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Rethinking Mobile Learning in Light of Current Theories and Studies

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ABSTRACT

The proliferation of hand-held devices offers educators new opportunities to reach students. This paper reviews the current literature on video and online learning as an instructional medium in academia, often created by librarians. Topics examined include distance learning, learning theory, user preference, student motivation, and learning efficiency.

Introduction

With the worldwide proliferation of hand-held devices, mobile access is fast becoming the standard for information retrieval. Students of all ages use their smartphones, tablets, and other devices to access information. The academic/university library is engaged with the mobile access revolution as more students access library resources from outside the library (Saunders, 2015). On-campus students access library resources remotely as do distance learners, who either will not or cannot come to the library. These resources include remote reference and consultations, video tutorials, online books, and articles. In recent years, courses have been offered wholly or partly online, and the trend indicates an ongoing shift in educational opportunities (Allen & Seaman, 2011; Mitchell, Parlamis, & Claiborne, 2015). While there has been a dramatic increase of online information, there has not been a corresponding development of universal technical standards. Librarians need to stay up-to-date on access services that facilitate distance learning, since their ability to adapt and learn new teaching methods and media is critical to student success (Johnston, 2001; Sun, Chen, Tseng, & Tsai, 2011).

Online text is a staple of distance learning but it is static and can be boring. Online video has the potential to be a more flexible and engaging resource for remote training. Like online text, video is available around the clock to accommodate the learner's preferred schedule. A learner may access a video as often as necessary to understand the material, learn the steps, or grapple with the concepts. Videos may be tailored for specific audiences and designed as chapters with embedded quizzes, and then the results may be linked to the online grade book in an educational institution. Captioned video offers a multisensory learning experience, including sight, sound, and printed word, all of which enhance the learning opportunity by tapping a variety of senses. Video may also be designed to accommodate sensory-impaired learners through good design and techniques. However, an instructional video is not a useful tool unless students learn from it. The mobile device is simply a tool to access videos; it is a learning instrument.

There are two distinct categories of challenges in using text or video as an instructional tool. One is hardware display, which is intimately tied to technology. Online learning media that is mobile-friendly must be compatible with display issues, including bandwidth, screen display, and formats. The technology is rapidly evolving and no standard lasts for long. Institutions such as libraries or universities may select a number of formats that change over time. The creator of online teaching material must remain vigilant and update the material regularly in order for it to be functional and relevant.

The other category of challenge in the mobile learning environment is pedagogy. One aspect of pedagogy concerns evaluation, i.e., assessment of how well students are learning using these mobile devices. Do students learn as well at a distance as they do in class? Does the technology get in the way of learning or does it enhance the process? Information literacy is also a concern. Do changes in pedagogy, based on new learning theories, enhance the online experience as opposed to the traditional face-to-face format? Is there a shift in the context and format of assessment in online education?

Motivation is another pedagogical concern in the mobile device world. What can teachers do to create the sense of community and inclusivity online that traditionally occurs in the classroom? Is that environment necessary or preferable for learning to occur? How best can the teacher address questions among individual learners who may be reluctant or unable to come to the library for a consultation? Designing

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learning activities, projects, and written work presents different challenges when the instruction is online as opposed to face-to-face. Instructional design offers guidance for creating engaging videos that both enhance student motivation to watch these instructional tools and increase library faculty motivation to create using these new pedagogical tools.

Confidence in one's ability to navigate the electronic environment is an ongoing concern in the remote access environment (Tang & Tseng, 2013). Students have to negotiate access to the library remotely, and then find their way around the website, databases, and electronic catalog without the benefit of face-to-face instruction. Library faculty also must be confident in their ability to assist students in navigating through a variety of mobile devices.

As more is known about the act of learning and about student preferences for online learning, institutions are reexamining their library tutorials and undertaking a radical rethinking of its design, duration, content, and function in the larger scope of education. Aligning learning theory, teaching methods, and distance learning to the most recent research into learning theory, user preferences, and delivery systems is the challenge and opportunity of the day.

This paper addresses pedagogical issues that arise in a mobile-learning environment. It is not meant to address technical details about device compatibility, since these situations change as new and revised software and hardware come on the market. Rather, the paper examines the literature concerning the use of mobile devices, when they are useful and preferable to paper, and the situations in which students learn more efficiently with one media over another.

Distance learning

Computers have enabled great changes in education. Whereas formerly one could consult a book or someone else for expertise, the internet is now a primary "go to" source for information. The verb "to Google" made its first entry in the Oxford English Dictionary in 1998 ("Google, v.2.," June, 2015); today googling information is second nature. Likewise, engineering feats in technology have brought affordable computing power to smart phones and other small devices.

I suggest that the staggering amount of information now accessible through the internet has created the possibility for each of us to be a "distance learner". The distinction is made when we either choose to contact an individual or resource on our own, or when we cast search terms across the internet and see what comes up. In the first case, we are searching among "present" resources, i.e., the books or people we know or have other reason to think may be qualified to give a responsible reply. In the second case, we put faith in the search terms and hope they bring up useful information.

Brooke, McKinney, and Donoghue (2013) refer to Heaps' definition of distance learners as "those who are separated by distance or by available time from the institution at which they are registered for a course of study" (p. 614). Whereas the concept is narrowly applied to students who access academic content online as part of a class conducted over the internet, the broader context includes all online inquiries, including those made by students outside the context of a particular class. This broader context gives rise to questions about the veracity, the quality, and the utility of online information (Carey, 2015; Feuer, 2014; Shaer, 2015; Somaiya & Kaufman, 2013). One of the observations to come out of the study by Brooke et al. (2013) was that 80% of its surveyed students were unaware of distance learner services at their university (p. 624). They note that distance learners report a series of problems beyond technical ones of firewalls and bandwidth, including finding and evaluating sources, feeling isolated/not being able to contact a librarian, and not feeling confident in their research and library skills (Fig. 5, p. 626). They also foresee a "growing number of non-distance learning students who are studying at a distance" (p. 632). The complex of teaching methods, learning environments, and transmission vehicles is a major theme for current researchers as mobile learning changes the nature of education.

The question of proficiency of library skills among distance learners was taken up by Tang and Tseng (2013), who surveyed 3517 students in 2012 about their proficiency with finding, handling, using, and interest in learning additional skills concerning, online information. They noticed that students, who had confidence in their research and library skills to succeed at tasks, were most successful at learning; students who doubted their skills had poorer learning outcomes (p. 519). They concluded that online learners had to learn how to learn in the online environment. Pursuing the importance that college students place on confidence in learning, Szpunar, Jing, and Schacter (2014) noted that "students overestimate their ability to assess later performance associated with learning from video-recorded modules…overconfidence in later performance can have a negative impact on long-term retention" (p. 161). Their study indicated that regular testing of video-presented information decreases overconfidence and increases actual performance.

In a separate study, Delen, Liew, and Willson (2014) investigated the learning strategies of undergraduate and graduate students by exposing two mixed groups to video and observing the student's self-regulation strategies: how much attention did students pay, under what circumstances, to a common video (one with minimal student involvement) and an enhanced video (one with greater interactive features)? Having been given time to engage with each video, the combination of undergraduate and graduate students were given a test of recall and learning. The results indicate that working with the data increased recall in the online environment. The students who used the enhanced video spent more time working with it and demonstrated deep learning when compared to the common video viewers. The researchers conclude that self-directed learners were more successful than their colleagues in the common video and control groups because they willingly engaged with the learning material and were not tempted to turn their attention elsewhere. The researchers also conclude that training and self-paced learning opportunities increase the opportunities for deep learning.

Given these research conclusions, we might ask, how do students engage with mobile devices and distance learning currently on a large state university campus? In 2012, two instructional designers at the University of Central Florida (UCF) issued a survey across campus to determine whether their students used mobile devices for academic work, when they used them, and how efficient they were in finding their target information (Chen & Denoyelles, 2013). Their purpose was clear: "Understanding students' mobile practices more deeply can guide informed instructor development in the future". The survey respondents of over a thousand undergraduates, graduate students, and a few instructors at UCF, indicated that more than 91% owned hand-held mobile devices, and more than half of the respondents used their devices for academic work. The researchers noticed, however, that students need instruction in how to use mobile technology for academic work. They go on to note that the survey "does not speak to the effectiveness of this instructional delivery method" (Chen & Denoyelles, 2013).

From these few studies, a profile of a college student emerges: the student owns and uses a mobile device for academic purposes but needs instruction to refine their online searching skills. On the one hand, confidence in those skills influences distance learner research techniques and engagement with the learning material. On the other hand, as we have seen in the Szpunar et al. (2014) study, overconfidence in the depth of understanding gained by watching a video (as opposed to reading, for example) can be detrimental to long term learning.

Stepping back from the data, the larger question becomes: Given an ocean of information, how do students use it? Do they skim the top or dive deep? Do distance learners understand the value of traditional structure of searching for information or is keyword-searching sufficient for them? Where do students learn the information skills to navigate the internet when, in the case of a peer institution, the majority of them do not know that university libraries go to great lengths to offer

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