THE JOURNAL ON TECHNOLOGY AND PERSONS WITH DISABILITIES

Mobile Learning: Device Ownership, Usage, and Perspectives of Post-Secondary Students With and Without Disabilities

Linda Chmiliar, Carrie Anton

Athabasca University

lindac@athabascau.ca, carriea@athabascau.ca

Abstract

The use of mobile devices is rapidly spreading throughout the world, and post-secondary environments are gradually moving toward implementation. There is a growing body of evidence on post-secondary students and mobile devices and m-learning. However, research has focused primarily on use of mobile devices by post-secondary students without disabilities. There has been little to no research on mobile devices and m-learning with post-secondary students with disabilities. This paper discusses a research project that focused on surveying post-secondary students with, and without disabilities, as to the mobile devices they currently own, how they use their mobile device(s), and their perspectives on using mobile devices for learning. The results show that one hundred percent of the students with and without disabilities own one or more mobile devices that they use for many purposes including learning activities. Students with and without disabilities also indicated that they are interested in using mobile devices in their learning.

Keywords

Mobile learning, mobile devices, post-secondary students, disabilities, device ownership

Introduction

There are a growing number of post-secondary students with disabilities. Mobile devices may offer post-secondary students with disabilities opportunities to overcome their learning challenges with intuitive touch screens, simple operating systems, built in accessibility features, and apps that can support learning challenges. There is little information available on the ownership and use of mobile devices by students with disabilities compared to students without disabilities. This paper compares post-secondary students with and without disabilities surveyed as to the mobile devices they currently own, how they use their mobile device(s), and their perspectives on using mobile devices for learning.

A number of studies in the literature have focused on mobile device ownership of post-secondary students. Zidoun et al. (82) found that 98.8% of students surveyed owned and used mobile devices. Briz-Ponce et al. (617) found 96.8% of the post-secondary student participants at the University of Coimbra owned a mobile device such as a smart phone or tablet. In Canada, in a survey at four universities, 92.6% of the students owned a mobile device (Boruff and Storie 24). Almaiah (33) reported that 86.8% of post-secondary students in a Malaysian university had access to a smart phone/mobile phone and 11.0% had access to a tablet PC. In an Australian study, Farley et al. (3) found that less than 5% of the post-secondary students did not have access to a smart phone and the majority of students had access to more than one mobile device.

Mobile devices may provide practical solutions for post-secondary students with disabilities who require technology support to overcome their learning challenges. Unfortunately, little research data can be found on mobile learning and students with disabilities. The purpose of the study to investigate mobile device ownership, usage, barriers to use, and perceptions on mobile learning by post-secondary students with and without disabilities.

Method

The focus of this research was on the use of mobile learning by post-secondary students with and without disabilities studying at a distance. The research questions focused on the following: what mobile devices do students own; and what tasks do students complete on their mobile devices and for how long? This study also looked at: the barriers students perceive to the use of mobile devices for learning; the activities students would like to be able to do on their mobile devices; the factors students think are important in mobile device use; student interest in m-learning; and the supports students require to participate in m-learning.

An online survey in Lime Survey was created to collect both qualitative and quantitative data related to these areas. The survey consisted of Likert scale items and open-ended questions. The survey was composed of three parts: demographic information, device ownership and use, and student perspectives on m-learning.

Results

Two groups of post-secondary students were surveyed using identical surveys during the same period. Group 1 was comprised of forty-six students with disabilities receiving educational supports from the university. Group 2 was comprised of forty-six students without disabilities participating in a research option in an undergraduate psychology course that were randomly chosen from a pool of over 500 research participants.

One hundred percent of the students in Group 1 and Group 2 reported that they own a smart phone. In addition, in Group 1, 90% own a laptop, 54% own a tablet, 17% own an e-Reader, and 11% own an iPod. In Group 2, 87% also own a laptop 48% own a tablet, 20% own an e-Reader, and 4% own an iPod.

The primary device used by 67% of students in Group 1 was the smart phone. Twenty-two percent use a laptop as their primary device and 11% use a tablet. Eighty-seven percent of students in Group 2 also use their smart phone as their primary device, 11% use a laptop, and 2% use a tablet. The students in both groups engage in a wide range of different activities on their primary device including learning activities. Thirty-six percent of students in Group 1 use their primary device to engage in research activities two to ten hours a week and 35% engage in research more than ten hours a week. Twenty-eight percent spend two to ten hours a week learning and studying, and 30% spent more than ten hours learning and studying. Forty percent of students in Group 2 engage in research activities two to ten hours a week and 20% engage in research more than ten hours a week. Twenty-two percent spend two to ten hours a week learning, and 15% spent more than ten hours learning and studying.

Seventy-four percent of the students in Group 1 reported that they own a second mobile device. The second most frequently used device used by students in Group 1 was: a laptop 56%, a tablet 29%, and smart phone 15%. Eighty-seven percent of the students in Group 2 reported that they own a second mobile device. The second most frequently used device for students in group 2 was: a laptop 65%, a tablet 28%, and smart phone 13%. The second most frequently used device by students in Group 1 and Group 2 is also used by students for a range of activities including studying and learning.

The top three m-learning activities that students in Group 1 would very much like to be able to do on their mobile devices are as follows: 85% would like to check assignments, 82% check grades, and 81% read course content. Students also had comments as to the activities they would like to engage in on their mobile devices. One student said, “I think it would be very helpful to find apps to help with studying, ability to create your own schedules to keep you

accountable." The top three m-learning activities that students in Group 2 would very much like to be able to do on their mobile devices are similar to Group 1: 89% check assignments, 93% check grades, and 85% read course content.

The students with disabilities in Group 1 identified several factors regarding mobile devices and m-learning that are very important or important to them. The top factors in terms of importance were: 98% the ability to use the device anywhere, 96% the ability to use the device anytime, and 91% multi-functionality of the device. In Group 2 the top three factors identified were: 89% the ability to use anytime, 87% the ability to use the device anywhere, and device multi-functionality 87%.

Students in both groups were asked as to what would help them use their mobile devices for m-learning. In Group 1 identified the following areas as their top choices: 87% knowing what apps to use, 87% learning how to use mobile devices to support their learning challenges, and 83% access to information on how to use mobile devices for learning. Students in Group 2 rated these items in a similar fashion. They identified the following top choices: 86% identified knowing how to use mobile devices for learning, 83% knowing what apps to use, 78% access to information on how to use a mobile device for learning.

Students in both groups were asked what barriers existed for them in using their mobile devices for learning. For students in Group 1, the top areas identified as a barrier or significant barrier were: 67% cost of data, 63% cost of devices, and 63% small screen size. Students in Group 2 identified similar items as a barrier or significant barrier: 79% identified access to high speed internet, 74% the cost of data, and 63% small screen size. One student commented, "We simply cannot afford to purchase another sort of mobile device for me. I feel like I am missing out on a vital experience in terms of mobile learning."

Overall, 78% of the students in Group 1 and 78% of the students in Group 2 were interested or very interested in using mobile devices to access their course content. Eighty-nine percent of the students in Group1, and 87% of the students in Group 2 were interested or very interested in using their mobile devices effectively for m-learning. Finally, 85% of the students in Group 1 and 61% of the students in Group 2 indicated that they were interested or very interested in learning more about how to use their mobile devices for learning.

Discussion

Student ownership of mobile devices in Group 1 and Group 2 is identical, with both groups reporting 100% ownership of one or more mobile devices. This is similar to, but slightly higher than data reported by Zidoun et al. (82), Briz-Ponce et al. (617), and Almaiah (33). One hundred percent of students in each group own a smart phone. Seventy-four percent of the students with disabilities, and 87% of the students without disabilities indicated that they own a second mobile device. The post-secondary students with disabilities in this study reported very similar device ownership to students without disabilities. This suggests that post-secondary students with disabilities are not disadvantaged in their ability to own multiple mobile devices.

No specific patterns of use by students with and without disabilities were identified in how students use their mobile devices. It appears that students use their devices for a range of activities including those related to learning, and that the choice on how to use each device is predicated by need and personal preferences. Students with disabilities are using their mobile devices for learning in similar ways to students without disabilities. However, they did not report using their mobile devices as assistive devices to overcome learning challenges.

Similar to studies in the literature (Zidoun et al. 83 and Farley et al. 7), students in the present study with and without disabilities reported that they would like to use their devices to

engage in m-learning activities. This suggests that post-secondary educators should be looking at how to maximize on the fact that students own mobile devices, spend a considerable amount of time on their devices, and want to use their devices for learning. Educators need to consider how support students in this learning and examine how to deliver course content and activities in an effective way to mobile devices.

Although positive attitudes towards m-learning were reported by Alenezi (111) and Yorganci (184), Farley et al. (7) reported that 18% of the students they surveyed did not want to use devices to learn. In the present study, several students expressed negative opinions towards m-learning. One student with ADHD indicated that mobile devices were a distraction and that they needed to be avoided. It is important to consider that some students with disabilities have learning challenges that may not be compatible with mobile device use. It is also possible that some students may need support to find ways to use mobile devices to overcome their learning challenges.

Both groups of students identified the high cost of data and lack of access to high speed internet as a significant barrier to mobile device use. Unfortunately, many students experience very limited access to high speed internet outside of urban centres, and students in rural areas are at a disadvantage. Even when internet is available, the cost of data can be prohibitive for students. As more course content and learning activities are moved online and made available for mobile devices, post-secondary institutions need to be cognizant that students in rural areas made need alternative ways to access what they require. Both groups of students also identified the cost of devices as a barrier although it was rated as more significant by students with disabilities. The solution may be to provide subsidized access to mobile devices for learning, or provide

some sort of loaner program so students, particularly those with disabilities, have more ready access to m-learning.

Students with and without disabilities reported on the tasks that they would like to be able to do on their mobile devices. The top three tasks that students would like to be able to engage in on their mobile devices were identical for both groups. They would like to be able to check assignments, check their grades, and read course content. It is important for post-secondary institutions to look at the provision and formatting of online materials that would facilitate this type of learning. Students also provided many comments regarding tasks that they would like to be able to do on their mobile devices. One student with organization difficulties was interested in finding apps to help with studying and the development of schedules. One student felt that an app that could convert his handwriting to text would be very helpful. Still another student with reading challenges was interested in audio format and felt that having this option would be life changing. There are many apps available that could support students with disabilities in the areas that they identified. There is a need to disseminate this information to students. Students in this study reported that that knowing what apps to use for learning and how to use mobile devices to support their learning challenges would be very beneficial for them. The effective use of mobile devices may be an area student support services for students with disabilities need to consider.

The top three supports that would help students with and without disabilities had slight differences. Both groups of students indicated that knowing what apps to use, knowing how to use mobile device for learning, and access to information were important to them. Students with disabilities also indicated that having access to support in the use of mobile devices for learning would be very helpful for them. This indicates that information needs to be available for students

with and without disabilities on the use of mobile devices for learning. This need may be greater for students with disabilities who may also benefit from specific supports in addition to information.

The results of this study are limited. Very few subjects participated in the survey as there are still relatively few post-secondary students with disabilities enrolled in post-secondary institutions. However, this small sample of students did provide a glimpse as to mobile device ownership, use, and attitudes towards mobile learning.

Conclusion

It is evident that post-secondary students with and without disabilities own one or more mobile devices and currently use them for a multitude of tasks including those related to studying and learning. Many of these students are interested in engaging in further m-learning activities but face a number of barriers. With further research and greater understanding, post-secondary institutions can come to learn how to support students with and without disabilities to overcome learning challenges and to use mobile devices effectively for learning.

Works Cited

Alenezi, Ahmed. "Checking on Preferential Choices of e-learning and m-learning: A case Study of Northern Border University, Saudi Arabia." *iPET*, vol.12, no .5, 2017, pp. 98-117. doi:10.39991/ijet.v12i05.6790.

Almaiah, Mohammed A. "Investigation Students' Perceptions on Mobile Learning Services." *International Journal of Interactive Technologies,* vol. 8, no. 4, 2014, pp. 31-36. doi.org/10.3991/ijim.v8i4.3965.

Boruff, Jill T., and Dale Storie. "Mobile devices in medicine: A survey of how medical students, residents, and faculty use smart phones and other mobile devices to find information." *Journal of the Medical Library Association,* vol.102, no. 1, 2014, 22-30. doi:10.3163/1536-5050.102.1.006.

Briz-Ponce, Laura, et al. "Learning with Mobile Technologies- Students' Behavior." *Computers in Human Behavior*, vol.72, 2017, pp.612-620. doi:10.1016/j.chb.2016.05.027.

Farley, Helen, et al. "How do Students use their Mobile Devices to Support Learning: A Case Study from an Australian Regional University." *Journal of Interactive Media in Education*, vol.1, no.14, 2015, pp 1-13. doi:10.5334/jime.ar.

Yorganci, Serpil. "Investigating Students' Self-efficacy and Attitudes Towards the Use of Mobile Learning." *Journal of Education and Practice,* vol. 8, no.6, 2017, pp. 181-185, https://eric.ed.gov/?id=EJ1133019. Accessed 9 Nov. 2017.

Zidoun, Youness, et al. "Students' Perception about Mobile Learning in Morocco: Survey Analysis." *International Journal of Interactive Mobile Technologies,* vol.10, no.4, 2016, pp. 80-84. doi:10.3991/ijim.v10i4.5947.