytime. This allows a shift away from the traditional model where the classroom is the central place of learning driven by the teacher and limited to instruction within the school day. In deploying mobile devices, the teacher is no longer at the center of the learning process and the instructional time can surpass the school day. The use of mobile devices provides many positive outcomes for students, staff, and the community. It's not only improves writing skills and gravity of students' research but also increases student interest in learning and ownership of the learning process. There are reductions in lecture/presentation instruction and an increase in project based learning activities.

## Major Benefits of Mobile Learning

Mobile devices are common even in areas where schools, books, and computers are scarce. A growing number of projects have shown that mobile technologies provide an excellent medium for extending educational opportunities to students who may not have access to high quality schooling. Although mobile learning does not replace but rather complements existing education, as well as ICT in education investments—such as textbooks, infrastructure, hardware, training and content— in ways that best utilize the attributes of mobile devices. Mobile devices are generally owned by their users, highly customizable, and carried throughout the day, they lend themselves to personalization in a way that shared and tethered technologies have not. Learning can happen at times and in places that were not previously conducive to education. Mobile learning applications commonly allow people to select between lessons that require only a few minutes to complete and lessons that demand us trained concentration over a period of hours. This

flexibility allows people to study during a long break or while taking a short bus ride. A number of projects have demonstrated that mobile technologies can streamline assessments and provide students and teachers more immediate indicators of progress. While historically students have had to wait days or weeks to get guidance regarding their comprehension of curricular content, mobile technologies, thanks to their interactive features, can provide instant feedback, allowing students to pinpoint problems of understanding and review explanations of key concepts. UNESCO's investigations have revealed that mobile devices can help instructors use class time more effectively. When students utilize mobile technology to complete rote tasks such as listening to a lecture or memorizing information at home, they have more time to discuss ideas, share alternate interpretations, work collaboratively, and participate in laboratory activities while at school. Far from heightening isolation, mobile learning allows people increased opportunities to cultivate the complex skills required to work productively with others. Mobile devices are regularly used to create communities of students where they did not exist before. While formal education has historically been confined to the four walls of classrooms, mobile devices can move learning to new settings that maximize understanding. Cloud computing and cloud storage streamline education by providing students continuous and up-to-date learning experiences regardless of the device they use to access content. Computing is increasingly moving to the cloud, devices do not necessarily need expensive processors to utilize sophisticated software; they simply need to provide a student a connection to the cloud. Mobile devices facilitate learning by blurring boundaries between formal and informal education. Using a mobile device, students can easily access supplementary materials in order to clarify ideas introduced by a classroom instructor.

Because messages sent by mobile devices are generally faster, more reliable, more efficient, and less expensive than alternative channels of communication, students and teachers are increasingly using them to facilitate the exchange of information. When weighed against the costs of comparable educational resources, mobile technology can offer exceptional value. Mobile learning is often highly cost effective. ICT in education policies were articulated in a 'pre-mobile' era, they do not seek to maximize the learning potentials of mobile technology.

## Challenges

In this digital era, more and more schools in many countries are taking advantage of these new mobile devices that offer portability and ease of use. Although the use of technology in education is remarkable and has a positive trend, there is a need for concern, as there are several obstacles that restrain the integration of technology (Vrasidas, 2008). The existing process needs to be reassessed and new methods may have to be implemented to be used in classrooms. The approach of throwing these devices into classrooms to see what happens is bad and

definitely will have negative consequences. Although the students are in favour of mobile devices, they too have concerns. However, there are some concerns on the use of mobile devices in education raised by students, lecturers and parents, which are discussed below. Technology is developing at a rapid pace and it is an ongoing process. Traxler (2010) considers that devices owned by students are not designed for education use and are poorly suited for learning. Initially tablets and similar devices were developed for personal use but of late, they are designed for educational purpose. Innovative technology is developing at a rapid pace and a number of apps for learning and teaching purpose are being introduced. The management experience some stress in taking decisions in choosing the apps that are best for learning and teaching. As Melhuish and Falloon (2010) noted that for an application to be a part of an individual's learning pathway they must be pedagogically sound in design rather than focusing solely on content, engagement or edutainment. In this era of digital technology, most children are immersed in digital technology. Homes are flooded with devices like smart phones, tablets, Xbox etc. These children spend most of their time playing games and watching movies and it has become a sedentary past time. However not all children have access to modern technology at home not only in developing countries but also in developed countries. Even if the developing countries introduced digital technology in education all institutions, it is only limited to urban regions while the rural and poor people continue to lag behind, due to lack of investment, infrastructure and skilled lecturers. The tablets are expensive to purchase and the cost of maintenance is even higher. Karsenti & Fievez (2013) stated that students spend 76% of their time on using iPads outside the classroom on social activities, amusement and other recreation. Although students feel that use of tablet for learning would not intimidate them, as it is an omnipresent constituent of their daily activities; yet even the tech-savvy students may consume more time for learning activities until they are familiarized with the device. Not being competent in the use of mobile devices may frustrate them and they might not want to explore the capabilities. Majority of mobile devices used for education seemed to be messy and poorly executed. When students lose their confidence, they might have a negative outlook on education. It is observed that the students find it easier to use gaming applications than education apps. Mobile devices when used inappropriately by students in classroom can be a source of distraction. Parents do not trust that their young children were responsible in their use and felt possible danger. Students find creative ways to do something on these devices than follow the teacher's instructions. With access to internet, the inattentions is diverted to gaming sites and social networking functions. Distraction is a big challenge to lecturers. According to the study in Quebec, Canada 99% of students, using tablets say that they find it distracting in class (Karsenti ,& Fievez2013). Management in educational institutions has to take responsibility to block certain applications or websites, and lecturers need to move around the class to control and monitor the use of such devices by students. In addition, they could create a place and time in the school for social networking than prohibiting. Tablets are more fragile than computers; parents and lecturers

are concerned about the damage. In addition, these gadgets are expensive and when dropped or misplaced the loss is quite big as they are costly devices. There is also possibility of theft of the devices at school. Parents concern is how this could be replaced. Clarke & Svanaes (2012) suggested that insurance could replace or repair the devices with some implications if the student broke more than one or two devices. Reading a large amount of text on the small screen of mobile devices can be difficult and can cause eye strain (Shuler,2009). Morrone et al (2011) found that use of tablets for learning and teaching requires advanced planning and devotion of more time monitoring and supervising student's tablets explorations. When digital technology is introduced for learning and teaching, instructors have to quickly adapt and always have back up plans to face disruptions and distractions. It is also found that students adapt and are faster compared to lecturers. This is a sign that changes for adoption success are thin. Some lecturers have found use of tablets for teaching and learning challenging, and some found the need for training on technical advices, lists of useful application, discussion of pedagogy and sufficient time to get used to the device. In addition, some lecturers at school have shown reluctance to adopt to this new technology and have touted as transformative devices. For use of tablets for teaching and learning at school requires internet connectivity with a proxy server. Internet is required to export response and other work created by students on their devices. At the same time, schools must restrict internet access to avoid inappropriate use. Setting up devices and account user names and passwords for individual students consumes school time of management, which is a probable barrier. Schools also have to consider adequacy of wireless network required for portability of the device. The use of device in classrooms needs internet connectivity, for which students have to log in and out each time they use. Lecturers have reported that they sometimes face disruption in their teaching plan due to bad network or limited range of the wireless network. It is important to remember that digital technology should enhance curricular goals and support student learning in new and transformative ways (Hutchison & Reinking 2011).

## Conclusion

the benefits overshadow the challenges. with proper training to lecturers, supervision of students and awareness of mobile learning; educational institutes will soon be able to make rapid strides. Lecturers deal with substantial challenges but when provided with adequate training and support the challenges are fewer. Using mobile devices allows students to extend learning beyond the classroom walls, says Harward's Dede. In addition, students are highly engaged and are able to demonstrate unique and creative ways to respond to the use of technology that offers some distinctive affordances to users. Educational institutions need to look for safe, productive ways to integrate mobile learning devices into curriculums. There has been very little research done on mobile learning and there is lot of scope for further research especially in evaluation and assessment.

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