



Technology for Learning: How Do Medical Students Use Technology for Education?

Michelle Moscova

Educational Development
University of Wollongong Graduate
School of Medicine

David Bruce Porter

Educational Technology
University of Wollongong Graduate
School of Medicine

Kate Schreiber

Educational Developer
University of Wollongong Graduate
School of Medicine

To assist in the design/selection and implementation of educational technologies in a regional medical program, first-year students were surveyed to determine the technologies used for academic purposes and their technology usage habits. The perceived usefulness and usability of technologies have been noted as important factors in technology adoption, as well as student engagement with technology. To address these conditions, the researchers surveyed students regarding the technologies they used for specific educational tasks. While still in our early stages of research, the results suggest that smartphones and tablets, while popular with students, still have not displaced laptops as the preferred devices for most tasks.

Keyword: medical education, educational technology, adoption, usability, mobile devices, byod

Background

The Bachelor of Medicine Bachelor of Surgery (MBBS) program at the University of Wollongong (UOW) emphasizes rural and regional medicine and relies heavily on blended and online modes of delivery. Examining students' understanding and use of technology is of inherent concern in program quality assurance, particularly in the design/selection and implementation of educational technologies.

In a period of rapidly changing technological innovation, university programs must address the implementation of technologies in support of student learning. The importance of the perceived usefulness and ease of use of technologies underscore the major theories of technology adoption (Agarwal & Prasad, 1997; Davis, 1989; Straub, 2009). The failure of technology to meet the needs of users inhibits the adoption of these innovations. Furthermore, technical difficulties have been linked to lower test scores and higher attrition rates (Sitzmann, Ely, Bell, & Bauer, 2010).

To address the technological needs of students, the Educational Technology team at UOW's Graduate School of Medicine examined students' use of technology as applied to their education. The annual study by the Educause Center for Applied Research recommends that institutions assess students' technological literacy and conduct research to help students connect with technology in ways that enhance engagement and learning (Dahlstrom & Bischel, 2014). The Educational Technology team emphasises the user experience in the implementation of educational technologies. To target the medical program's use of instructional technologies and to inform design decisions, the team engages in annual assessment of medical students' use of technology for educational purposes. This study extends current research by understanding not only the devices students are using, but also the purposes for which students use the devices.

Method

First-year medical students were surveyed regarding the technology they used for specific educational tasks. During their first week of the program, the students indicated their responses via personal response devices (i.e., clickers) to survey items that asked their age, the devices they used for educational purposes, and the devices they used for specific educational tasks. Multiple response items were used to identify all devices students used for each task, therefore only frequencies and proportions of the cohort are reported. The study has been approved by UOW's ethics committee.

Key Findings

- The majority (88.57%, $N=70$) of the students said they used multiple devices for educational purposes.

- In terms of educational uses, the largest proportion (87.14%, $N=70$) of students are still using laptops to access the learning management system, other online materials, email, and library resources.
- While the majority of students used electronic means to access library resources, 25.71% ($N=70$) of students preferred to access these services in person.
- Managing a calendar was the only educational task for which the largest proportion of students (37.68%, $N=69$) used smartphones.
- Of students under 25 (57%, $N=70$), none of the students used tablets for educational purposes, compared with the 47.62% of mature-age students who used tablets ($n=21$). This may be due to the cost of these devices.

Implications and Areas for Future Research

While the current study reflects the technology preferences and usage behaviours of one cohort of medical students, the results begin to illustrate student technology practices. The survey data collected to date provide insights into the technologies students are using and suggest considerations for future program development. Over the long term, the second-, third-, and fourth-year cohorts will be surveyed to compare their educational technology preferences. Future studies might consider additional factors, including technical and pedagogical support in the use of technologies. Furthermore, studies conducted at other medical institutions will provide more generalizable observation and, henceforth, inform the integration of educational technologies across medical institutions.

References

- Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision sciences*, 28(3), 557-582. <https://doi.org/10.1111/j.1540-5915.1997.tb01322.x>
- Dahlstrom, E., & Bischel, J. (2014). ECAR study of undergraduate students and information technology. Louisville, CO: Educause Center for Applied Research.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- Sitzmann, T., Ely, K., Bell, B. S., & Bauer, K. N. (2010). The effects of technical difficulties on learning and attrition during online training. *Journal of Experimental Psychology: Applied*, 16(3), 281. <https://doi.org/10.1037/a0019968>
- Straub, E. T. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of educational research*, 79(2), 625-649.

Moscova, M., Porter, D.B., & Schreiber, K.. Technology for Learning: How Do Medical Students Use Technology for Education? In T. Reiners, B.R. von Konsky, D. Gibson, V. Chang, L. Irving, & K. Clarke (Eds.), *Globally connected, digitally enabled*. Proceedings ascilite 2015 in Perth (pp. 640-641) <https://doi.org/10.14742/apubs.2015.1001>

Note: All published papers are refereed, having undergone a double-blind peer-review process.



The author(s) assign a Creative Commons by attribution licence enabling others to distribute, remix, tweak, and build upon their work, even commercially, as long as credit is given to the author(s) for the original creation.