Teaching and Learning with Mobile Devices in the 21st Century Digital World: Benefits and Challenges

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Abstract

Mobile devices have introduced a new generation of educational tools that afford creative use and instant access to a wealth of resources. These devices hold great potential for transforming learning. On one hand teachers and students are very positive about these devices, on the other hand, there are several obstacles faced. This paper examines the benefits and challenges of mobile devices on learning and teaching. The study shows that teachers and students are optimistic about the use and influence of these devices on students' motivation, communication, collaboration and ability to research. Adequate training and support can help overcome the challenges faced.

Keywords*:* Classroom, learning, mobile devices, teaching.

Introduction

Learning in the 21st century is omnipresent with computer and technology and is gaining momentous 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. Mobile learning is the use of mobile technology to facilitate learning anytime and anywhere.

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) points 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. He adds that they have been using videogames, video cams, digital music players, cell phones, computers, and all other toys and tools of the digital age almost from their birth and are an essential part of their lives. He further says that today, mobile learning is a need but not a want. 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 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 teachers to augment or change the way they teach in order to entirely educate students and prepare them for scientific and technological global competitiveness for the 21st century.

The study addresses the benefits and challenges presented by the implementation of mobile devices in classrooms for teaching and learning at school. Though still in the initial stage, it is essential to highlight the challenges hampering systemic change. According to Alberta (2011), mobile devices not only eradicate many of the access issues but also reduce the need for teacher expertise and provide evidence of enriched learning instantly. As with the implementation of any new technology in education, there are challenges and mismatches in the classroom. The purpose of this study is to look at the benefits of mobile devices in education. It further looks into the challenges to the school, teachers and students in its implementation with suggestions.

Benefits of Tablets for Teaching and Learning

Many schools are now moving towards mobile learning in the classroom because of the new electronic devices that offer portability and ease of use on a budget. The new electronic devices include Netbooks, iPads, cell phones, iPods, e-readers and even PDAs. Recent research on use of various mobile devices in classrooms have revealed positive learning outcomes for its use in classroom.

Students are generally positive in using mobile devices for learning, which is essential for 21st century education (Wylie, n.d.). These devices enable students to control their individual learning and allow learners to switch learning contexts conveniently from formal to informal or personal to social. It keeps students engaged, attentive and motivated and allows interaction with the devices. Teachers also benefit from the use of these devices. There is evidence that mobile devices have encouraged independent learning making it easy for teachers to differentiate individual student needs and share resources with students and among each other.

For students, mobile devices are easy to use and attractive. These devices have larger screens, variety of apps, audio and video recording software, higher processing and battery power. Research on tablet use and adoption reports that electronic devices have a positive impact on students' engagement with learning (Mango, 2015). The research showed that students tend to spend more time and effort in learning tasks that are of interest to them. Clark and Lucking (n.d.) findings showed increased interest, creativity, enthusiasm, engagement, motivation, independence and self-regulation, and improved productivity in students. Doing activities and discussions facilitated by the mobile device, students find learning more fun as compared to a typical lecture-based classroom (Morrone et al, 2012).

When tablets and iPads are used in classrooms, they have had a profound impact on teaching and learning according to the research by Nishizaki, (2015). The research also showed that relationship in teaching and learning in the classroom changes and becomes more student centered and student friendly allowing for more creativity of the student. The numerous apps available allow students to work independently, in groups and as part of the whole class, developing a range of knowledge and skills. With an increase in the use of devices, creative processes are possible as the boundaries between formal and informal learning blurs. There is emerging evidence to suggest that apps have a significant potential to support the learning process (Shuler, 2009).

Teachers can create interactive presentations, which include students' observations and comments. Teachers can give lessons, monitor progress and stay organized. Simple-to-use and easy to create presentations with stunning animations and effects. Productivity applications help students and teachers put together professional-looking documents, presentations, and spreadsheets no matter where they are. Teachers' can directly write notes using these mobile devices during interactive discussion and these can be displayed on a projected screen for students. These notes can be saved, modified, uploaded and can be helpful to students who miss anything. Students can track their assignments, take notes, and study for finals using the notes.

Tablets and iPads help students feel more confident in their learning after partici-pating in technology-driven activities by promoting active learning. Teachers could engage students in online discussion by linking all computers. The students can then take part in the discussion by writing on the screen. The mobile devices have the capacity to connect student and instructor and create more active discussions and more constructive reflection (Morrone, 2012), that includes teacher-teacher, student-student, teacher-student, and student- teacher, what they are discovering is possible with the device. With a device, the classroom is always at the students and teachers fingertips with thousands of educational apps available to download.

Mobile devices help forge closer connections between student and teacher. Both teachers and students have learned and developed effectively through exploration and by wanting to share knowledge with each other (Burden et al, 2012). Teachers, 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 teachers and students, and school and home easier and routine. 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 flexible 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, teachers 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 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.

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 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, Kyriacou, 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 favor of mobile devices, they too have concerns. However, there are some concerns on the use of mobile devices in education raised by students, teachers 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

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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 educational 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 teachers. 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, their attention is diverted to gaming sites and social networking functions. Distraction is a big challenge to teachers. According to the study in Quebec, Canada 99% of students, using tablets say that they find it distracting in class (Karsenti, & Fievez 2013). Management in educational institutions have to take responsibility to block certain applications or websites; and teachers 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 teachers 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

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(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).There are a great variety of digital books available but schools have very limited access and some are also difficult to use. Schools should provide students with the link to online books. Some governments have urged schools to speed up the transition to digital textbook so that in the next few years every student in America should have a digital textbook (Torres and Lofholm 2013). A small number of students use digital books in middle and high school in America. In the future digital textbooks will replace the traditional paper textbooks, which will be lighter. Initially for schools cost of investment would be high but in the end, they would be able to save a considerable amount of money. Tablets are used in schools in ever-increasing numbers, as prices come down in a competitive market, and with the added attraction of over 100, 000 free or low-cost educational apps, and the arrival of tablets specially designed for schools.

It is observed that tablets do not have the required features in a single application. They look to be for receiving information than inputting. This is one of the major drawbacks of this device. Some students find it difficult to write lengthy text responses on the table due to lack of keyboards. Use of separate keyboards debilitate better power and reduce portability. Although it has an onscreen keyboard but when used, the view area becomes smaller and peculiar.

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 backup plans to face disruptions and distractions. It is also found that students adept and are faster compared to teachers. This is a sign that changes for adoption success are thin. Some teachers 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 teachers 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 need internet connectivity, for which students have to log in and out each time they use. Teachers have reported that they sometimes face disruption in their teaching plan due to bad

network or limited range of the wireless network.

Conclusion

Conclusions drawn show that the benefits overshadow the challenges. What is evident from the discussion is with proper training to teachers, supervision of students and awareness of mobile learning; educational institutes will soon be able to make rapid strides. Teachers 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. It is important to remember that digital technology should enhance curricular goals and support student learning in new and transformative ways (Hutchison & Reinking 2011). Educational institutions need to take note of this, and look for safe, productive ways to integrate mobile learning devices into our 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.

Reference

[1] Alberta (2011). *IPads: What are we learning? Summary report of provincial data gathering day,* ISBN 978-0-7785-9859-6 (Print) ISBN 978-0-7785-9860-2 (Online), Retrieved March 10, 2016, from https://education.alberta.ca/learning-with-technology/overview/

[2] Burden, K., Hopkins, P., Male, T., Dr, Martin, S., Dr, & Trala, C. (2012, October). *IPad Scotland Evaluation* (Rep.). Retrieved February 06, 2016, from The University of Hull website: http://www.janhylen.se/wp-content/uploads/2013/01/Skottland.pdf

[3] Clark, W., & Luckin, R. (n.d.). *IPads in the Classroom* (Rep.). Retrieved April 06, 2016, from Institute of Education University, London website: https://digitalteachingandlearning.files.wordpress.com/2013/03/ipads-in-the-classroom-report-lkl.pdf

[4] Clarke, B., Dr, & Svanaes, S. (2012, December 04). *One-to-one Tablets in Secondary Schools: An Evaluation Study* (Rep.). Retrieved March 22, 2016, from http://www.e-learningfoundation.com/Websites/elearningfoundation/images/PDF. Documents/Honeywood_2012_Barbie_Clark.pdf

[5] Dwight, V (2013): *The apps have it. iPads and tablets are changing the face of special education* URL: http://www.weareteachers.com/hot-topics/special-reports/assistive-technology-in-theclassroom

[6] Goodwin, K., Dr. (2012). *Use of Tablet Technology in the Classroom* (pp. 1-16, Rep.). Strathfield, New South Wales: NSW Curriculum and Learning Innovation Centre.

[7] Hutchison, A. & Reinking, D. (2011). *Teachers' Perceptions of Integrating Information and Communication Technologies into Literacy Instruction*: A National Survey in the U.S. Reading Research Quarterly, 46(4).

[8] Karsenti, T., & Fievex, A. (2013, December 09). *The iPad in education: Uses, benets, and challenges A survey of 6,057 students and 302 teachers in Quebec, Canada* (Rep.). Retrieved March 18, 2016, from http://www.karsenti.ca/ipad/pdf/iPad_report_Karsenti-Fievez_EN.pdf

[9] Kunzler, G. (2011, September 11). *Tablets motivate students to learn, improve the education experience. Tablet News.* Retrieved from http://www.mactrast.com/2011/11/tablets-motivate-students-to-learn-improve-the- education-experience/

[10] Mango, O. (2015). *iPad use and student engagement in the classroom. The Turkish Online Journal of Educational Technology, 14*(1), 53-57. Retrieved March 15, 2016, from http://www.tojet.net/articles/v14i1/1417.pdf

[11] Marc P. (2001), *Digital Natives, Digital Immigrants By From On the Horizon* (MCB University Press, Vol. 9 No. 5, October 2001) http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf

[12] Melhuish, K., & Falloon, G. (2010). Looking to the future: M-learning with the iPad. *Computers in New Zealand Schools: Learning, Leading, Technology, 22*(3). Retrieved February 12, 2016, from http://www.otago.ac.nz/cdelt/otago064509.pdf

[13] Morrone, A. S., Gosney, J., & Enge, S. (2012, April). *Empowering Students and Instructors: Reflections on the Effectiveness of iPads for Teaching and Learning*. Retrieved March 18, 2016, from https://net.educause.edu/ir/library/pdf/ELIB1201.pdf

[14] Nishizaki, D. M. (2015). *The Effects of Tablets on Learning: Does Studying from a Tablet Computer Affect Student Learning Differently Across Educational Levels* (Unpublished master's thesis). Claremont McKenna College, United States.

[15] Saxena, S. (2013, November 14). *How Can Technology Enhance Student Creativity?* Retrieved March 19, 2016, from http://edtechreview.in/trends-insights/insights/750-how-can-technology-enhance-student-creativity

[16] Shuler, C. (2009, January*). Pockets of potential: Using mobile learning technologies to promote children's learning.* New York: The Joan Ganz Cooney Center at Sesame Workshop. From: http://joanganzcooneycenter.org/pdf/pockets_of_potential.pdf

[17] Torres Z and Lofholm N (2013), *Colorado schools face challenges in transition to digital textbooks*. The Dever Post; http://www.denverpost.com/news/ci_24730836/colorado-schools-face-challenges-transition-digital-textbooks?source=infinite

[18] Traxler, J. (2010). Will student devices deliver innovation, inclusion and transformation? *Journal of the Research Center for Educational Technology (RCET), 6*(1), 2010th ser., 3-15.

[19] UNESCO - United Nations Educational, Scientific and Cultural Organization report, (2013) by shuller C., Winters N. & West M, *The future of mobile learning - Implications for policy makers and planner*, ISSN 2227-5029 Retrieved March 20, 2016, from United

[20] Vrasidas, C., & Kyriacou, E. (2008). *Integrating Technology in the Classroom*. Retrieved March 26, 2016, from http://www.integratingtechnologyintheclassroom.com/

[21] Wylie, J. (n.d.). *Mobile Learning Technologies for 21st Century Classrooms* [Web log post]. Retrieved February 22, 2016, from http://www.scholastic.com/browse/article.jsp?id=3754742