

Mobile Learning A Tale of Two Devices

Duncan deBruin

Department of Counseling, Educational Psychology, and Special Education
Michigan State University

Introduction

It is hard to find a person or place that is not inundated with mobile phones. Whether it be cell phones, iPads, tablets or laptops, their evolution into portable modes of communication, learning, and social connections combined with the ability to be taken almost anywhere anytime has changed the landscape of our world. It should come as no surprise to those in and out of the educational field the desire to leverage the very best mobile technology has to offer in an ability to reach more students, increase student engagement, ease the workload on teachers and to hopefully increase student achievement and preparedness for a global economy. When we begin to discuss the idea of mobile technology, we generally mean personal and easy to carry devices like cell phones. Although cell phones make up the largest portion of this technology they fit into a much larger ecosystem of mobile technologies that can also be considered easy to carry and personal such as tablets and laptops.

The explosion of mobile technology into most professional spaces has dramatically increased the desire and need to understand what role they play in society, more specifically in education and how can they best be leveraged to maximize the educational outcomes for our students? This area of research becomes even trickier when you start to explore what the pedagogical benefits for using mobile technology are but also the role they should play in replacing traditional teaching and learning. Most of the current and past research into the use of mobile technology has centered around specific uses in content areas such as science or math. The purpose of this paper is to evaluate the research conducted over the past decades to determine the effectiveness if any of replacing traditional teaching with mobile technology.

Method

Data Collection

The method of literature collection involved using the MSU library website and both the Education Full Text search function, which provides citations for every article of at least one column in length taken from more than 500 English-language periodicals and yearbooks in the field of education. Covers every age and sector of the educational community from preschool through college. Includes book review citations and ERIC a U.S. national bibliographic database

covering the journal and research literature in the field of education. Sponsored by the U.S. Department of Education, ERIC blends two files: Current Index to Journals in Education (CIJE), covering the published journal literature from over 775 periodicals and Resources in Education (RIE), covering other research document literature, such as conference papers, books, theses, and research reports. Two sets of keywords were searched: (1) mobile-device related keywords, including mobile, wireless, portable, handheld, cell phone, tablet, laptop and classroom response system; and (2) learning-related keywords, including teaching, learning, and education. The two sets of keywords were combined when searching the electronic databases.

Data Analysis

From this list, articles were selected based on a few criteria. I first looked at the sourcing of the articles to make sure they were published or coming from academic journals such as Educational Technology and Society, International Journal of Mobile and Blended Learning, and Computers and Education. One of the first things we learned in CEP 822 during the week 2 unit was how to look at articles and determine the impact factor along with number of citations for articles. This was the first selection criteria along with the articles whose titles I felt matched up with my focus the best. I also did the completely unscientific method of looking at the titles that came up first. The articles that did not get included were either because I felt that they were not relevant anymore and new research has been conducted that is more recent or they did not relate to my focus as much as I wanted. Although I am looking at mobile technology I did try to find articles that related this to cell phones more than say laptops or even tablets.

Most of the research I reviewed were either case studies, literature reviews or pretest-intervention-posttest design papers. I did not have to do any coding on my own, if there was coding present it was already completed by the authors of the paper. I tried to keep my focus on papers that had quantitative data, but this proved hard to accomplish as I discovered a vast majority of the research conducted about mobile technology in education was of the qualitative nature. I did check to see if they had decent sample sizes and found many to be on the smaller scale. I also was interested in the conclusions to decipher if they had practical deliverables that a classroom teacher such as myself could apply into the classroom or ideas that could be used to engage my colleagues with.

Findings

Based both off of my own personal experience using mobile technology and the research articles reviewed the student achievements made using mobile technology are mixed and depend much more on the pedagogical structures already in place as well as the teachers understanding of how to properly implement mobile technology into their classrooms. If the teachers are simply looking to digitize their content and now use mobile technology the added benefits are minimal at best. By digitizing content new issues arise such as student's limited attention spans, focus of the lessons, attitudes towards the use of mobile technology and the experimenting that comes along with their use. But mobile technology does give us the ability to improve feedback time and depth, to engage more learners who might have otherwise been ignored in traditional teaching, improved communication between stakeholders and allowed for opportunities to engage in more critical thinking and skills building. I believe that educational community is aware that the landscape of teaching and learning is changing to a more digital world. I also believe that our students of today are learning and getting their information from very different sources than previous generations. If we want to be able to still play a critical role in developing people capable of being gainfully employed, we must begin to embrace mobile technology and other educational technology tools to truly say we are sending our students to the next level whatever that may be prepared and ready to contribute on day one.

Conclusion and Implications

Despite the emergence of digital learning models, most countries around the world still design their educational systems for agrarian and industrial eras rather than modern society. Both here in the United States and in other countries we must acknowledge that as the economy changes and technologies such as automation, artificial intelligence, and machine knowledge progress, countries will need to update their curriculum to ensure our students have the acquired the necessary new skills for the 21st century. One of the functions of cellphones, tablets and laptops to education is their capability to customize content for individual learners. This feature can be very beneficial, particularly as teachers in many countries deal with classrooms of diverse students with varied upbringings and interests who each learns in a different way and who must be reached. Technology is a universal part of young people's' lives, and mobile learning is able to transform what a traditional classroom once looked like, free of physical barriers. Students can use technology to discover things they are passionate about and to gain a deeper understanding than ever before. The almost unlimited amount of information that one can get in a few clicks of a button or tap of a screen has allowed all learners, whether auditory, visual, or kinesthetic to engage in in-depth learning moments. The studies I researched showed that students are quite open to using technology for learning and that they are aware of new learning tools such as online courses, virtual reality, and videogames for instructional purposes.

Another function mobile technology can serve in educational settings is the ability to embed formative and summative assessments within apps or learning tools such as LMS's like Schoology. These tools have the ability to unburden the teacher from the time-consuming task of manually grading certain tests and having to provide specific and immediate feedback to students and parents. Websites can be programmed to examine assessments against a whole host of factors such as content mastery, learning objectives, and knowledge acquisition all used to inform students of where they stand in real time. The immediacy of scoring and feedback can allow a teacher to devise differentiated learning plans that are individualized for the needs of each and every student as well as give us the ability to meet students where they are not where they should be. Data can be gathered, analyzed, dissected and shared like never before. Not to mention higher achieving students can be more easily identified and pushed with advanced learning or more in-depth assignments to truly push them past their current demonstrations of learning and abilities.

Another function mobile technology can serve in educational settings is the ability to embed formative and summative assessments within apps or learning tools such as LMS's like Schoology. These tools have the ability to unburden the teacher from the time-consuming task of manually grading certain tests and having to provide specific and immediate feedback to students and parents. Websites can be programmed to examine assessments against a whole host of factors such as content mastery, learning objectives, and knowledge acquisition all used to inform students of where they stand in real time. The immediacy of scoring and feedback can allow a teacher to devise differentiated learning plans that are individualized for the needs of each and every student as well as give us the ability to meet students where they are not where they should be. Data can be gathered, analyzed, dissected and shared like never before. Not to mention higher achieving students can be more easily identified and pushed with advanced learning or more in-depth assignments to truly push them past their current demonstrations of learning and abilities.

Lastly mobile technology makes the modern classroom both more efficient and flexible. These both allow for the teacher to dedicate more of their time creating individualized learning plans where the students take more ownership of their learning and progress. Teachers can focus on critical thinking skills, problem based learning, and more projects or activities. One of the examples in my articles was the use of Flipboard or Stitcher to enhance the understanding of marketing materials in a business communications classroom. This supplementary material was shown to not only improve the learning of those students who used these apps, but also showed a marked improvement in both their engagement and excitement for the class.

Limitations

One of the first limitations I have is the fact that over the past year I have changed my own personal classrooms from a traditional learning environment in every sense of the word into a blended learning classroom. The main tool that has allowed this to happen for me has been mobile technology specifically the cell phone. I began this process with a bias that cell phones and mobile technology can and is a benefit to my students. The data I discovered for the most part confirmed my thoughts. Although I did come across a few studies that noted the need for very sound pedagogy, content understanding, and additional teacher skills such as time/classroom management in order for the introduction of mobile technology to yield any significant gains in achievement. Also, the studies found that most of the gains made in achievement were for students who were in the mid to low range for learning ability. This could mean that teachers are not adept at using mobile technology with advanced students yet, or more conclusive research is needed to discover why this is the case. I believe that the studies all showed that the future of education is changing and the quicker educators study, understand and begin to implement technology into their classrooms the better outcomes for students we can expect. You are either going to be on the side of adaptation or extinction.

References

- Benjamin, R. (2016). *The pedagogical perspectives of mobile learning*. *Go.galegroup.com.proxy2.cl.msu.edu.proxy1.cl.msu.edu*. Retrieved 2 August 2017, from http://go.galegroup.com.proxy2.cl.msu.edu.proxy1.cl.msu.edu/ps/i.do?p=AONE&u=msu_main&id=GALE%7CA461970831&v=2.1&it=r&sid=summon&authCount=1
- Chu, H.-C. (2014). Potential Negative Effects of Mobile Learning on Students' Learning Achievement and Cognitive Load—A Format Assessment Perspective. *Educational Technology & Society*, 17 (1), 332–344.
- Grimus, M., & Ebner, M. (2015). Learning and Teaching With Mobile Devices. *International Journal Of Mobile And Blended Learning*, 7(2), 17-32. <http://dx.doi.org/10.4018/ijmbl.2015040102>
- Keengwe, J., & Bhargava, M. (2013). Mobile learning and integration of mobile technologies in education. *Education And Information Technologies*, 19(4), 737-746. <http://dx.doi.org/10.1007/s10639-013-9250-3>
- Kuznekoff, J., Munz, S., & Titsworth, S. (2015). Mobile Phones in the Classroom: Examining the Effects of Texting, Twitter, and Message Content on Student Learning. *Communication Education*, 64(3), 344-365. <http://dx.doi.org/10.1080/03634523.2015.1038727>
- Lim, C., & Churchill, D. (2016). *Mobile learning*. *Taylor & Francis Online*. Retrieved 2 August 2017, from <http://www.tandfonline.com/doi/full/10.1080/10494820.2015.1113705>
- Marín, V., Jääskelä, P., Häkkinen, P., Juntunen, M., Rasku-Puttonen, H., & Vesisenaho, M. (2016). Seamless Learning Environments in Higher Education with Mobile Devices and Examples. *International Journal Of Mobile And Blended Learning*, 8(1), 51-68. <http://dx.doi.org/10.4018/ijmbl.2016010104>
- McGovern, E., Luna-Nevarez, C., & Baruca, A. (2017). Utilizing mobile devices to enrich the learning style of students. *Journal Of Education For Business*, 92(2), 89-95. <http://dx.doi.org/10.1080/08832323.2017.1281213>
- Nickerson, C., Rapanta, C., & Goby, V. (2016). Mobile or Not? Assessing the Instructional Value of Mobile Learning. *Business And Professional Communication Quarterly*, 80(2), 137-153. <http://dx.doi.org/10.1177/2329490616663707>

Sung, Y., Chang, K., & Liu, T. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education, 94*, 252-275. <http://dx.doi.org/10.1016/j.compedu.2015.11.008>.