Lifelong Learning in the Digital Era: Insights from Post-secondary Student Focus Groups

Tetiana Polishchuk, University of Alberta
Oksana Babenko, University of Alberta
Lia Daniels, University of Alberta

Evolving Lifelong Learning Practices

In its *Vision for the 21st Century*, the Commission for a Nation of Lifelong Learners envisioned Lifelong Learning (LLL) as "a continuously supportive process which stimulates and empowers individuals … to acquire all the knowledge, values, skills and understanding they will require throughout their lifetimes … and to apply them with confidence, creativity and enjoyment in all roles, circumstances, and environments" (Commission for a Nation of Lifelong Learning, 1997, as sited in Collins, 2004, p. 615). Knapper and Cropley (2000) argued that "to cope with the demands of a rapidly changing world we need an educated population, capable of taking the *initiative* for their own education, and motivated to continue learning throughout their lives and in many different situations" (p. xiii, emphasis added). Similarly, Similarly, Hojat et al. (2003) and Hojat et al. (2006), emphasized the notion of initiative in LLL and the significance of *self-initiated* learning activities, such as those undertaken by professionals to address immediate challenges in their practice and stay up to date in their field. According to the UNESCO Institute for Lifelong Learning (2022), LLL "is rooted in the integration of learning and living, covering learning activities for people of all ages, in all *life-wide contexts and through a variety of modalities* that, together, meet a range of learning needs and demands" (p. 17, emphasis added).

To prepare students for digital work environments that transcend physical and geographical boundaries, many universities have introduced and support a variety of digital technologies such as blended delivery, social media, and virtual and augmented reality. For example, at the University of Alberta, nearly 100% of medical students access audio and video recordings of their lectures (Dr. Vijay Daniels, personal communication, September 20, 2023), and education students can hone their presentation skills in a virtual reality classroom (Daniels & Hoy, 2020). Such new types of technology-enabled learning aim to satisfy students' immediate needs for flexible, individual learning, and to support the cognitive processes of the learner.

Given technological advancements, it is crucial to investigate the evolving LLL practices of students during their post-secondary education because how they learn in this context will shape how they will continue to learn as practicing professionals (Babenko et al., 2017) in an increasingly global and technologically connected world. We conducted a qualitative study using a subjectivist inductive approach and a fully inductive theory development study design (Varpio et al., 2020), seeking to remain open to all ideas and insights offered by students. The following two empirical questions guided our exploration:

- (Q1) How does digital technology shape students' self-initiated learning activities?
- (Q2) How do students envision ongoing learning throughout their careers?

Approach

To explore the use of digital technology in self-initiated learning, we conducted five focus group sessions from January to March, 2024. The focus group participants were 18 University of Alberta undergraduate students in various professional programs, including education, engineering, kinesiology, dentistry, medicine, nursing, and pharmacy. Each group

consisted of three to five participants and a facilitator. Focus groups were mixed, meaning that each group included students from various programs. The focus groups took place online via Zoom, lasting between 45–60 minutes each, and were audio- and video-recorded. All participants e-signed their consent form to participate in the study.

To facilitate the focus group sessions, we curated a list of digital technologies and technology-enabled learning activities (see Figure 1). We compiled the list through a literature review, teaching and learning experiences of the research team members, input from practicing professionals in various fields, and feedback from undergraduate student volunteers during the pilot-testing of the list. Using the list during the focus groups, we prompted participants to:

- Suggest additional digital technologies they believed should be included on the list.
- Identify any technologies they felt should be removed from the list and why.
- Identify most and least helpful technologies in their learning.
- Discuss which technologies they intended to utilize post-graduation when they are in their professional practice.

Figure 1

The List of Digital Technologies and Technology-Enabled Learning Activities

1. 3D Visualizations (The BioDigital Human, Atlas, Zygote Body, etc.)
2. AI Tutors, AI Learning assistants
3. Animations (e.g., instructional animation or computer animation)
4. Augmented reality
5. Blogs / microblogs (X[Twitter])
6. Chatbots (ChatGPT)
7. Digital games/mobile games
8. Digital platforms for microlearning (with digital badges/certificates upon completion)
9. E-books, digital libraries
10. Educational apps
11. ePortfolio
12. Flashcards (Anki, Quizlet, etc.)
13. Interactive digests, professional magazines
14. Interactive games
15. Lecture recordings (like Zoom)
16. LinkedIn
17. Mobile applications that help to manage time and/or define and track learning objectives
18. Mobile learning (e.g. tablets, iPads, mobile device, computers)
19. MOOCs, online courses
20. Note taking apps/platform (e.g., OneNote, Word)
21. Notifications I choose to subscribe to
22. Online discussion platforms
23. Online study/interest groups
24. Open educational resources (free textbooks, educational software, videos)
25. Open Knowledge Maps
26. Paid subscriptions (UpToDate)
27. Plagiarism checkers
28. Podcasts
29. Presentation slides (PowerPoint, Google Slides)
30. Simulations
31. Social media (online communities, forums)
32. Team collaboration platforms (Slack, WebEx, Asana)
33. Video sharing sites (YouTube)
34. Virtual world / virtual reality
35. Web 2.0 (Internet)
36. Webinars
37. Wikis

Findings

In this section, we present the findings from the preliminary phase of our descriptive thematic analysis. Regarding our first research question (Q1), we identify digital technologies students report using most often in their self-initiated learning. With respect to our second research question (Q2), we identify technologies that students envision using for their ongoing learning as future professionals.

How Does Digital Technology Shape Students' Self-initiated Learning Activities? (Q1)

While focus group participants reported using traditional methods such as paper textbooks and pen-and-paper notes in their learning, they reported extensively using and relying

on their smartphones, the Internet (Web 2.0), mobile learning applications, digital libraries, video-sharing sites, and chatbots. They reported most often using:

a) ChatGPT to generate new ideas, receive feedback, and develop code;
b) presentation slides from their courses and lecture recordings to review the material;
c) video-sharing sites such as YouTube for visualization and clearer explanations than those provided in lectures;
d) note-taking apps (e.g., Word, Google Docs) to record study notes;
e) flashcards (e.g., Quizlet) for memorizing new material;
f) mobile learning devices (e.g., tablets, iPads) for quick access to learning materials from anywhere; and
g) e-textbooks as part of their university coursework.

Based on the findings from the focus groups, it appears that our current list of digital technologies and technology-enabled learning activities is quite comprehensive for students. However, the focus group participants suggested:

- adding coding and programming platforms, text-to-speech tools, and social media platforms (e.g., Discord), and
- removing plagiarism checkers from the list as most students do not perceive them as useful for educational purposes.

Certain technologies were noted to be less helpful for learning, including wikis and blogs, due to concerns with source credibility, and e-portfolios as students may not fully understand their utility.

How do Students Envision Ongoing Learning Throughout their Careers? (Q2)

Focus group participants indicated that they do not anticipate using presentation slides, lecture recordings, flashcards, and e-textbooks after graduation, due to the perceived lack of relevance in memorizing material and reading textbooks outside of academic settings. However, some participants stated that they would use LinkedIn Learning and similar platforms for taking courses post-graduation. Looking ahead to their professional careers, students indicated plans to continue using video-sharing platforms (e.g., YouTube, Instagram), ChatGPT and other AI tools to answer practice-based questions and receive feedback and explanations in real-time.

Discussion and Conclusion

Students extensively use digital technologies in self-initiated learning activities (Mohr et al., 2020; O'Connor & Andrews, 2018; Shorey et al., 2021). Students use technologies such as ChatGPT and video-sharing sites on a regular basis and expect to use and benefit from them as future professionals. The results of Güner et al. (2024) echoed our findings that students view ChatGPT in education as a useful technology, while Jackman and Roberts (2014) emphasized the benefits of YouTube videos as supplements to lectures.

An important takeaway from the focus groups is that the use of digital technologies for learning is contextual and field-dependent. For example, engineering students report often using and relying on communication and collaboration platforms, and health professions students rely on a close-knit network of digital resources and technologies specific to their field (e.g., UpToDate, Bugs & Drugs app). In particular, students in health professions indicated that they use YouTube and Instagram to find short educational videos such as tutorials or visual

explanations containing information relevant to their professions (e.g., first aid techniques, specific maneuvers). In certain professions such as engineering, medicine, and dentistry, students also report using 3D visualization, and online simulations. Augmented and virtual reality are used more and more often and are popular for their learning, whereas in other fields such technologies are a distant future.

Students in the digital era have access to a wide variety of information freely available on the Internet, and as such, they do not see the need or expect to pay when engaging in LLL either now or later. The results of the *Content & Learning Survey of Career Development Professionals* (CERIC, 2022), aimed to understand the educational needs and behaviours of Canadian professionals in various sectors. It found that most surveyed professionals spend at least up to $500 per year on their professional development, preferring MOOCs (Massive Open Online Courses) and micro-credentials, over paid, formal courses. In the CERIC survey, cost, time, and source credibility were highlighted as the primary considerations when professionals decide which professional development activities to pursue. Technology-enabled learning activities, such as reading online articles, perusing online newsletters, attending webinars and workshops, and watching video recordings, were top sources of learning professionals reported engaging in (CERIC, 2022).

Despite the significant advantages of digital technologies, their disadvantages include cost, technological limitations, lack of appropriate knowledge and skills among potential users, and cultural barriers (Criollo-C et al., 2018). Widely used learning tools like ChatGPT can facilitate student cheating, thereby undermining academic integrity (Cotton et al., 2023). As such, teachers should consider learning new digital technologies not only to benefit from them, but also to stay abreast of the latest technological trends and threats. One of the limitations of our study is the lack of perspectives from students with no or limited access to digital technologies, and people with disabilities. Future research should focus on the diversity of technology users as well as cultural and age differences in the context of LLL.

Our findings highlight the transformative role of digital technologies in student learning and their LLL as they transition into their professional careers. The insights from this study are foundational for further exploration of tools and ways of modern student learning in professional education. Our study has potential to provide an impetus for research on the cognitive and social dimensions of LLL, including the impact of digital technologies on the satisfaction of basic psychological needs (Ryan & Deci, 2000). Our findings contribute knowledge to the development of contemporary LLL measures.

References

Babenko, O., Koppula, S., Daniels, L., Nadon, L., & Daniels, V. (2017). Lifelong learning alonthe education and career continuum: Meta-analysis of studies in health professions. *Journal of Advances in Medical Education & Professionalism, 5*(4), 157–163.

CERIC. (2022). *Content & learning survey of career development professionals*. https://ceric.ca/wpdm-package/ceric-content-learning-survey-infographic/?wpdmdl=56028&refresh=6640bed38baba1715519187

Collins, J. (2004). Education techniques for lifelong learning: Lifelong learning in the 21st century and beyond. *Radiographics*, *24*(4), 613–622. https://doi.org/10.1148/rg.292085179

Commission for a Nation of Lifelong Learning. (1997). *A nation learning: Vision for the 21st century.* Commission for a Nation of Lifelong Learning.

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, *61*(2), 228–239. https://doi.org/10.1080/14703297.2023.2190148

Criollo-C, S., Luján-Mora, S., & Jaramillo-Alcázar, A. (2018, March 11–14). *Advantages and disadvantages of m-learning in current education* [Conference presentation]. IEEE World Engineering Education Conference 2018 (EDUNINE), Buenos Aires, Argentina. https://doi.org/10.1109/EDUNINE.2018.8450979.

Daniels, L. M., & Hoy, B. H. (2020). *Virtual reality to reduce pre-service teachers' presentation anxiety*. Unpublished data, Department of Educational Psychology, University of Alberta, Edmonton, Alberta, Canada.

Güner, H., Er, E., Akçapınar, G., & Khalil, M. (2024). From chalkboards to AI-powered learning: Students' attitudes and perspectives on use of ChatGPT in educational settings. *Educational Technology & Society, 27*(2), 386–404 https://doi.org/10.30191/ETS.202404_27(2).TP05

Hojat, M., Nasca T. J., Erdmann J. B., Frisby A., Veloski J. J., & Gonnella J. S. (2003). An operational measure of physician lifelong learning: It's development, components, and preliminary psychometric data. *Medical Teacher, 25*, 433–437. https://doi.org/10.1080/0142159031000137463

Hojat, M., Veloski, J., Nasca, T. J., Erdmann, J. B., & Gonnella, J. S. (2006). Assessing physicians' orientation toward lifelong learning. *Journal of General Internal Medicine, 21*, 931–936. https://doi.org/10.1007/BF02743140

Jackman, W. M., & Roberts, P. (2014). Students' perspectives on YouTube video usage as an e-resource in the university classroom. *Journal of Educational Technology Systems, 42*(3), 273–296. https://doi.org/10.2190/ET.42.3.f

Knapper, C. K., & Cropley, A.J. (2000). *Lifelong learning in higher education* (3rd ed.). Stylus Publishing.

Mohr, T., Young, J. L., Ingram, D., Mabey, R., Mohr, P., & Miro, R. M. (2020). Preferences of physical therapy students regarding digital and printed textbooks. *Journal of Allied Health*, *49*(3), 169–177. https://login.ezproxy.library.ualberta.ca/login?url=https://www.proquest.com/scholarly-journals/preferences-physical-therapy-students-regarding/docview/2441572942/se-2

O'Connor, S., & Andrews, T. (2018). Smartphones and mobile applications (apps) in clinical nursing education: A student perspective. *Nurse Education Today, 69,* 172–178. https://doi.org/10.1016/j.nedt.2018.07.013

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist, 55*(1), 68–78. https://doi.org/10.1037//0003-066x.55.1.68

Shorey, S., Chan, V., Rajendran, P., & Ang, E. (2021). Learning styles, preferences and needs of generation Z healthcare students: Scoping review. *Nurse Education in Practice, 57,* 103247. https://doi.org/10.1016/j.nepr.2021.103247

UNESCO Institute of Lifelong Learning. (2022). *Making lifelong learning a reality: A handbook.*

Varpio, L., Paradis, E., Uijtdehaage, S., & Young, M. (2020). The distinctions between theory, theoretical framework, and conceptual framework. *Academic Medicine, 95*(7), 989–994. https://doi.org/10.1097/ACM.0000000000003075

Wetzel A. P., Mazmanian P. E., Hojat M., Kreutzer K. O., Carrico R. J., Carr C., Veloski, J., & Rafiq, A. (2010). Measuring medical students' orientation toward lifelong learning: A psychometric evaluation. *Academic Medicine, 85,* 41–44. https://doi.org/10.1097/ACM.0b013e3181ed1ae9