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OUSA

Ontario Undergraduate Student Alliance

Issue 17

EDUCATED SOLUTIONS

Our Evolving Partner in Education:
Technology in Post-Secondary

Land Acknowledgement

The Home Office of the Ontario Undergraduate Student Alliance is situated on the traditional territory of the Huron-Wendat, the Haudenosaunee, and most recently, the Mississaugas of the Credit River and is covered by Treaty 13 of the Upper Canada Treaties.

Our member institutions exist on Lands that have been the homes of Indigenous Peoples for time immemorial and have remained homes despite efforts of the settler-colonial state we know as Canada. As a coalition of student unions, we are also aware that all levels of education have a long history as violent tools for assimilation and as disseminators of settler-colonial practices. Since this issue of Educated Solutions aims to explore our relationships with technology, we would be remiss if we did not acknowledge the infrastructural gaps experienced by Indigenous communities across the province. To reach empowerment and liberation, Indigenous communities need access to essential resources such as the internet and technology.

Some institutions are taking meaningful steps to improve access for Indigenous students - for instance, the University of Waterloo is waiving tuition fees for prospective students from the two Nations closest to their campus[1]. However, there needs to be more targeted and sustained efforts across all educational institutions to address the historical and ongoing disparities faced by Indigenous communities.

We recognize that the path to true reconciliation requires more than symbolic gestures; it demands systemic change, respectful engagement, and an unwavering commitment to amplifying Indigenous voices. In honouring the past, acknowledging the present, and committing to a more just future, we recognize that technology-assisted education can be a powerful tool for change when wielded responsibly, equitably, and inclusively. We implore all settlers to critically engage with the specific histories of the Land you occupy. Learn about the injustices that occurred (or still occur) where you are, and get to know the Indigenous communities near you – engage in dialogue, learn about what you can do to support these specific communities, and commit to tangible action.

As we move forward towards decolonization in the face of rapid technological advancements within the post-secondary sector, we must ask ourselves: How can we advance and innovate in an authentic manner, one that empowers and liberates Indigenous voices and communities, while ensuring that no one is left behind?

1 Latif, Anam. “University of Waterloo Will Waive Tuition for Students from 2 Ontario First Nations.” CBC. Last modified May 25, 2023.https://www.cbc.ca/news/canada/kitchener-waterloo/university-of-waterloo-will-waive-tuition-for-students-from-2-ontario-first-nations-1.6854417.

Our Evolving Partner in Education: Technology in Post-Secondary

Volume 17, September 2023

Editors: Ananya Gupta (she/her)
Octavia Andrade-Dixon (she/they)

Foreward: The Honourable Jill Dunlop

Authors: Trevor Potts (he/him)
Kordell Walsh (he/him)
Samantha Brown (she/her)
Zarreen Brown (she/her)
Steve Orsini (he/him)
Cecilia Amoakohene (she/they)
Tarin Karunagoda (she/her)
Rocío Chávez Tellería (she/her)
Maxim Jean-Louis (he/him)
Nina Huntemann (she/her)
Brittany Washington (she/her)
Ian Muller (he/him)
Nicole Campbell (she/her)
Nigmendra Narain (he/him)
Sanjana Shah (she/her)
André Côté (he/him)
Lena Balata (she/her)
Ken Chatoor (he/him)

Design: Tiffany Li Wu (she/her)

OUSA President: Vivian Chiem (she/her)

Publisher: Ontario Undergraduate Student Alliance

OUSA Home Office: Malika Dhanani (she/her)
Tiffany Li Wu (she/her)
Octavia Andrade-Dixon (she/they)
Ananya Gupta (she/her)

Table of Contents

Table of Contents

Minister's Foreword

I am delighted to once again address members of the Ontario Undergraduate Student Alliance (OUSA) in this year's edition of Educated Solutions. I always appreciate your efforts to ensure our undergraduate students have a platform to share their views and the thoughtful insights you provide to enhance our postsecondary education system.

This year's theme of technology in postsecondary education could not be more timely, as the shift to online classrooms during the COVID-19 pandemic highlighted the tremendous opportunities presented by virtual learning. While this period certainly presented challenges, it also sparked a significant shift in our approach to education, one focused on building a more innovative, inclusive, and responsive postsecondary education system to fuel Ontario's global competitiveness. Known as hybrid learning, more and more colleges, universities, and Indigenous Institutes across the province are adapting this valuable new way of learning.

Recognizing this, our government has taken significant steps to position Ontario as a global leader in and has made significant investments to expand institutional capacity and supports for the delivery of virtual postsecondary education. This includes an historic investment of over $70 million in a Virtual Learning Strategy for Ontario to improve access to high-quality, market-responsive, and globally competitive virtual training opportunities. Hybrid learning is one of the ways we are building a postsecondary education system that embraces accessibility, inclusivity and promotes success for all learners so they can find rewarding careers.

Since our Virtual Learning Strategy was first announced almost three years ago, it has resulted in over 450 projects from across the province, creating more than 600 digital resources to support students, faculty, and staff as they teach and learn online. This includes tools and technologies for learners in small, rural, remote, Indigenous and Francophone communities in Ontario, and delivering courses to learners who might not otherwise access postsecondary education, such as people who work or care for their families full-time.

By continuing to work together with our partners, like OUSA, I am confident we will continue to advance our shared interest of supporting learners across the province, so we can ensure they get the skills and education they need to prepare for the jobs of today and tomorrow.

The Honourable Jill Dunlop
Minister of Colleges and Universities

Born and raised in the Town of Coldwater in Simcoe North, Jill Dunlop developed a love and appreciation for rural Ontario, and witnessed firsthand the importance of community and small local businesses, as her grandparents owned Dunlop Plumbing and her parents were actively engaged community members. This inspired her to run as the MPP for Simcoe North in 2018 to advocate for the small business sector and the skilled trades, the backbone of Ontario's economy.

Jill has proudly served as the member of provincial parliament for Simcoe North since 2018 and as the Minister of Colleges and Universities since 2021. Prior to being elected, Jill attended Western University, and later joined the faculty of Georgian College. With her experience at Georgian College, and as a mother of three postsecondary aged daughters who give her unique insights into the world of higher education, Jill is uniquely qualified and prepared to lead the postsecondary and research sectors. Through her experience building and fostering partnerships within the postsecondary education sector, Jill has successfully created the connections students need to receive on-the-job experience to kickstart their careers in the local community.

Additionally, Jill was appointed Associate Minister of Children and Women's Issues in the Ministry of Children, Community and Social Services in 2019.

Editors' Note

We are in an age of unprecedented technological progress, and the effects of rapid advancements in technology have touched nearly every aspect of our lives. The post-secondary sector, too, is undergoing change, innovation, and transformation. During the pandemic, it was necessary for different sector stakeholders, such as educators, students, and administrators, to adapt to online modes of learning. However, as we approach a post-pandemic era, we can witness an organic global shift towards the integration of digital modes of education, the incorporation of Artificial Intelligence (AI) and other technologically assisted processes. As we move forward, how can we view technology as a partner in education, ensuring equity, accessibility, and accountability?

For these reasons, in the 17th Edition of Educated Solutions, we embark on an exploration of the dynamic intersections of technology and the post-secondary sector. Our intention is to uncover the myriad ways in which technology is reshaping the higher education landscape. Our contributors delve deep into the multifaceted role technology plays in this sector, shedding light not only on the opportunities and challenges it presents, but also recognizing the necessity for robust and critical dialogues about the sector's future. The themes range from issues of equity and access to ethics and innovation, focusing on supporting the diverse needs of the student population. Particularly, our contributors focus on matters of pedagogical change, technology literacy, work-integrated learning, AI, and personalized learning, among others. These dialogues encompass ethical considerations as well as critical thought around the evolving partnership between modern education and technology.

We extend our gratitude to all the authors for their contributions to this year's edition of Educated Solutions. OUSA deeply values the diversity of perspectives and fresh insights you've brought to the table, enriching the discourse and broadening our understanding of the technological considerations in the post-secondary sector. It is our hope that this edition acts as a catalyst for meaningful discussions, ignites innovative thought, and fosters a deeper understanding of the interplay between technology and higher education. Through this, we strive to unlock novel dimensions of privacy, accessibility, equity, and collaboration that will shape the future of learning.

Ananya Gupta
OUSA's Research
& Policy Analyst

Octavia Andrade-Dixon
OUSA's Research
& Policy Analyst

President's Note

As we navigate the post-secondary landscape three years after the onset of the COVID-19 pandemic, many- myself included- can look back at a degree experience unique to a generation. Faculty, staff and students alike have overcome the obstacles of rapid transitions from remote learning to hybrid and return to predominantly in-person learning. Throughout this time, we found ways to work together to navigate the constantly changing circumstances while striving to create welcoming learning environments and advocating for high-quality education. This experience taught us the advantages and drawbacks of greater technological integration into post-secondary education.

While adjusting to the new realities of education was difficult, seeing and experiencing how technology could be used to improve our education was inspiring. A-synchronous learning became a valuable tool for students of varying abilities and those with competing responsibilities; more educators began incorporating principles of Universal design learning into their teaching, and students found ways to create community through digital means. As we returned to in-person learning, students advocated for the maintenance of accessibility that remote learning brought them, along with critical intervention on new technologies in the classroom.

As we look forward to the future, we must not pretend the strides made during the pandemic were temporary blips. Finding ways to embrace technology and be critical of its use is essential to ensure Ontario's post-secondary sector is not left behind. This year's edition of Education Solution aims to address this delicate balance, highlighting the opportunities post-secondary institutions have to use advancing technology to their advantage, the ways it is improved the post-secondary landscape, and the pitfalls of our current digital infrastructure.

The post-secondary sector is charting new territory, and we hope that the insights provided in this year's edition will be used to shape its future. As such, these lessons should be considered when shaping the strategic visions of the sector and, ultimately, provide students with the future-facing education they deserve while ensuring their needs are met.

OUSA President

Vivian Chiem

The Digital Divide: The Impact of Connectivity Gaps on Remote, Rural, and Indigenous Education

Canadian Alliance of Student Associations (CASA)

Written by:
Trevor Potts, Policy and Research Analyst
Kordell Walsh, Research Intern

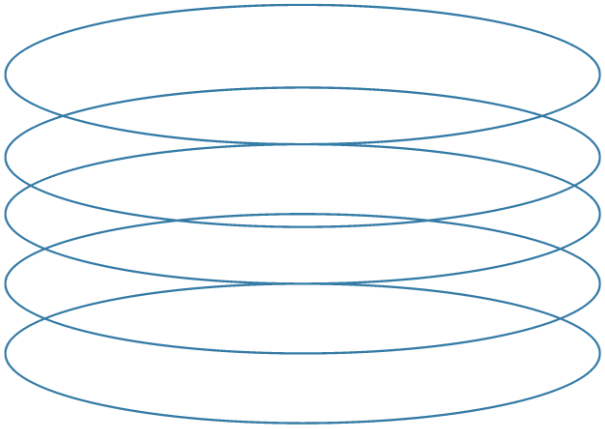
Background

Internet Coverage in Canada

Canada is the second-largest country in the world, with a total geographic area of 9,984,670 square kilometres, stretching 5,514 kilometres from east to west[1]. Within its borders, nearly 88% of Canada's total population (40 million) reside in its largest urban centres[2], including Toronto, Vancouver, Montréal, Ottawa–Gatineau, Calgary, and Edmonton[3].

In contrast, Canada's population living in rural and remote communities (that is, regions with population under 10,000[4]) remains comparatively small, with less than one in five Canadians living in these regions. According to Statistics Canada, while rural and remote regions account for the vast majority (98%) of Canada's landmass[5], rural and remote communities (RRCs) represent only 17.8% of its total population, approximately 6.6 million people[6]. For example, while Canada's three territories[7] account for nearly two-fifths (39.1%) of Canada's landmass, they comprise only 0.3% of its total population.

However, population development in RRCs is driven by the fastest-growing demographic in Canada[8], Indigenous peoples, with over half of all Indigenous communities residing in the country's most rural and remote regions, compared with just 5% of the non-Indigenous Canadian population[9]. In Canada, the fastest growing RRCs are found in Nunavut[10], which is significant given that 87% of its total population is either Inuit, First Nations, Métis or from another Indigenous group[11].



1 Statistics Canada. "Geography." Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada. Last modified September 30, 2011. https://www150.statcan.gc.ca/n1/pub/11-402-x/2011000/chap/geo/geo-eng.htm.
2 Statistics Canada. "Canada's Population Reaches 40 Million." Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada. Last modified June 19, 2023. https://www.statcan.gc.ca/en/subjects-start/population_and_demography/40-million.
3 Statistics Canada. "Population Growth in Canada's Rural Areas, 2016 to 2021." Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada. Last modified February 9, 2022. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-x/2021002/98-200-x2021002-eng.cfm.
4 VOdden, K. and Cunsolo, A. (2021): Rural and Remote Communities; Chapter 3 in Canada in a Changing Climate: National Issues Report, (ed.) F.J. Warren and N. Lulham; Government of Canada, Ottawa, Ontario.
5 Centre for Rural Economic Development Innovation, Science and Economic Development Canada. Canada's Rural Economic Development Strategy: Progress Report August 2021. April 11, 2022. https://ised-isde.canada.ca/site/rural/en/canadas-rural-economic-development-strategy-progress-report-august-2021.
6 Statistics Canada (2022). "Population Growth in Canada's Rural Areas, 2016 to 2021."
7 Ibid
8 Statistics Canada. "Projections of the Indigenous Populations and Households in Canada, 2016 to 2041." Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada. Last modified October 6, 2021. https://www150.statcan.gc.ca/n1/daily-quotidien/211006/dq211006a-eng.htm.
9 Ibid
10 Ibid
11 Statistics Canada. "Inuit: Fact Sheet for Nunavut." Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada. Last modified March 29, 2016. https://www150.statcan.gc.ca/n1/pub/89-656-x/89-656-x2016017-eng.htm

Given their lower density populations, RRCs are more likely to face resource scarcities and infrastructure gaps, which can have significant impacts on economic prospects, health outcomes, and access to essential services.

It is essential that all communities living in Canada have reliable access to affordable and quality high-speed Internet to participate in the digital economy, and have access to essential services, including medical resources, government services, and post-secondary education. Ultimately, connectivity is a significant driver of economic growth for all communities across Canada, and having a minimum standard of service is an essential need for all students from coast to coast.

Concerns

The Connectivity Strategy

In 2019, the federal government released the High Speed Access for all: Canada's Connectivity Strategy ("the Strategy")[12], which committed to closing the urban and rural digital divide by 2030. Total investments, both through the Strategy and from previously existing funding pre-2019, total over $8 billion across 10+ years. The Strategy outlined the minimum high-speed Internet connectivity target for all Canadians (50/10 Mbps) and committed to delivering these speeds to 90% of Canadians by 2021, 98% by 2026, and 100% by 2030.

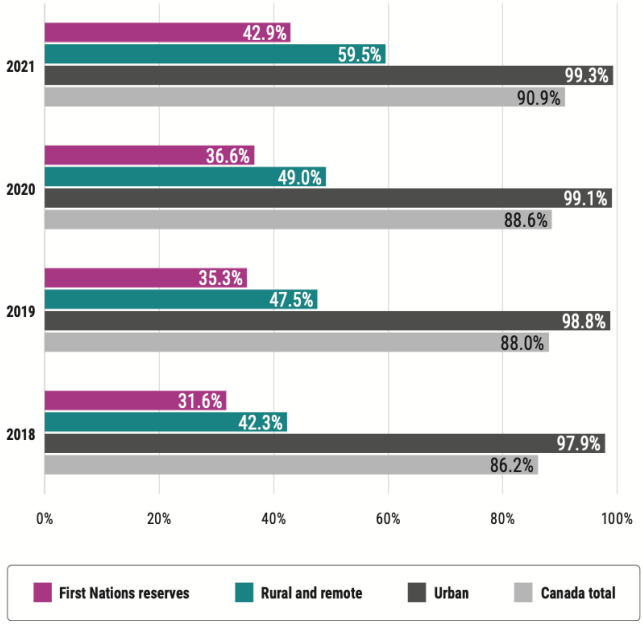
Since its launch, Internet coverage has increased across the country, in both urban and rural/remote regions . However, connectivity to high-speed Internet is not equal for all, and there remains a significant digital divide between urban and rural/remote communities, as well as between non-Indigenous and Indigenous populations.

The Digital Divide

While the government met its goal to provide 50/10 internet to 91% of Canadian households by 2021, 1.4 million unserved and underserved households remain without access, most predominantly in rural and remote regions[13]. The Auditor General of Canada found that while 90.9% of households in 2022 had access to these minimum connection speeds, only 42.9% of First Nations reserves and only 59.5% of households in rural and remote regions had similar access[14], as shown by Exhibit 2.1.

In the Canadian Radio-television and Telecommunications (CRTC)'s 2022 Telecommunications in the Far North Survey, 94% of respondents noted that they had experienced a service outage or interruption within the previous year[15]. Of those 94%, many were students who noted that the outage impacted their schooling - rendering them unable to attend classes, watch educational materials, or access online resources[16]. These barriers intensify the strain on post-secondary students, who must then rely on expensive and, at times, unreliable[17] mobile data or miss classes in order to attain their degree.

Exhibit 2.1—The percentages of rural and remote areas and First Nations reserves with access to minimum Internet speeds of 50/10 Mbps* lagged behind urban areas (2018–2021)



18

12 Digital Transformation Service Sector. High-Speed Access for All: Canada's Connectivity Strategy. April 11, 2022. https://ised-isde.canada.ca/site/high-speed-internet-canada/en/canadas-connectivity-strategy/high-speed-access-all-canadas-connectivity-strategy.

13 Auditor General of Canada. "Report 2—Connectivity in Rural and Remote Areas." Office of Auditor General of Canada. Last modified 2023. https://www.oag-bvg.gc.ca/internet/English/att__e_44225.html.

14 Auditor General of Canada. "Report 2—Connectivity in Rural and Remote Areas."

15 Canadian Radio-Television and Telecommunications Commission. "Survey Response Report- Telecommunications in the Far North." Last modified 2022. https://crtc.gc.ca/eng/archive/2022/CRTC_Conversations-Telecoms_in_the_Far_North-Survey_aggregated_data_report_for_Public_Record.pdf.

16 Canadian Radio-Television and Telecommunications Commission. "Survey Response Report- Telecommunications in the Far North.

17 Ibid'

18 Office of The Auditor General of Canada. "Connectivity in Rural and Remote Areas." Government of Canada, 2023.

Lack of high-speed internet access has a significant impact on access to post-secondary education in Canada. Even minor disruptions, such as the 2022 temporary outage in Thunder Bay, Ontario, resulted in prolonged outages to the internet service, websites, and email service of both of its post-secondary institutions, Lakehead University and Confederation College [1920]. Disruptions to internet access further highlight the lack of options available for students from rural and remote communities.

Additionally, lack of access to reliable high-speed internet results in many different approaches to overcoming the divide. One example provided by the Canadian Federation of Municipalities notes that often students in these communities must work on and submit assignments while in the classroom - overall, impacting the amount of time and attention they can dedicate to learning the material[21].

Given the population demographics of rural and remote regions as previously discussed, this digital divide between rural and urban regions, as well as indigenous and non-indigenous communities, further reinforces systemic barriers to accessing essential services and opportunities, including post-secondary education.

Federal Spending Concerns

One primary issue impacting Internet connectivity rates for students in RRCs has been regarding federal spending concerns. For example, only 25% of available funds have been spent for the Universal Broadband Fund (UBF)[22]. One major source of delayed funding disbursements is due to long application and approval processes, and the lack of communication by federal departments with funding applicants on the status of their submissions. Currently, under the CRTC's Broadband Fund, it takes on average of 22 months to secure a project's approval, nearly a full year longer than the stated timeline. Similarly, ISED's Universal Broadband Fund - Rapid Response Stream takes average 51 weeks to grant final approval, over ten times longer than the stated timeline of 5 weeks[23].

Furthermore, while the Connectivity Strategy highlights the need to support anchor institutions, such as libraries, schools, hospitals, and local governments[24], the vast majority of recipients for funding are large telecommunications companies. For example, of the total 50 projects funded through the Broadband Fund, nearly half (20 projects) were awarded to the three largest telecommunications companies in Canada: Telus, Rogers, and Bell, while only 2 projects (4%) were directly awarded to anchor institutions.

With concerns regarding the allocation of existing funds, as well as significant delays to the disbursement of key funding initiatives, it is uncertain whether the 2030 goal can or will be met with the existing funding allocated[25]. Uncertainty regarding the 2030 goals means that many students or potential students in rural and remote communities may continue to be left behind and face additional, unnecessary barriers to accessing their education.

Gaps in Federal Connectivity Data

While the Canadian Radio-television and Telecommunications Commission (CRTC) does collect data on internet connectivity, the federal government does not currently measure progress on the level of affordability, accessibility or quality of internet connectivity across the country[26].

Besides coverage, the quality of Internet connectivity is an essential element of accessibility. The CRTC's main connectivity database, the National Broadband Internet Service Availability Map ("the Map"),

19 "Lakehead University, Confederation College Experience Network Outages." TBNewsWatch.com. Last modified October 20, 2022. https://www.tbnewswatch.com/local-news/lakehead-university-confederation-college-experience-network-outages-5983150.
20 "Critics Say 24-hour Internet Disruption Highlights Lack of Backup Options in Canada's North." The Globe and Mail. Last modified September 27, 2022. https://www.theglobeandmail.com/business/article-critics-say-24-hour-internet-disruption-indicative-of-lack-of-backup/?login=true.
21 Federation of Canadian Municiplaities. Broadband Access in Rural Canada: The role of connectivity in building vibrant communities. 2014. https://fcm.ca/sites/default/files/documents/resources/report/broadband-access-rural-canada.pdf.
22 Auditor General of Canada. "Report 2—Connectivity in Rural and Remote Areas." g 14-15
23 Ibid
24 Innovation, Science and Economic Development Canada. High-speed Access for All: Canada's Connectivity Strategy. n.d. Accessed August 23, 2023. https://ised-isde.canada.ca/site/high-speed-internet-canada/sites/default/files/attachments/ISEDC_19-170_Connectivity_Strategy_E_Web.pdf.
25 Ibid.g 4
26 Ibid.g 9-10

features long, irregular gaps between map updates, and both out-of-date and inaccurate data[27].

In addition to coverage and quality, affordability is the final essential component of Internet connectivity. While the Strategy includes a definition of affordability based on price, it does not include any national indicators or targets to evaluate whether affordability outcomes are being achieved, nor does it assess a person's income.

As a result of these data gaps, applicants may have wasted time and resources on applications that were ineligible or would need revising, and communities may have been incorrectly excluded from federal funding due to out of data map data.

Similarly, while ISED also tracks improvements in Internet coverage across Canada, it does not monitor or report on actual Internet adoption rates stemming from the billions of federal investments committed [28].

Due to the limited data collected by the CRTC and the ISED, there is limited means to strategize access improvement plans for rural and northern residents. The limited data collection practices are also a barrier for those campaigning for improved services, as they lack the empirical evidence to strengthen their advocacy efforts.

It is therefore essential that rural and remote regions, particularly those disproportionately represented by Indigenous communities, have access to affordable, accessible, high-quality internet in order to redress the significant digital and education gaps generated by Canada's "... history of colonial assimilation practices, chronic underfunding, and inadequate education systems."[29].

First, there is a clear need for ISED to review and update its application and approval processes in order to expe -dite funding and implementation of connectivity projects. Likewise, the CRTC should speed up its application and approval processes for the Broadband Fund,

and notify applicants when project proposals have been halted, deemed ineligible, or not selected.

Recommendations

The affordability, accessibility, and quality of Internet connectivity are three essential elements to ensuring all individuals have access to post-secondary education across Canada. The current levels for connectivity for rural, remote, and Indigenous students across Canada are significantly impacted by federal funding delays and gaps in data.

Second, it is essential that ISED provide more regular and timely updates to the National Broadband Internet Service Availability Map in order for applicants to have

27 Ibid. Pg 9-10, 27
28 Ibid.g 5
29 "Annual Report to Parliament 2021." Services Aux Autochtones Canada / Indigenous Services Canada - Canada.ca. Last modified February 1, 2022. https://www.sac-isc.gc.ca/eng/1640359767308/1640359909406.

the latest data to inform their applications for connectivity projects. CRTC should also routinely collect and verify data coming from telecommunications service providers on other dimensions of connectivity quality besides speed, that cover signal delays, video pixelation, and “freezing”. Furthermore, ISED and CRTC should collect data to measure progress against the affordability objective of the Connectivity Strategy to better realise improved Internet connectivity in RRCs, including in Indigenous communities.

In order to provide the infrastructure needed to support rural and remote learners including First Nations communities, CASA advocates that digital facilities, installations, services and software be considered of equal importance to physical infrastructure in terms of federal post-secondary infrastructure granting programs.

CASA supports efforts by the federal government to expand broadband access to rural and remote areas, and calls on the federal government to work to ensure that all post-secondary students have access to affordable broadband, as an essential component of distance learning, and that broadband access in rural and remote areas is continuously reviewed, supported, and maintained.

Trevor Potts (he/him/il) works as the Policy and Research Analyst for the Canadian Alliance of Student Associations (CASA).

Kordell Walsh (he/him/il) is a Master’s of Political Management student at Carleton University, and Research Intern at the Canadian Alliance of Student Associations (CASA)

As Fundamental Inequity: Technology in Classrooms

Ontario Tech Student Union (OTSU)

Written by:
Samantha Brown, President

Ontario's ever-evolving post-secondary education landscape places a strong emphasis on technology-enriched learning. This necessitates a comprehensive understanding of the impact of COVID-19 on students and the pressing demand for universities to adapt their pedagogy, given the escalating reliance on technology.

Integrating technology into classrooms offers considerable benefits in terms of accessibility and adaptable learning approaches for students. However, this article will concentrate on addressing two inherent inequities. Firstly, the notion that all university students fall within the 18-23 age bracket, implying a higher likelihood of digital literacy, is both unrealistic and exclusionary. This assumption excludes mature students in an attempt to imply that these students are 'digital natives' which refers to "a generation of tech-savvy young people immersed in digital technologies for which current education systems cannot cater to"[1]. Secondly, this construction of young people as 'digital natives' hinges on the insurmountable gap between them and the less technologically literate older generations. Moreover, the narrative that contemporary university students are digital natives due to the prevalence and normalized advancement of pedagogical technology during their formative years is ableist and is inconsiderate of the financial privileges.

Introduction

Technology Enhanced Learning (TEL) is defined as any technology that enriches the learning experience through analog and digital technologies [2]. Digital TEL in educational software works to provide additional avenues to course participation, delivery and overall success through recorded lectures, tutorials, e-books, and study applications. Within Canada, studies have however found a divide in the use of TEL among people from different demographics. For example, there are lower adoption rates of technology among those aged more than 65 years as compared to those under the age of 50[3]. This is accompanied by a lack of smartphone use among older generations, as well as poorer attitudes towards technology[4]. However, a 2013 Statistics Canada study found that, on average, adults in Canada 16 to 65 possessed digital literacy and problem-solving skills higher than the Organization for Economic Cooperation and Development (OECD) average[5]. However, Canada's scores were significantly polarized: younger people with higher education levels scored significantly better than the OECD average, while others (such as older adults and those with lower educational levels) scored much lower[6].

1 Bennett, Sue, and Karl Maton. "Beyond the 'digital natives' debate: Towards a more nuanced understanding of students' technology experiences." Journal of Computer Assisted Learning 26, no. 5 (2010), 321-331. doi:10.1111/j.1365-2729.2010.00360.x.
2 Ibid
3 Abdelaal, Nour, and Sam Andrey. Leadership Lab. 2022. https://static1.squarespace.com/static/5fec97c81c227637fcd788af/t/6046d3b67340445f8b5716e2/1615254495143/DigitalDivideFramework-March-2021.pdf.
4 Abdelaal, Nour, and Sam Andrey. Leadership Lab. 2022.
5 Ibid
6 Ibid

Barriers to Technology Literacy

TEL and technology literacy should aim to increase the accessibility and range of educational resources for students. Within the post-secondary sector, there are a number of digital tools used for this purpose, these include but are not limited to "hardware such as laptops, mobile telephones, televisions and e-readers, or software such as social networking, office suites, online forums, and videos"[17].

When one considers TEL and technology literacy, it is integral to consider the intersectionality of its use. For example, Rachel Staddon, in her study surrounding technology literacy, raises some important questions. She asks:

- Whether it is pedagogically efficient to treat our modern post-secondary the same as a traditional cohort?
- What is called for in a deeper understanding of TEL needs concerning mature students, and how do they differ from those of younger, more 'traditional' students?
- How can we amend our current practice and learning environments?[8]

Referring to the first assumption that lumps all university students into the 18-23 age group based on traditional academic timelines, assuming a standard 4-year degree completion, raises questions. Staddon's research points out the problem of treating modern post-secondary students the same as traditional ones, neglecting mature students and those with learning disabilities who might follow different paths, including part-time options. Staddon's inquiry delves into how TEL can be inclusive of mature students' unique interactions with TEL compared to younger peers. While not all younger students are tech-savvy, the integration of digital TEL in classrooms improves their digital literacy. However, Staddon's third inquiry stresses the need to challenge such assumptions due to barriers like non-compliant TEL access, limited resources, unequal opportunities, and financial constraints at individual and institutional levels.

When it comes to understanding TEL, it is important to consider how different demographics understand and interact with it. A study on TEL within the post-secondary space revealed the differing levels of comfort and confidence among students from different age groups, particularly highlighting the lower levels of confidence among mature students. Mature students are defined as those who enter post-secondary education at the age of 26 or older,[9] and the study revealed that they were "less comfortable and viewed themselves as having less efficacy around computers"[10]. Another key finding regarding full-time mature students, was that they had "lower confidence for computer use and learning, and distance mature students had more negative attitudes to computers and full-time mature students had lower confidence for computer use and learning".[11] As self-perception and confidence are directly correlational to technology use, the attitudes adversely impact essential functions of online learning such as sending and receiving digital communication, typing, online assignment submission, understanding of and the ability to utilize various formats of documents in particular formats; PDF, Office 365 or Google suite[12].

Studies elucidate that TEL poses a challenge for older adult students where the repercussions of insufficient computer literacy in some cases have adverse academic consequences. A study with undergraduate students who are 50 and older highlighted that communication on the internet is a challenge for adult learners[13].

Additionally, it was found that graduate adult learners within the age bracket of 41 to 65 lack technical skills, which makes the instructional process challenging [14].

7 Staddon, Rachel V. "Bringing technology to the mature classroom: age differences in use and attitudes." International Journal of Educational Technology in Higher Education 17, no. 1 (2020). doi:10.1186/s41239-020-00184-4.
8 Rachel V. Staddon, Bringing technology to the mature classroom.
9 Ibid
10 Ibid
11 Ibid
12 Ibid
13 Ibid
14 Ibid

This gap informs the consequential reality that adult learners within this age range struggle to access reliable information through the Internet[15]. Moreover, when other modes to obtain physical research information were largely unavailable due to public and higher education library closures, research tech illiteracy heightens hurdles for mature students taking heavy courses and majors. Mature students also face challenges when participating in collaborative activities such as online group work software due to tech illiteracy as it impacts underdeveloped research and digital communication/ interaction on the internet. Here, tech illiteracy in online spaces can result in missing key course information, difficulty or inability to do group work (which, depending on the student's major may be fatal to overall academic success), or failing courses. Learning resources differ, and range in availability and accessibility depending on the infrastructure and values at the given higher education institution. This experience is in contrast to the majority of younger students as mature students experience skill-based difficulties in attempts to participate in TEL meaningfully.

Challenges in communication are a direct consequence of the false narrative that all post-secondary students are tech natives. This does not provide room for complexities of younger students' technology experiences, mature students who may not have been as exposed to technology in their formative years or students who may not have access to technology currently utilized in classrooms through TEL due to financial barriers. As a result, inaccessibility may be misunderstood as tech illiteracy.

Diversity of the Student Experience

Technology's pedagogical evolution through the lens of adversity exposes inequity embedded in post-secondary education. Many mature students have additional responsibilities that impose a particular layer of economic barriers to accessing TEL, such as bandwidth requirements. One of the challenges of TEL are technical problems such as disconnection and lack of broadband Internet speed experienced by adults in their study locations[16]. As online learning typically relies on the individual learner's domestic resources, there is an implied emphasis placed on the student's finances. Here, the expectation is that students own, have the ability to access or are in an appropriate financial position to purchase the necessary technology. However, this is often not the case, as anecdotally explained by students who moved to online learning during the COVID-19 Pandemic, "data was a big issue. I had to upgrade my data plan to accommodate the extra data expenses" (Participant 12)[17]. Stress is also placed on the fact that during the quarantine portion of the pandemic, people were mandated to stay home. As a result, there was extra strain placed on bandwidth for work, school, and entertainment purposes. Many students in rural and northern areas were more affected by this as there were more prevalent service and internet connection issues in these areas. As explained by Participant 15, "Just the fact that both my mother and myself use the WiFi for work, makes it a bit difficult"[18].

TEL has been shown to benefit students and improve students' experience with higher education through pedagogy when lecturers select TEL such as social media, videos and software to improve student engagement[19]. Considering the diversity of the student experience software such as "[s]creen readers, recording tools and planning tools increase the

15 Ibid

16 Kara, Mehmet, Fatih Erdogudu, and Kursat Cagiltay. "Challenges Faced by Adult Learners in Online Distance Education: A Literature Review." International Council for Open and Distance Education 11, no. 1 (2019). https://files.eric.ed.gov/fulltext/EJ1213733.pdf.

17 Cloete, Monique, Jessica Michele Ellington, Anke Jansen van Vuuren, Elisca Adele Marais, and Poppy Masinga. "Migrating From Face-To-Face to Online Learning During the COVID-19 Pandemic: The Experiences of Psychology Students at a Private Higher Education Institution in Gauteng" Pg 11–21.

18 Ibid.

19 Ibid.

accessibility of courses for disabled students; however, this raises concerns surrounding the 'digital capital' these students have - the social and cultural support and resources a person can access"[20]. This is something that impacts mature students as well. The obstacles experienced in education are exacerbated by the student's personal life, which may appear as insufficient support from their families and workplaces.[21] Mature students tend to have "multiple roles such as spouse, parent, colleague, and student, each of which means additional responsibilities and workload. These challenges might affect their learning success as well as can cause dropout in online distance education programs or courses". [22]

Student Mental Health

Mental health during the peak of the pandemic posed academic and wellness-related challenges for students. Regarding the physical impact of online learning, professors and students expressed that learning was more physically exhausting due to the increase in screen time when compared to face-to-face learning[23]. Mature students faced disproportionate challenges due to additional familial responsibilities. As a result, adult learners may not have the same support through the institutional and orientation programs as "traditional" students.[24]

In addition, adults have multiple roles, such as spouse, parent, colleague, and student, each of which means additional responsibilities and workload [25]. These challenges might affect their learning success as well as causing dropout in online distance education programs or courses"[26].

Conclusion and Recommendations

Therefore, it is vital to balance work and rest in online learning environments to benefit an individual's physical, mental and emotional well-being. The failure to adopt accessible TEL is reflective of pedagogical gaps that stunt evolution in confronting ongoing issues in education. The accessibility and flexibility that TEL provides should be taken advantage of to correct the inaccurate narratives of all higher education students as "digital natives" comfortable with extreme shifts to learning modes.

Recommendation 1: Acknowledging the flexibility and general accessibility the addition of online environments provide to education, it is pertinent for the provincial government to prioritize funding to assist with the costs and training for TEL tools for post-secondary institutions.

Recommendation 2: Acknowledging the flexibility and general accessibility the addition of online environments provides to education it is pertinent for post-secondary institutions to consider the benefits for students and instructors in continuing TEL and online course offerings.

Samantha Brown (she/her) is the current President of the Ontario Tech Student Union. She recently finished her undergraduate degree in Legal Studies (Hons), a minor in Criminology and Justice and a Specialization in Alternative Dispute Resolution.

20 Ibid.
21 Ibid.
22 Ibid.
23 Ibid
24 Ibid
25 Ibid
26 Ibid

Digital Degrees: How Laurentian Online Makes University More Accessible

Students General Assembly at Laurentian University (SGA)

Written by:
Zarreen Brown,Vice President of Education and Interim President

Introduction

In 2021, I began my post-secondary studies at Laurentian University amidst the COVID-19 pandemic. This moment in time represented a paradigm shift for many students like me. We arrived on campus, expecting the full university experience, and faced something else instead. Despite several trials and tribulations, we adapted. Through my enrollment in several online courses, I discovered new ways to learn and realized that the "university experience" is a fallacy. I came to realize that there is no one way to experience or pursue post-secondary education. I began to enjoy online learning and often preferred it due to its accessible nature.

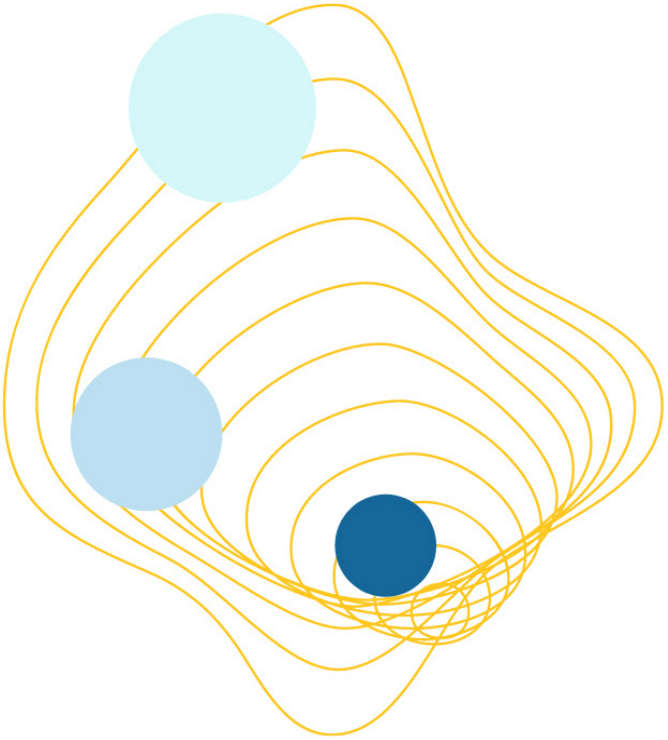
To understand the work that has gone into making online courses a viable and even preferred option. I sat down with Bettina Brockerhoff-Macdonald and Christina Sckopke of Laurentian Online, the driving force behind the development of the university's online educational material.

A Brief History of Laurentian Online

Distance education has existed at Laurentian since 1972 and has gone through many reinventions since its inception. In September of that year, the university launched its first online course, PSYCH 1105 or Intro to Psychology, designed with mature learners in mind. This course is still one of the most highly sought-after distance courses, with several sessions running throughout all semesters of the school year. This development allowed off-campus students to approach post-secondary education with a new perspective and a sense of agency. The introduction of online learning was the beginning of greater flexibility in course delivery and degree format for students at Laurentian. The Distance Education program, previously named ENVISION, was an eclectic combination of video/audio conferencing, print materials and cassettes that launched officially in 1986. Through the Northern Development Fund's financial support, ENVISION expanded its offerings beyond a single course and into the development of whole undergraduate degrees, such as liberal science and Indigenous Social Work, which could be completed entirely at a distance.

Since then, Laurentian Online, as it is known today, has become a large faction of the university staff and is supported by the efforts of the Student Success, Continued Learning and Academic Excellence Centres. What began as a single distanced course has now become an entire department dedicated to serving the interests of distance learners. Laurentian Online now focuses on translating in-person materials to fit a distanced model and develops programs and micro-credentials in close collaboration with campus faculty and other professionals in their respective fields.

The high-quality education offered through Laurentian Online has received worldwide acclaim and shows no signs of slowing down. In the past decade alone, the department has been recognized through the Award of Merit in Instructional Design for "MUSC-1101, Introduction to Music Theory I" (2017) and "EDUC-3026, Math Content Review" (2018),



as well as the National Programming Award for Programs Over 28 Credit Hours for the "Degree Completion Bachelor of Forensic Identification" (2019). These awards have been nothing more than a testament to the detail and care put into developing Laurentian Online's educational material.

Course Development

Laurentian takes extensive measures to ensure the quality of its online courses. These programs, which can take over a year to develop, are created in collaboration with experts in their fields and faculty members who have taught the material locally for years. The department makes the unique choice of ensuring all its online courses go through a rigorous peer review process, which is not mandated at universities but ensures that the quality of education online learners receive is of the highest quality. At any given moment, 25-30 programs can be in revision to keep up with the latest developments. This year, Laurentian Online is in the process of developing six new courses. They aspire to soon add a comprehensive BA in History to the program catalogue.

In addition to 4-year degrees, Laurentian Online also offers non-credit micro-credentials. On the development of these certifications, Christina Sckopke explained that "[Laurentian Online] wants to see students graduate with these extra skills. In developing these add-ons, students can graduate with credentials that will add experience in the field and put them ahead of their competition." At this time, there are 29 micro-credentials in the development process in addition to the 25 that already exist. The highly competitive BSc in Nursing is one program that greatly benefits from this. Sckopke told us, "If you look at our page, you can see that we have started developing courses to support nursing students who are getting the credits in critical care so that they can work in those extremely specific environments upon graduation. These kinds of micro-credentials are huge for students who are passionate about receiving the training they need to be successful when they apply and work in those unions." The micro-credential model can also support students who have already graduated and want to acquire more skills in several specialized areas. Online educational material is available for all members of the Laurentian community and is not limited to fully online learners. Clearly, the development of these programs seeks to benefit all of us.

Demographics

Online learning has long been praised due to the flexible nature of its course layout. For an undergraduate who may need to work to pay their way through university, a rigid course schedule does not often leave space for employment opportunities and other priorities. In choosing to study online, education can become more accessible to those who wish to learn on their own terms and at their own pace. Moreover, the systems that govern on-campus education have historically done so with a specific image in mind of what a university student looks like. This archetype is one of a young person, most likely living on campus or near their institution, who can easily get to and from their classes on time daily. This vision does not accurately reflect the reality of our in-person students, let alone online individuals.

Online programs have become an accessible mode of education for those with various disabilities, or those from remote areas for whom attending in-person lectures is unfeasible and inaccessible, incarcerated individuals, and mature learners who cannot conform to the demanding schedule of in-person programming. In 2020, Laurentian Online launched a survey to its students enrolled in fully online English and French-language degree programs to capture an accurate image of who is learning at a distance and why. Based on data from respondents, ~45% of online students are also employed full-time; ~49% have chosen to pursue an online degree due to the constraints of their work schedule, and 18.5% prefer the convenience of online learning. Family obligations (17.9%), health reasons (7.1%), and location restrictions (7.1%) were the other notable reasons students chose online education. The ages of online learners were also found to vary greatly, with 21.4% of students being in the age group 16-25, 35.7% being 26-36, 25% from 36-45, and 16.1% over the age of 46. Without the flexibility and self-directive nature of online learning, nearly half of these enrolled students would not be able to pursue their educational aspirations. This distribution illustrates that online education is the most accessible form of university education and can reach a much wider audience than on-campus programming.

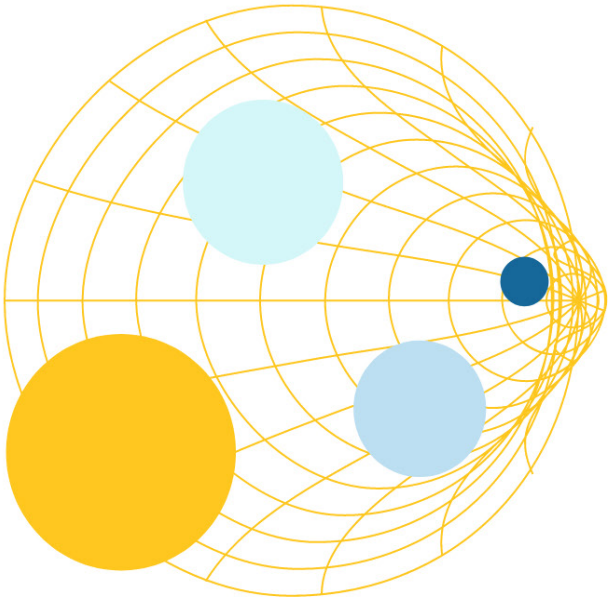
Online Learning In the Age of the Pandemic

In recent years, the demand for high-quality distance education at the post-secondary level has risen at an unprecedented rate. The COVID-19 pandemic of 2020 impacted University populations all across Ontario, and many institutions are still fighting to recover from this and increase perpetually dropping enrollment rates. It is no surprise that Laurentian, the northernmost bilingual institution in Ontario, was no stranger to these issues, either. From the initial stages of the pandemic to today, Laurentian Online has still managed to boast strong numbers. Brockerhoff-Macdonald told us that this was one of the most positive and unexpected effects of the events of 2020. In addition to seeing an unpredicted surge in online enrollments, she said,

"Historically, distanced education was approached with the ideology that if students are online, we cannot see them and don't know if they are actually behind their screens, putting in the work. During the pandemic, faculty members of remote courses were able to meet more regularly with their online learners, and educators were able to come to the realization that these students are just as dedicated and interested in learning as their on-campus counterparts. They came to understand that these are real people and good students."

Since its inception, online learning in the context of post-secondary education has been under scrutiny. The notion that online courses are of lower quality than their in-person counterparts has been a persistent belief that has led to the depreciation of the importance of alternative learning methods. The erasure of the online learner has minimized the advocacy required to accommodate their unique needs and learning styles, leaving far too many behind.

The pandemic became a great equalizer in this sense. When institutions went completely online at the height of the national lockdowns, it became evident that the archetype of the online learner did not exist; it could be any of us, and it was all of us. Educators had to address the technological gaps in their pedagogy and implement new strategies to teach at a distance effectively. Many faculty members have become so accustomed to the model of online education that it has since remained their preferred teaching method.



When the unexpected happened, educators and students adopted the long-standing learning styles and methodology of remote education and are still a part of in-person learning. As the paradigm has shifted, it is undeniable that online learning was a saving grace during an otherwise turbulent time.

Beyond education itself, Laurentian had to reevaluate its commitment to the university experience of online learners and the lack of support it offered to these students. Services that were once exclusively brick-and-mortar had no choice but to become virtual. Academic advising, health services, and course registration clinics, among several other services, became offered in a hybrid format that meant all students, regardless of their location, could easily access the unique support they required to be successful.

The Future of Laurentian Online

Laurentian University is an institution that is constantly in transition. The university has no choice but to restructure itself to serve its students well and survive uncertain times. Amid the ongoing institution-wide Strategic Planning process, I asked Brockerhoff-Macdonald where Laurentian Online will go from here and what online learners can gain from enrolling with their offices. She has a positive vision for the department's future and told us, "I think we have weathered the storm. We have proven ourselves time and time again; we have proven that we are providing quality education and that we are more than comparable to on-campus courses and degree programs, especially for those students who cannot come to campus. We are not here to displace on-campus learning or impede the on-campus experience for students. We are here to complement it, supplement it, and provide flexibility. This is our new reality. We have and will continue to provide another solution for students and faculty."

When considering the needs of the student body, we must be cognizant of our biases and our inherent instinct to neglect what we cannot see. Many of the university's departments and divisions have come to understand this and, as a result, have become close collaborators with the Laurentian Online team. Just last year, the Students' General Association, the largest undergraduate student association on campus, worked internally to provide online students with their own edition of the students' health plan so they can affordably access essential health services. This is monumental, but we cannot stop there. In truth, we cannot ever stop. We cannot ever assume that we fulfilled our duty to our students because as the world around us evolves, we can only support students if we do the same.

The future of online education is the future of the university itself. It must become an ongoing conversation and a cyclical practice of outreach and reflection. Strategic Planning offers an incredibly unique opportunity to uplift and amplify voices of the unseen and unheard among the student body and actively work against the stigma surrounding education not seen as traditional. As a student in the 3rd year of my undergraduate degree, I look forward to seeing where this journey will take Laurentian. Our institution, by virtue of its remote location and diverse student population, must be invested in all of us. In doing so, there will be no limit to the number of individuals we can reach with inclusive and accessible education.

Zarreen Brown (She/her) the current Vice President of Education and Interim President of the Students General Assembly at Laurentian University. She is entering the third year of her BSc/BEd in psychology through Laurentian's Concurrent Education program. She is also an executive member of Pride Laurentian, a resource and support centre created for and by the university's 2SLGBTQ+ population.

Enhancing the University Student Experience through Technology

Council of Ontario Universities

Written by:
Steve Orsini, President and CEO

Technology has become an integral part of our lives, impacting various aspects of society, including higher education. As it continues to advance at lightning speed, universities in Ontario continue to undergo profound transformation as they respond to the ever-evolving role of technology.

Growing advancements in technology have not only made learning more accessible and efficient, but have also augmented traditional teaching methods and classroom environments. Additionally, the use of technology in the higher education space has allowed students to access education from anywhere, breaking down barriers and ensuring equity. Moreover, through the use of improved technology-based educational data systems, universities have enhanced record-keeping, data analysis and security, helping foster an environment of continuous improvement and growth.

Whether it's through the use of the latest apps in the classroom or blockchain technology for validating student records, it is clear technology has – and will continue to – redefine higher education in Ontario and has the potential for the continued success of our students.

Adapting and Evolving Teaching Methods and Classrooms for Student Success

Globally, technology is changing the way we teach and learn, offering limitless new possibilities for the universities of today and tomorrow. Without question, technology has ushered in a new era of innovative teaching methods in higher education and Ontario's universities are at the forefront of this change, embracing innovative tech solutions to enhance and improve learning experiences.

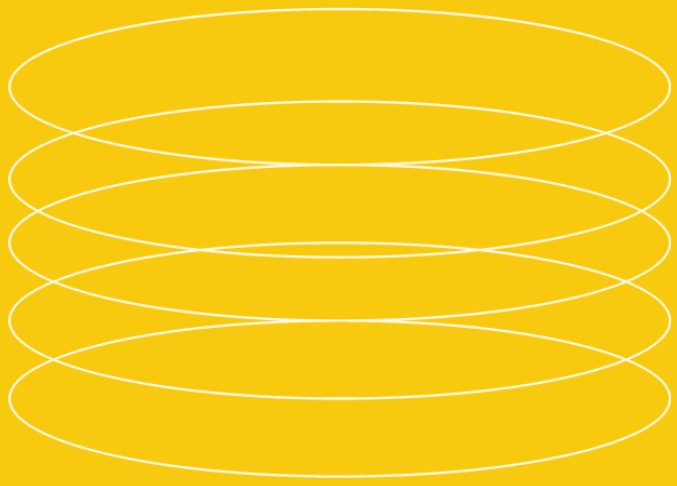
Many universities in Ontario are using virtual simulations and virtual reality technology to allow students to engage in realistic simulations and gain hands-on experience in various fields. For example, medical students can practice surgical procedures in a virtual operating room, while engineering students can explore and manipulate complex 3-D models. Additionally, some programs such as nursing also offer simulation labs equipped with advanced technologies and virtual reality, providing students with realistic patient care scenarios and allowing them to gain practical skills and experience in a safe environment.

Within other classrooms, gamification has been an effective tool to engage students and make learning enjoyable. Gamified educational platforms, quizzes and challenges motivate students to actively participate and stay invested in their studies. One Ontario university, for example, is highly engaged with cutting-edge gamification research and teaching at both the graduate and undergraduate level.

Through an innovative Game Development and Interactive Media program, and laboratory that is equipped with state-of-the art software and equipment, they are fostering the development of high-quality animation, 3D models, sound recording and production, game engines, and gameplay code as they train the next generation of game developers. Through the use of technology, Ontario's universities are providing students with the opportunity to participate in remote internships and virtual hackathons, collaborate on real-world projects with industry partners and gain valuable insights into their chosen professions, all through digital platforms.

Below are a few additional examples of how Ontario's universities are using technology to better support and enhance the student learning experience:

- Online Learning Platforms: Universities use Learning Management Systems (LMS), such as Blackboard, Canvas or Moodle, where students can access course materials, submit assignments, participate in online discussions and communicate with professors and peers. Mobile apps have also become indispensable in the learning process, providing students with the flexibility to access course materials and resources on-the-go.
- Social Media: Social media platforms are widely used by universities to create online communities, share important updates, host virtual events and provide a platform for students to connect with each other.
- Online Clubs and Organizations: COVID prompted university student clubs and organizations to transition their activities online. They used platforms like Discord, Slack or university-hosted virtual environments to continue discussions, organize events and facilitate collaboration.
- Virtual Events: Universities often organize virtual events, tours, workshops and webinars to keep students engaged and informed on various topics. These events are held via live streaming or pre-recorded videos, allowing students to participate remotely. Over the last few years, we have seen universities across the province hold hybrid graduation ceremonies to celebrate the momentous occasion while still ensuring students and families stay connected.



- Online Peer-to-Peer Support: Many universities set up online peer mentoring programs or student forums where experienced students could assist new or struggling students with academic or personal matters.
- Student Mental Health: Many universities have adopted innovative mental health programs through the use of technologies to better support students, including mobile apps that provide guiding mindfulness sessions or Cognitive Behavioral Therapy tools; counselling services like Good2Talk; and other supportive technologies, such as such as an app to help Indigenous community members find appropriate mental health supports.
- eCampusOntario Courses Portal: An online portal where learners can access information on thousands of online courses and programs from Ontario's publicly funded universities, colleges and Indigenous institutions.

As technology continues to evolve at a rapid pace, Ontario's universities will continue to adapt and evolve their teaching methods to ensure they are staying current and meeting student needs by leveraging the most effective methods and new technologies.

Student Access and Keeping Students Connected

Over the next decade, advanced technologies will put higher education within the reach of many more individuals – not just across Ontario,

but around the world. Gone are the days when students were limited to physical classrooms as now technology has helped shatter those boundaries, allowing students the flexibility to participate and learn from virtually anywhere.

Online learning has unlocked vast opportunities for life-long learning and continuing education, especially for those who face geographical barriers or have other commitments like jobs or family responsibilities, empowering individuals to upskill and stay relevant in a rapidly changing job market. As the labour market continues to change at a rapid pace, and the need to continually train and upskill adults across a variety of subjects and careers grows, Ontario's universities are adapting to meet the needs of these students, not only in the form of continuing education programs that are offered, but even in the way they're delivered.

Furthermore, technology has played a significant role in removing barriers to access. To help enhance accessibility for students with disabilities and improve remote learning for students from remote areas, northern communities, and international locations, universities are are offering more options, now, than ever before. Webinars, video conferencing, virtual classrooms and assistive technologies have facilitated improved communication between students, professors and peers, fostering a sense of belonging and community.

Ethical use of AI

As the use of artificial intelligence (AI) continues to grow, it is increasingly important to understand how to use AI ethically and responsibly. Many commentators point to the risks of AI in allowing students to create content and complete assignments. While these risks are real, many commentators also point AI's ability to support student success. AI can help detect plagiarism, provide information services through chatbots, create new learning management systems, transcribe lectures, enhance online discussion boards, analyze student learning experiences, accelerate academic research and discovery and automate administrative operations. However, as universities adopt AI, it is essential that they continue to ensure transparency, ethical use, data privacy, and data security to maintain trust among students, faculty, and stakeholders.

One Ontario university, for example, is leading the way in research, education, and training related to the ethical use of AI. Working with an advisory panel of academic and industry leaders, the university has launched a hub for artificial intelligence to grapple with ethical questions amidst growing concern around issues of privacy, bias and human-machine interaction, taking aim at regulations and public policy related to the ethics of AI technologies. Researchers will also apply AI to human and animal health, environmental sciences, food and agriculture.

Improved Educational Data Systems

Data and data analysis have always been a part of higher education. And as big data analytics continues to be a powerful tool in education, Ontario's universities are embracing modern educational data systems that are revolutionizing administrative processes. Applications, transcripts and other crucial documents, for example, are now digitized, reducing paperwork and streamlining bureaucratic procedures.

Universities are gathering and analyzing vast amounts of data, enabling them to make data-driven decisions and improve the overall learning experience. Historical data maintained through big data systems helps in identifying trends, weaknesses and strengths, thus enabling institutions to adapt and refine their educational offerings.

While the use of software like Microsoft Office 365, Google Workspace and collaborative cloud-based tools has allowed students to work together on projects and assignments remotely, the move to cloud-based systems, has also enabled universities to increase data storage capacity and scale their resources as needed. Universities are using these cloud-based technologies for student relationship building, learning management systems and assessment management applications. These technologies streamline various operations within the institutions and provide more granular data, allowing for better support and personalized attention.

In addition, the implementation of blockchain technology is helping ensure the integrity and security of academic records, making them tamper-proof and easily verifiable.

Processes such as sharing student data between institutions for a semester exchange, or student transfers, are a few instances where blockchain is is being applied.

For example, in 2019, one Ontario university announced it was awarding "digital degrees" using blockchain to Faculty Engineering students after the university implemented micro-credentials using blockchain to securely validate students' learning. Additionally, some Ontario universities are implementing pilot projects with eCampus Ontario and industry partners to award micro-credentials using blockchain.
As more and more digital tools for education emerge, the use of technology in universities continues to revolutionize administrative processes and improve efficiencies in various areas. A few examples include:

- MyCreds, which serves as a secure digital credential wallet, enabling the issuing and verification of official digital documents, such as transcripts, degrees, diplomas, micro-credentials and badges, allowing students to easily transfer credits between institutions and access a broader range of courses.
- The Ontario Universities' Application Centre (OUAC), which streamlines the application process by eliminating the need for each institution to process its own applications. This not only saves students time and costs, but also eliminates duplication of work for universities.
- The Ontario Council of University Libraries (OCUL), which facilitates the sharing of digital and print library services among Ontario's universities. By pooling resources and engaging in collective purchasing, universities are saving costs and improving access to library materials.
- The Centre for Innovation in Campus Mental Health, which has partnered with colleges and students to create a centralized resource for frontline service providers. This resource streamlines the sharing of mental health education and resources, enhancing support for students' well-being.

With the help of the latest technologies, Ontario's universities are continuously improving operations, cost savings, support services and data-driven decision-making within the higher education sector.

Conclusion

The impact of technology on higher education in Ontario has been nothing short of transformative. Today, technology is being used in increasingly strategic and innovative ways to expand access to education, improve student learning outcomes, provide greater institutional effectiveness and enable greater efficiencies.

Adapting teaching methods, leveraging online platforms and embracing cutting-edge technologies have made education more engaging, accessible and efficient. The digital transformation has helped to remove geographical and physical barriers and has made lifelong learning a reality for students from diverse backgrounds. Improved educational data systems have also helped revolutionize record-keeping, enhance decision-making and increase security.

And as technology continues to evolve, Ontario's universities must remain at the forefront of innovation, ensuring that students receive a world-class education that prepares them for the challenges of the future.

By working together with government, business and community partners, we can ensure universities have the resources they need to continue to support students, lead innovation and harness the power of technology, ensuring that higher education in Ontario is poised to lead the way in shaping a brighter and more inclusive future for generations to come.

Steve Orsini, President and CEO

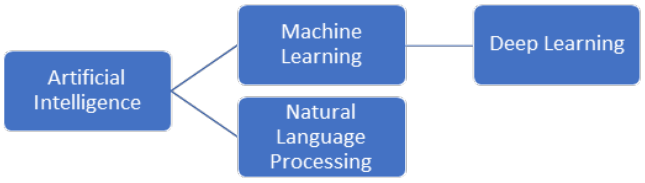
AI and Mental Health in a Post-Secondary Setting

Centre for Innovation in Campus Mental Health (CICMH)

Written by:
Cecilia Amoakohene and Tarin Karunagoda, Knowledge and Research Lead

Introduction

The use of Artificial Intelligence (AI) has gained interest and investment within our current society and has come a long way since the recognition of AI in 1956. As subsets of AI developed, they have been utilized for variety of technologies such as voice assistants, customer service bots, facial recognition and many more. Due to the limitations and challenges brought by the COVID-19 pandemic, AI tools have been a key component within healthcare. These advancements were made possible with the growth of machine learning and deep learning techniques in the early 2000s. In order to truly understand how this technology works within health care and specifically in mental health care, we must understand the distinctions between the terms. AI refers to machines that mimic human behaviour and activity. Machine Learning (ML) is a subset of AI technology that consists of a machine to use algorithms to learn patterns across data and make predictions. Deep Learning (DL) refers to a type of ML that is made to mimic the way humans may think and how human brains work. Another form of AI is Natural Language Processing (NLP) that is able to understand human language as it is spoken and writte.[1]



AI in Post Secondary Mental Healthcare

In Canada, the use of AI within clinical setting is limited as most applications are still being researched or are in development, therefore they are not yet being consistently used within post-secondary settings . However, the foci for these tools can be utilized for early detection, diagnosis purposes, prevention, prognosis, note-taking and documentation, as well as treatment. Early detection can look like identifying patterns of thought and speech to assess risk for a mental health condition. Prevention can look like having mental health supports available or have targeted educational material regarding topics on mental health. Treatment options can look like using AI bots to deliver cognitive behavioural therapy (CBT) as a first line of treatment. These tools can open doors to address shortages in mental health professionals and increased wait times, provide cost effective options, work on reducing stigma as well as managing caseloads. [2]

1 Wells, Charlotte et al. "Artificial Intelligence and Machine Learning in Mental Health Services: An Environmental Scan." Canadian Agency for Drugs and Technology in Health. Ottawa: CADH, June 2021.

2 "Artificial Intelligence in Mental Health Services: Results From a Literature Review and an Environmental Scan", Mental Health Commission of Canada, June 13 2023, https://mentalhealthcommission.ca/resource/artificial-intelligence-in-mental-health-services-results-from-a-literature-review-and-an-environmental-scan/

Kids Help Phone has been one of the few major mental health services that has incorporated AI to streamline their services. It uses AI related to NLP to classify any users who are at imminent risk to high priority so they can be connected to a human crisis worker sooner [3]. Tess, an AI chatbot used to provide personalized conversation based on mental health concerns, has shown to be effective among college students according to a 2018 study by Fulmer and colleagues[4]. It provided with support, psychoeducation and reminders which could be a resource utilized for students during wait times before seeing a mental health professional. Another AI tool used within a general healthcare setting that could be incorporated within mental health setting is the use of AI to track and control patient flow within clinics, first used by Humber River Hospital in Toronto[5]. Another exploration by the World Well-Being Project has been using an analysis of social media posts for early detection for mental health conditions such as depression, anxiety or eating disorders[6]. Additionally smart phone apps that use ML have been a resource for patients who may be going through mild to moderate symptoms of anxiety and depression. Apps such as Youper had shown a decrease of depressive symptoms by 19% with 2 weeks of the use of app as well as a decrease in anxiety by 24%[7]. However, a scoping review in 2022 stresses the need of studies with higher samples that provide stronger evidence of the effectiveness as these apps because they are not often studied consistently or among a higher number of users[8].

Privacy and Ethics

Despite the exciting avenues AI can take us within mental healthcare, the impact of using AI on patient privacy, safety, autonomy and trust must be acknowledged. This includes assessing therapeutic relationships, the competence of AI, data privacy and biases[9]. Specifically, ethical considerations can look like managing patient attachment to AI caregivers, monitoring therapeutic relationships between AI and patients, addressing liability risks that comes with autonomous AI services, assessing the competence and safety of intelligent machines, invasion of privacy through constant surveillance and data collection, ensuring patients understand how their data are used and who has access to their information, as well as automation bias[10]

Equity, Mental Health, and AI

Artificial intelligence provides us with a myriad of possibilities when it comes to supporting the mental health needs of post-secondary students. But before we dedicate ourselves to AI, we must make sure that we are implementing it equitably so that all students can benefit from it. The COVID-19 pandemic accelerated the work that was being done in the realm of AI and mental health.[11] With all of these innovations and changes, we have come to the perfect moment where there is still the opportunity to embed equity into the foundation of AI-powered mental health supports. To achieve this outcome there are some things we should avoid and some things we should be striving for.

As much as we can, we want to eliminate bias from the AI-powered mental health supports we are offering students. Bias is often introduced to these tools through the

1 "Kids Help Phone seeking help from AI tech to meet demand for mental health support," CTV News, July 5, 2023, https://toronto.ctvnews.ca/kids-help-phone-seeking-help-from-ai-tech-to-meet-demand-for-mental-health-support-1.6467525

4 Fulmer, Russell, et al. "Using Psychological Artificial Intelligence (Tess) to Relieve Symptoms of Depression and Anxiety: Randomized Controlled Trial." JMIR Mental Health, 2018, https://doi.org/10.2196/mental.9782

5 Globe Content Studio. "How AI Is Helping Shorten Patient Wait Times." The Globe and Mail, June 2019. https://www.theglobeandmail.com/business/adv/article-how-ai-is-helping-shorten-patient-wait-times/.

6 Wells, Charlotte et al. "Artificial Intelligence and Machine Learning in Mental Health Services: An Environmental Scan." Canadian Agency for Drugs and Technology in Health. Ottawa: CADH, June 2021

7 Mehta, Ashish et al. "Acceptability and Effectiveness of Artificial Intelligence Therapy for Anxiety and Depression (Youper): Longitudinal Observational Study." Journal of Medical Internet Research, June 22, 2021, https://doi.org/10.2196/26771.

8 Milne-Ives, M. et al. "Artificial intelligence and machine learning in mobile apps for mental health: A scoping review." PLOS Digital Health, 2022, https://doi.org/10.1371/journal.pdig.0000079

9 Luxton, David D. et al. "Ethical Issues and Artificial Intelligence Technologies in Behavioral and Mental Health Care." Artificial Intelligence in Behavioral and Mental Health Care, 2016, 255–76. https://doi.org/10.1016/b978-0-12-420248-1.00011-8

10 Rubeis, Giovanni. "iHealth: The Ethics of Artificial Intelligence and Big Data in Mental Healthcare." Internet Interventions, 2022, https://doi.org/10.1016/j.invent.2022.100518.

11 Kent, Jessica. "What Role Could Artificial Intelligence Play in Mental Healthcare?" HealthITAnalytics, November 29, 2021. https://healthitanalytics.com/features/what-role-could-artificial-intelligence-play-in-mental-healthcare.

data that is used to build up their knowledge repositories[12]. That data is compiled and pulled together by human beings that have their own implicit and explicit biases that impact how they see the world and perceive others. The implicit bias that can be fed into these tools can be particularly harmful because it can lead to things like over or underdiagnosis of certain populations and a focus on popular interventions that may not actually be helpful or supportive for all students[13]. Students from structurally marginalized populations, who often already face barriers to accessing mental health services, are especially at risk of being a target of technological bias which can further hinder their ability to access the supports they need. We must be proactive when it comes to eliminating bias by making sure that we are critically examining the data being used to power these mental health supports and that we have policies and practices in place to mitigate harms if they do occur.[14] [15] One researcher who has been focusing their work at the intersection of equity and ethics is Timnit Gebru, a Eritrean-born, world-renowned computer scientist and the former co-lead of Google's ethics is artificial intelligence team. Concerned about the bias being introduced into the world of AI, Gebru is actively taking steps to reduce and eliminate barriers to the equitable and ethical use of AI. She has pushed for there to be more community-based AI research through her organization the Distributed AI Research Institute[16]. Gebru believes in order for AI to be able to benefit specific communities, they must be involved in the research and building of AI models because this allows for expertise around AI, and therefore some of its power, to be spread out diffusely among various groups instead of being concentrated among a few large technology entities.[17] Gebru has also been a champion of moving away from the idea that generality is a key part of machine learning and AI and towards the idea that in order for AI to benefit the various communities it impacts it must have context from those communities built into it. Conceivably, this context would then support the AI in being better prepared to meet a community's specific needs.[18]

Aside from pushing back against bias, we also want to ensure that these AI-powered mental health supports are able to increase access to services by decreasing the barriers that students face.[19] The tools have ability to bridge service gaps by providing a touchpoint for students who go to school in areas where there may be few mental health supports on campus or in the community. [20] But in order to make sure that AI-powered mental health tools can achieve that goal, we need to make sure that post-secondary institutions have the infrastructure to be able to offer these services and that students have the tools and capacity to access them[21] [22]. The infrastructure must exist on campuses to implement these services in a way that minimizes barriers and encourages students to seek supports.

12 Timmons, Adela C. et al."A Call to Action on Assessing and Mitigating Bias in Artificial Intelligence Applications for Mental Health." Perspectives on Psychological Science, December 9, 2022, 174569162211344.

13 Ibid

14 Mathiyazhagan, S., Salam, M., Willis, H. A., & Patton, D. U. "Social work in metaverse: addressing tech policy gaps for racial and mental health equity | Internet Policy Review." Internet Policy Review. (2022). https://policyreview.info/articles/news/social-work-metaverse-addressing-tech-policy-gaps-racial-and-mental-health-equity/1619

15 Timmons, Adela C. et al." A Call to Action on Assessing and Mitigating Bias in Artificial Intelligence Applications for Mental Health." Perspectives on Psychological Science, December 9, 2022, 174569162211344.

16 Walsh, Dylan. "Timnit Gebru: Ethical AI Requires Institutional and Structural Change." Stanford University Human-Centered Artificial Intelligence, May 26th, 2022. https://hai.stanford.edu/news/timnit-gebru-ethical-ai-requires-institutional-and-structural-change.

17 Ibid

18 Ibid

19 Mental health equity achieved through innovative artificial intelligence and technology-based solutions, "University of Illinois at Chicago Centre on Depression and Resilience". 2023. https://uifightdepression.psych.uic.edu/ui-center-on-depression-and-resilience/mental-health-equity-achieved-through-innovative-artificial-intelligence-and-technology-based-solutions.

20 Noble, Jasmine M, Ali Zamani, Mohamad, Ali, Gharaat, Dylan Merrick, Nathanial Maeda, Alex Lambe Foster, Isabella Nikolaidis, et al. "Developing, Implementing, and Evaluating an Artificial Intelligence–Guided Mental Health Resource Navigation Chatbot for Health Care Workers and Their Families During and Following the COVID-19 Pandemic: Protocol for a Cross-Sectional Study." JMIR Research Protocols 11, no. 7 (July 25, 2022): e33717. https://doi.org/10.2196/33717.

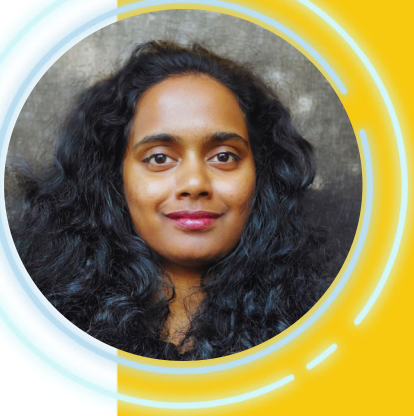
21 Kundi, Bushra, and Christo El Morr. "Need of Equity in Virtual Mental Health in Canada in the Times of COVID-19." Studies in Health Technology and Informatics, June 29, 2022. https://doi.org/10.3233/shti220737.

22 Manríquez Roa, Tania, Markus Christen, Andreas Reis, and Nikola Biller-Andorno. "The Pursuit of Health Equity in the Era of Artificial Intelligence." Swiss Medical Weekly 153, no. 1 (January 23, 2023): 40062. https://doi.org/10.57187/smw.2023.40062.

Efforts must also be made to support students in accessing the technology necessary to take advantage of these service offerings.

AI-powered mental health supports have an extraordinary amount of potential when it comes to supporting student mental health. But the only way that they can fulfill that potential is if we take an equity-minded approach to implementing and scaling them while also considering the ethical implications for students, staff, and post-secondary institutions at large.

Cecilia Amoakohene (She/They) is the Community Partnership Lead at the Centre for Innovation in Campus Mental Health (CICMH) and is currently completing their Master of Arts degree in Health Policy and Equity at York University. They have worked in the mental health and health promotion space for the last 11 years.



Tarin Karunagoda (She/Her) is a Knowledge and Research Lead at the Centre for Innovation in Campus Mental Health. She has a master's in Neuroscience and has been involved with supporting youth and post-secondary student mental health in different roles within the past 6 years.

Artificial Intelligence in Higher Education: How to Explore Horizons of Change

E-Campus Ontario

Written by:
Rocío Chávez Tellería (she/her) , Research and Foresight Associate

Over the years, news stories have consistently echoed a familiar tune – the arrival of new technologies poised to disrupt higher education. Remember the "Year of the MOOC" in 2012[1]? The Economist even pondered whether MOOCs would spell the end of traditional university degrees [2]. But as time passed, the narrative shifted, and we saw different headlines like "MOOCs Are No Longer Massive. And They Serve Different Audiences Than First Imagined" published in EdSurge [3]. Recent stories about technologies like ChatGPT have sparked debates in Forbes ("ChatGPT: A Threat To Higher Education?")[4] and The Atlantic ("Will ChatGPT Kill the Student Essay?")[5] , reflecting the ongoing cycle of technological disruption in education.

Without a doubt, artificial intelligence (AI) is poised to revolutionize postsecondary education. However, most discussions about AI in education tend to oversimplify the impact as either culmination or substitution. To make sense of this rapidly evolving landscape, it's crucial to move beyond these binary narratives and into transformational spectrums. How can we navigate the disruptions brought about by AI and envision a range of possibilities that prioritize learners' needs? Furthermore, while comparing AI to MOOCs might not be entirely accurate due to AI's broader scope, there's value in learning from past technology applications to drive meaningful and equitable transformations.

Strategic foresight methodologies provide a path forward. The Observatory of Public Sector Innovation defines strategic foresight as the ability to perceive, understand, and act upon emerging future ideas in the present [6]. Expanding opportunities for learner-driven visioning is vital to create inspiring future visions that inform present initiatives. To guide these learner-centric conversations, the Three Horizons framework offers a structured approach.

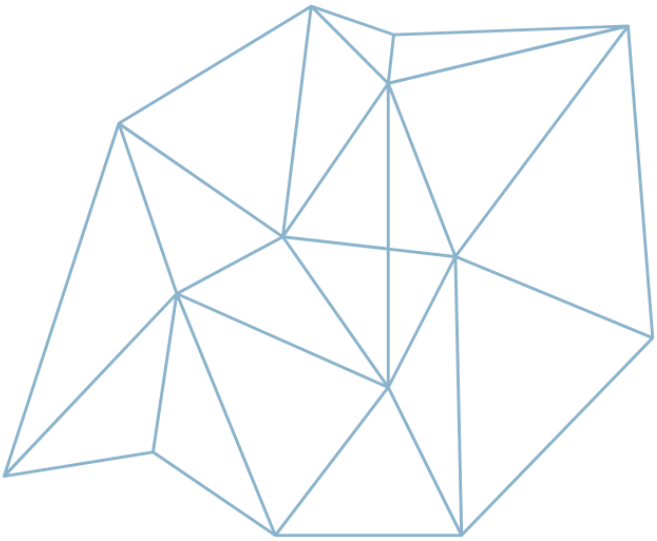
The Three Horizons framework

Bill Sharpe's Three Horizons framework[7] is a foresight technique that helps us explore the potential changes AI could bring to education. It divides the process into three waves: Horizon 1, representing the present; Horizon 3, envisioning the desired future; and Horizon 2 (examined last in the process), exploring the transitional tensions.

1 Laura Pappano, "The Year of the MOOC," The New York Times, November 2, 2012, https://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html.
2 N. L., "Will MOOCs Kill University Degrees?," The Economist, October 2, 2013, https://www.economist.com/the-economist-explains/2013/10/01/will-moocs-kill-university-degrees?utm_medium=cpc.adword.pd&utm_source=google&ppccampaignID=18798097116&ppcadID=&utm_campaign=a.22brand_pmax&utm_content=conversion.direct-response.anonymous&gclid=CjwKCAjw_MqgBhAGEiwAnYOAeh-FR1l-cQpk3agYbYZH4qLrLeNCcl-5NqvFHf877Wc6Kg2OMfUW1phoCvrwQAvD_BwE&gclsrc=aw.ds.
3 Jeffrey R. Young, "MOOCs Are No Longer Massive. And They Serve Different Audiences than First Imagined. - EdSurge News," EdSurge, August 21, 2018, https://www.edsurge.com/news/2018-08-21-moocs-are-no-longer-massive-and-they-serve-different-audiences-than-first-imagined.
4 Jason Wingard, "ChatGPT: A Threat to Higher Education?," Forbes, January 10, 2023, https://www.forbes.com/sites/jasonwingard/2023/01/10/chatgpt-a-threat-to-higher-education/?sh=607a6cb31e76.
5 Stephen Marche, "The College Essay Is Dead," The Atlantic, December 6, 2022, https://www.theatlantic.com/technology/archive/2022/12/chatgpt-ai-writing-college-student-essays/672371/.
6 Observatory of Public Sector Innovation, "Futures & Foresight," Observatory of Public Sector Innovation, n.d., https://oecd-opsi.org/guide/futures-and-foresight/.
7 Bill Sharpe, Three Horizons: The Patterning of Hope (Triarchy Press, 2020).

Understanding the present landscape: Horizon 1

Artificial Intelligence (AI), as defined by Leong and Jordan, is "the computerized ability to perform tasks commonly associated with human intelligence, including reasoning, discovering patterns and meaning, generalizing, applying knowledge across spheres of application, and learning from experience." [8] It is an umbrella term that encompasses a range of technologies such as machine learning and natural language processing (NLP). ChatGPT is one of the latest generative AI tools based on NLP that many of us have been able to experience.



In postsecondary education today, AI tools are being used in two broad ways: to increase capacity by automating tasks, and to extend capabilities by supporting analysis projects that provide new insights[9]. Some systems also allow for the overlap of these two processes (automation and analysis), like adaptive learning platforms, which can analyze learning data, ascertain learners' needs, and thus provide learning material that should help meet those needs.

As the implementation of AI in education increases, consider how is AI being used in your learning experience?

Identifying emerging changes: Pockets of the future

We at eCampus Ontario have sorted some of the emergent opportunities of AI in education into three main areas pertaining to the learning experience: 1) content and environment generation, 2) learning pathways mapping, and 3) revamped adaptive learning with virtual assistants support.

Content and environment generation pockets of the future include AI tools like ChatGPT, DALL-E and Midjourney. Other tools for text-to-3D objects are also emerging, such as Open AI's Point-E[10] and NVIDIA's Magic3D text-to-3D service in partnership with Shutterstock[11]. Combined with advances in virtual and mixed-reality technologies, these developments can allow postsecondary institutions to increase and scale mixed-reality spaces that promote experiential learning from any location[12].

Pockets of the future that aid in mapping learning and career pathways include AI applications like FutureFit AI[13]) which builds a personalized road map of learning, resources, and work opportunities by matching individual skills and interests with advanced labor market data. These systems can transform how learners navigate education and career planning throughout their lives, and how postsecondary institutions may design learning programs[14].

8 Brenda Leong and Sara R. Jordan, "The Spectrum of Artificial Intelligence Companion to the FPF AI Infographic" (Future of Privacy Forum, August 2021), https://fpf.org/wp-content/uploads/2021/08/FPF-AIEcosystem-Report-FINAL-Print.pdf.

9 Jisc, "AI in Tertiary Education. A Summary of the Current State of Play" (Jisc, June 2022), https://repository.jisc.ac.uk/8783/1/ai-in-tertiary-education-report-june-2022.pdf.

10 Kyle Wiggers, "OpenAI Releases Point-E, an AI That Generates 3D Models," TechCrunch, December 20, 2022, https://techcrunch.com/2022/12/20/openai-releases-point-e-an-ai-that-generates-3d-models/.

11 Jim Thacker, "Nvidia and Shutterstock to Build AI Text-To-3D Service | CG Channel," channel.com, March 21, 2023, https://www.cgchannel.com/2023/03/nvidia-and-shutterstock-to-launch-ai-based-text-to-3d-service/.

12 eCampusOntario, "Ubiquitous Learning: From Anywhere, at Anytime Scaling Ubiquitous Learning an Ecosystem That Enables Learning from Anywhere, at Anytime" (eCampusOntario, 2022), https://vls.ecampusontario.ca/wp-content/uploads/2022/11/Ubiquitous-Learning_04_EN_20221117_Tagged_Fixed.pdf.

13 "RBC Upskill: Discover and Unlock Your Career Potential," RBC Future Launch, February 18, 2023, https://www.rbc.com/en/future-launch/resource-type/tools/rbc-upskill/.

14 eCampusOntario, "Navigating Lifelong Learning Navigating Lifelong Learning Landscapes, Maps, Signposts, and Exploration Hubs" (eCampusOntario, 2023), https://vls.ecampusontario.ca/wp-content/uploads/2023/03/LifelongLearning-EN-04-20230309-1651-TAGGED-FINAL.pdf.

Pockets of the future that integrate AI and adaptive learning, like Cerego[15], hold immense potential. Natural language processing, as seen in ChatGPT, bridges gaps in assessing complex skills like essay writing. Chatbots in adaptive learning platforms can enhance personalized support for learners as they engage with learning content.

To consider further: what other "pockets of the future" or emerging changes have you identified that could transform your learning experience?

Visualizing a future: Horizon 3

The next step is to extrapolate the possibilities opened by the "pockets of the future" and visualize a desirable future. These questions will help you and your peers start the conversation:

- What could work-integrated learning opportunities look like in a world with 3D immersive environments generated by AI tools?
- What would learner support services look like when learning opportunities are suggested and mapped by AI-assisted systems?
- What would mentorship and feedback look like when working with AI-assisted content generation tools, adaptive learning systems, and AI-assisted evaluation tools?

To consider further: What other questions can you ask to prompt the visualization of desirable futures? What does your desirable future look like?

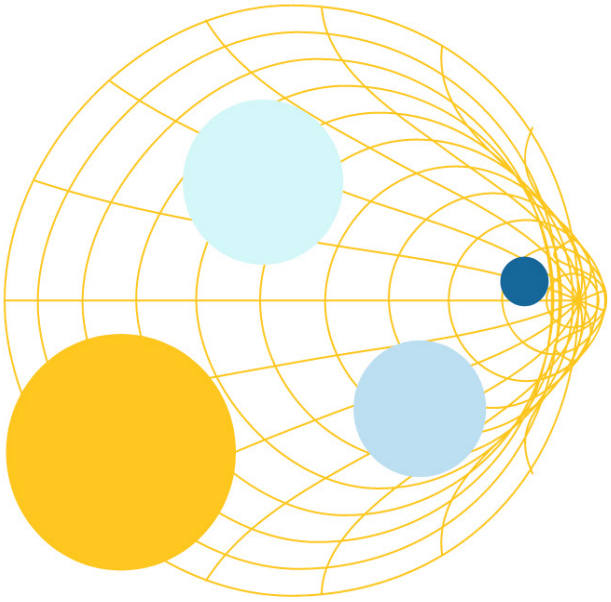
Exploring transitional tensions: Horizon 2

In the Three Horizons approach, the final step involves delving into the transitional challenges situated between Horizon 1 and Horizon 3. Insights from previous technology applications in education can shed light on critical pitfalls of technocratic hypes, essential for fostering genuinely transformative and equitable futures. Extensive research by Justin Reich, MIT researcher and director of the Teaching Systems Lab, has dissected past promises and anticipated transformative impacts of educational technologies, uncovering reasons for their failure to revolutionize education.

Reich's observations crystallize into four transformation traps: 1) routine assessment, 2) the toxic power of data and experiments, 3) the EdTech Matthew Effect, and 4) the curse of the familiar[16].

The initial trap, routine assessment, underscores the limitation of computers assessing only within their capabilities. AI tools like ChatGPT and Midjourney demonstrate computer capabilities nearing human complexity, prompting a reevaluation of assessment methods whether they provide insight into the most valued inherently human skills, such as creativity, empathy, and contextualized intelligence. Consider what types of assessments would provide learners with the necessary experience and feedback for constant improvement?

The second trap, the toxic power of data and experiments, highlights our increasing reliance on quantitative data to refine learning experiences. Although learning analytics track engagement patterns, completion times, retries, and pitfalls, they lack qualitative insights into why learners engage the way they do. Consider what type of relational spaces with educators and peers would help students flourish? What would policies that safeguard learners' privacy and empowerment over their data look like?



15 Inc, Memre ai. n.d. "Cerego: Supercharge Your Learning Ecosystem." www.cerego.com. Accessed August 18, 2023. https://www.cerego.com/.
16 Justin Reich, Failure to Disrupt (Harvard University Press, 2020).

The third trap, the EdTech Matthew effect, alludes to a systems theory principle where interventions meant to enhance equity inadvertently favor the privileged, exacerbating inequality gaps. Consider, what learner oversight and interventions need to be supported to ensure equitable design and use of generative artificial intelligence?

Lastly, the familiarity curse, Reich's fourth trap, warns that despite technological advances, without pedagogical innovation at the core, educational progress stagnates. Key to understanding the curse of the familiar are these questions:

- What are the core metaphors and paradigms shaping our visions of technology in education?
- What are the metaphors underpinning how we understand education itself? Is it about students as "receivers" of knowledge and teachers as "transmitters"?
- Is improving learning a matter of increasing the "effectivity" of knowledge transfer? Or are we focusing on the collaborative construction of knowledge and its creative applications?
- What type of learning experiences help students develop the necessary knowledge, skills, and networks for the current and future context?

These questions are particularly important as the metaphors and paradigms we use to frame the visions and possibilities for AI in education will likely shape its outcomes.

To consider further: What other traps or tensions would impact the transitions between the current state of AI in education and your desirable future vision?

An open invitation

We invite you to use this article as a guide to run your own Three Horizons exercise with your peers. You can also find a guide and template for the Three Horizons method at the end of our Connected Education: Learning Ecosystems foresight report[17].

We are open to engage with Ontario learners, as collaboration will continue to be increasingly important to envision shared future visions and present-day actions that enable positive digital transformation. Contact the Research and Foresight unit at eCampusOntario at research@ecampusontario.ca.

Rocío Chávez Tellería (she/her) , Research and Foresight Associate

17 eCampusOntario, "Connected Education Learning Ecosystems Exploring Networks Co-Created for Purposeful Collaboration and Coordination of Learning" (eCampusOntario, 2023), https://vls.ecampusontario.ca/wp-content/uploads/2023/02/LearningNetworks_EN_05-20230203-FINAL-20230203-1154-TAGGED.pdf.

Critical Need to Better Understand the Opportunities and Challenges Inherent in Deploying AI Systems to Support Teaching, Learning, and Assessment

Contact North I Contact Nord

Written by:
Maxim Jean-Louis, President-Chief Executive Officer and the Contact North/Contact Nord Team

The launch of ChatGPT3 in November 2022 prompted several educational institutions to ban its use, citing problems of plagiarism and cheating by students[1]. Others have adopted it, while pointing out significant performance problems – bias, errors, hallucinations, lack of traceable sources, and limited response for subjects with fewer than ten thousand source objects [2]. Still, others have raised concerns about intellectual property rights[3]. For example, Indigenous academics have pointed to the misunderstanding of their culture and the appropriation of objects in some AI art generators[4].

Today, we look forward to the arrival of GPT5 in 2024. It promises to enable richer inputs – audio, video, text, multilingual inputs, voice and facial recognition, and gesture control – with even richer products, including art, music, regenerated voices, and hyper-narrated simulations that allow students to have conversations with John Diefenbaker, William Shakespeare, Sigmund Freud or Gordie Howe[5]. GPT5 will also offer specific educational services to "learn anything, anywhere, anytime, through personalized learning, peer support and access to expert tutoring"[6]. Open AI will launch an academy with free courses and study programs. In addition, anyone will be able to create and offer their own courses, with quality assurance guaranteed by market response rather than a regulatory authority.

Every day, around 30 new AI-based tools and applications are launched[7], which are as diverse as simple text data analysis systems, faster video and audio production and editing, image generation, programming, and psychological support for people suffering from depression and anxiety. Developments in AI are evolving much more quickly than policymakers, college and university managers, staff and students can evolve. These developments are forcing our institutions and policymakers to respond, and to do so in a way that is both supportive and preserves the integrity of academic work, teaching, learning and assessment.

10 Major issues

The challenges and concerns associated with major language models such as GPT3.5 are now well known. They include, but are not limited to, the following:

1. **Limited understanding:** Many automated AI systems – whether writing or analytical aids – can produce incorrect or problematic answers or analyses. The systems are "trained" on very large datasets and, although they can produce excellent answers, they also sometimes fail to provide appropriate answers, due to their limited understanding and incomplete access to documents. Not only are AI systems subject to certain biases, but errors also occur. Although the situation is improving – there is a significant difference between the documents produced

1 Castillo, Evan. "These Schools Have Banned ChatGPT and Similar AI Tools | BestColleges." BestColleges. Last modified March 27, 2023. https://www.bestcolleges.com/news/schools-colleges-banned-chat-gpt-similar-ai-tools/.
2 Mintz, Steven. "AI Unleashed." Inside Higher Ed | Higher Education News, Events and Jobs. Last modified December 15, 2022. https://www.insidehighered.com/blogs/higher-ed-gamma/ai-unleashed.
3 "IP and Frontier Technologies." WIPO - World Intellectual Property Organization. Accessed August 24, 2023. https://www.wipo.int/about-ip/en/frontier_technologies/.
4 Hendrix, Justin. "An Indigenous Perspective on Generative AI." Tech Policy Press. Last modified January 30, 2023. https://techpolicy.press/an-indigenous-perspective-on-generative-ai/.
5 Marshall, Colin. "Thanks to Artificial Intelligence, You Can Now Chat with Historical Figures: Shakespeare, Einstein, Austen, Socrates & More." Open Culture. Last modified January 13, 2023. https://www.openculture.com/2023/01/thanks-to-artificial-intelligence-you-can-chat-with-historical-figures.html.
6 AI Revolution. "OpenAI CEO Sam Altman Reveals Shocking GPT-5 Details + OpenAI Academy." YouTube. n.d. Accessed August 24, 2023. https://www.youtube.com/watch?v=tAGQY9_2Heo.
7 "There's An AI For That." Cloudflare. Accessed August 24, 2023. https://theresanaiforthat.com/#switch.

2. **Lack of personalized support:** AI systems are generally not able to provide personalized support to students regarding their individual needs and learning styles. Indeed, the lack of empathy and genuine connection with users is one of the main criticisms levelled at many current AI systems. Although work is underway to add 'artificial empathy' to systems that have direct contact with customers, the creation of good customer relationships is rare; this is especially true with customers from ethnic minorities or Indigenous peoples. While GPT5 aims to change this, it will be a challenge given the biases implicit in most AI systems.

3. **Reliance on technology:** The use of AI as a support resource relies on technology and access to the Internet; however, this resource is not available to every student in Canada. This could create a digital divide where some individuals have better access to support resources than others. During the pandemic, this was a very real problem. While technology loan programs can help, the real issue is access to affordable and reliable broadband, especially in rural and northern regions.

4. **Ethical considerations:** The use of chatbots in education raises ethical considerations, in particular the risk of becoming highly dependent on automated assistance or misunderstanding the limits of chatbots; a 'discussion' with a digital tool is not on an equal footing with a conversation between students and teaching staff. Chatbots can only use the data and algorithms available; they do not have access to intuition, they don't know the individual or the class of which an individual is a member, nor do they understand the difficulties that many people have with specific forms of learning.

5. **Limited scope:** AI systems can only provide support in the context of their programming and 'training'. If the question asked or the problem presented does not fall within this framework, the system cannot provide a useful answer. For example, most AI systems are unable to predict the economic future. Chatbots and other AI systems need to be trained to answer questions. Here's a very concrete example: ChatGPT had to answer all the questions in the Institute of Chartered Accountants of England and Wales insurance exam. It scored 42%, below the pass mark of 55%. There is a clear systemic weakness when nuanced understanding and perspectives are required. There were also some poor answers and questionable mathematics.

6. **Lack of transparency:** The data sources or reference material used to create answers in an AI system are not always obvious. This shortcoming, however, has improved significantly in GPT4 and is likely to offer greater transparency in GPT5.

7. **AI misuse:** AI systems such as ChatGPT can be used by students to cheat in exams and assessments. Some colleges and universities, concerned about this possibility, have sought to ban it, as have others. The concern about the misuse of AI is real and has led to the creation of a new type of plagiarism detection system capable of detecting AI-generated material.

8. **False positives** in AI detection systems: Students have been accused of cheating by AI, even though they are innocent, with some groups experiencing this more than others (e.g. religious minorities). Yet institutions trust their detection systems more than they trust student statements [8]. Legal proceedings are in progress. Given the limitations and concerns, instructors are being advised not to elevate an 'AI detected' message to disciplinary action, but instead to ask the student to show and explain their work and working methods[9].

9. **Privacy and security:** There are concerns about access to data shared with a large language model and about the privacy and security of these systems[10]. Colleges and universities, already concerned about cybersecurity, have expressed serious concerns about data breaches.

10. **Environmental damage:** AI systems, which make extensive use of cloud computing services, consume a large amount of energy needed to cool the server farms used by cloud providers such as Amazon, IBM, Microsoft, Google, and Oracle. AI systems are already overtaking the aviation industry in terms of CO2 emissions[11].

8 Mollenkamp, D. 2023. "How Does a Tool That Detects Cheating with ChatGPT Grapple with 'False Positives'?" EdSurge (blog), July 11. https://www.edsurge.com/news/2023-07-11-how-does-a-tool-that-detects-cheating-with-chatgpt-grapple-with-false-positives.

9 Jimenez, K. 2023. "Professors are Using ChatGPT Detector Tools to Accuse Students of Cheating. But What if the Software is Wrong?" USA Today, April 12th. https://www.usatoday.com/story/news/education/2023/04/12/how-ai-detection-tool-spawned-false-cheating-case-uc-davis/11600777002/

10 Stewart, D., Bucallie, A., and Crossan, G. 2021. "Keeping AI private: Homomorphic encryption and federated learning can underpin more private, secure AI." Deloitte Insights (blog), December 1. https://www2.deloitte.com/us/en/insights/industry/technology/technology-media-and-telecom-predictions/2022/homomorphic-encryption-federated-learning.html.

11 M Maslej, N., Fattorini, L., Brynjolfsson, E., Etchemendy, J., Ligett, K., Lyons, T., Manyika, J., Ngo, H., Niebles, J-C., Parli, V., Shoham, Y., Wald, R., Clark, J., and Perrault, R. 2023. The AI Index 2023 Annual Report. Stanford, CA: AI Index Steering Committee, Institute for Human-Centered AI, Stanford University. https://aiindex.stanford.edu/report/.

The need for AI skills and education

These ten issues (and others that space does not allow us to explore) suggest the need for a better understanding among faculty, students, and officials of the opportunities and challenges inherent in deploying AI systems to support teaching, learning, assessment, and school services. Instead of focusing on the negatives and challenges, institutions should foster learning pathways with students and teaching staff that cultivates effective use of AI tools as digital assistants.

Five main features of this type of education seem important for learning to use AI responsibly:

1. Ethics and integrity – understand the appropriate use of AI tools and be able to identify harmful and unethical practices.
2. Critical analysis and evaluation – acquire the systematic approaches and skills needed to analyze and evaluate the 'products' of AI systems, whether text, images, code, music, video, or other products.
3. Bias detection and cultural sensitivity – understand and be able to assess the extent of bias in AI responses and enable the design of queries to minimize or eliminate bias. Help train AI systems to better understand cultural differences and subtleties; for example, queries can improve the ability of large language models to learn and preserve native languages.
4. Traceability and data sources – before using data provided by AI, ensure that the sources used are recognized and understood.
5. Intellectual property – understand the concerns and identify the issues related to the use of intellectual property by AI systems, including that from open sources that require recognition.

Policies and support

At the same time, colleges and universities need to be explicit in their policy statements. Given the nature of academic freedom in universities, each course syllabus must include a clear and explicit statement about the acceptable and unacceptable place of AI in the work completed by the student body. All institutions must have clear and explicit policies on the appropriate and inappropriate use of AI tools for assignments and assessments[12]. They must also be wary of the use of plagiarism detection software, considering the risk of false positives[13] and the issues of trust that may arise from the use of such tools.

Need to be lifelong learners

The widespread deployment of AI tools that act as digital assistants for learning and research should be welcomed. Clear guidance at the institutional level regarding their use is required. Some are well advanced in this work. Others are 'catching up'. Given the speed at which AI deployments are occurring, we all need to be lifelong learners.

Maxim Jean-Louis, President-Chief Executive Officer

12 Higher Education Strategy Associates. "HESA's AI Observatory: What's New in Higher Education." HESA. Last modified August 18, 2023. https://higheredstrategy.com/hesas-ai-observatory-whats-new-in-higher-education-aug-11-2023/.

13 Kleerekoper, Anthony, and Andrew Schofield. The False-Positive Rate of Automated Plagiarism Detection for SQL Assessments. Association for Computing Machinery, 2019. https://dl.acm.org/doi/10.1145/3351287.3351290.

Empowering Post-Secondary Students: Applying AI to Scale Student Support and Personalize Learning

Chegg

Written by:
Nina Huntemann, Ph.D. Chief Academic Officer
Brittany Washington, M.Ed. Academic Research Analyst

Introduction

For more than a century, the methods for teaching and learning in post-secondary education have not changed. These methods are deeply ingrained in the credit-hour model, which measures student learning and progress toward a degree based on time spent in the classroom, not on what a student has learned. This model is based on a one-size-fits-all approach to teaching a set curriculum to all students at the same pace regardless of individual learning needs. And at the end of the term, learning is assessed in the same manner across all students.

University enrollments are changing. A 2022 Student Behavior Study conducted by Chegg's Center for Digital Learning discovered that 29% of Canadian university students are 25 or older, 25% are employed[1], and 15% are the first in their families to attend university[2]. The learning needs of these students differ from the needs of an 18-year-old student who is a second-generation post-secondary student. Even among similar demographic groups, students come to university with widely different interests, levels of academic preparedness, and learning goals. The one-size-fits-all education model is not working for the reality of students today. In a 2022 survey of Canadian post-secondary students, only 11% feel completely supported by their college/university[3]. Additionally, the survey found that 40% of students have considered dropping out of their college or university program, marking a 5% increase from 2021.

To catch students who fall out, there is increasing pressure on universities to extend and broaden their student support services. Writing centers, mental health services, tutoring services, career centers, residential and commuter services, and academic counseling are scrambling to meet student demand. While technology solutions for student support, including systems enabled with artificial intelligence (AI), have been available for years, the popularity of ChatGPT and other generative AI systems since late 2022 has sparked a much-needed conversation in higher education about how to further leverage artificial intelligence to provide flexible and inclusive learning environments and better support students. We see two promising applications of AI that could significantly expand access to academic support and accelerate student achievement.

Unlike previous generations, today's Canadian post-secondary students are tech-savvy and inclined towards academic experiences reflecting their technology-driven lifestyles. In 2022, KPMG in Canada found that 80% of Canadian post-secondary students want educational experiences that match their digital lifestyle[4].

1 Chegg. (2023). Student view: A deep dive into the student experience in US, Canadian, and UK higher education. Chegg Center for Digital Learning. https://www.chegg.com/about/wp-content/uploads/2023/06/Reviewed_Student-Behavior-White-Paper_V11_27.06.pdf

2 Hanover Research. (2022). Chegg student behavior study. [Unpublished report]

3 Reid A. (2002). 2022 Canadian student wellbeing survey. https://www.studiosity.com/hubfs/2022-STUDENT-WELLBEING-CANADA.pdf?utm_campaign=CAN%20-%20Studiosity%20-%20Student%20Wellbeing%20Report&utm_medium=email&_hsmi=230210230&_hsenc=p2ANqtz-8_x5afa03ejrgSkRog4uFTC9GqNXgONg6wrbOvsehsKNT_cnkFzZlYeg41lfLQaPC8l6AFbFUAR15U-B8rpsPzYXaVHG-pd19MTgKjBgO2D0mwE8Qk&utm_content=230210230&utm_source=hs_automation

4 KPMG. (2022). Reimaging student experience in higher education. https://assets.kpmg.com/content/dam/kpmg/ca/pdf/2022/03/reimagining-student-experience-in-higher-education-final-en.pdf

Students anticipate a widespread integration of advanced technology, with 69% believing it will be commonplace in classrooms [5]. Also, students seek greater involvement in their coursework and want learning tools and resources that align with their individual needs. For almost a quarter of students (22%), having learning experiences personalized to their learning needs plays a significant role in shaping their student experiences alongside digital access to information (22%)[6].

Students aspire to actively shape their learning experiences and seek greater accessibility and flexibility in accessing information. Our 2022 Student Behavior Study echoed these findings, revealing that over half (59%) expect their institutions to provide customized learning resources that align with how they learn best[7]. However, our findings suggest that many Canadian university students lack this level of individualized support[8]. More than half (57%) feel unsupported by their institutions due to the absence of such resources.

These findings underscore the need for Canadian universities to address this gap and recognize the unique needs of learners. One obstacle to creating truly personalized learning for post-secondary students has been the time and cost required to adapt existing material, create new learning content, and provide individualized feedback. By leveraging the power of generative artificial intelligence, universities can now provide tailored educational content that addresses each student's specific needs and preferences.

Unlocking Potential: The Power of Personalized Learning

Personalized learning shifts the emphasis of higher education from teacher-centered to student-centered[9]. This approach acknowledges that students learn best when actively engaged, motivated, and have ownership of their learning. In personalized learning environments, students are not restricted to a rigid curriculum, predetermined learning materials, or a set pace for learning. As the post-secondary student population continues to evolve, becoming more diverse, older, and bearing numerous responsibilities and interests beyond their academic pursuits, the significance of personalized education becomes increasingly invaluable. For example, hybrid/flexible learning, asynchronous instruction, and self-paced course modules provide the flexibility students need to balance their education with work and family responsibilities. Also, when designing curriculum, ask students for their interests and career goals and then connect that to course material and assessments. Personalizing instructional content in this way can motivate students to stay engaged in their studies.

In addition to supporting the growing diverse student population, personalized learning is also valuable for supporting neurodiverse learners and students with learning differences. By recognizing and accommodating diverse learning needs, personalized learning enhances accessibility for students with varying cognitive abilities. And adjusting teaching and learning strategies for neurodiverse students and students with learning differences can have universal benefit to all students. For example, recording lectures, closed captioning video, and providing transcripts allow students to slow down, speed up or review challenging segments of video, and read as well as watch and hear what was spoken. For assignments, providing students with several options for how they demonstrate their learning.

Embracing personalized learning can unlock transformative capabilities for learners. However, the true magnification of personalized learning can be achieved by leveraging the potential of generative AI.

Amplifying Personalized Learning through Generative AI

A significant challenge of implementing personalized learning has been the time and cost of creating customized learning material and assessments attuned to each student. We see the transformative power of generative AI and large language models to enable the promise of personalized learning for every student.

5 KPMG. (2022). Reimaging student experience in higher education. https://assets.kpmg.com/content/dam/kpmg/ca/pdf/2022/03/reimagining-student-experience-in-higher-education-final-en.pdf
6 KPMG. (2022). Reimaging student experience in higher education. https://assets.kpmg.com/content/dam/kpmg/ca/pdf/2022/03/reimagining-student-experience-in-higher-education-final-en.pdf
7 Hanover Research. (2022). Chegg student behavior study. [Unpublished report]
8 Chegg. (2023). Student view: A deep dive into the student experience in US, Canadian, and UK higher education. Chegg Center for Digital Learning. https://www.chegg.com/about/wp-content/uploads/2023/06/Reviewed_Student-Behavior-White-Paper_V11_27.06.pdf
9 Alamri, H.A., Watson, S. & Watson, W. (2021). Learning technology models that support personalization within blended learning Environments in higher education. TechTrends 65(1), 62–78.
10 Hamilton, L., & Petty, S. (2023). Compassionate pedagogy for neurodiversity in higher education: A conceptual analysis. Frontiers in Psychology, 14, 1093290. https://doi.org/10.3389/fpsyg.2023.1093290

Generative AI is a form of artificial intelligence that can create new, original content based on data sets the AI model has been trained on. Capabilities exist to generate content in various formats, including text, images, video, and sound. Large language models (LLMs) are a kind of generative AI that specializes in understanding and generating human language. At Chegg, we are leveraging generative AI and large language models built specifically for learning to create an interactive AI companion for students to eventually offer personalized learning support through real-time conversational guidance and feedback.

By employing generative AI tools alongside adaptive assessments and activities, targeted remediation is possible, offering additional practice exercises or suggesting specific resources to aid learners in overcoming difficulties and reinforcing their comprehension[1]. The generative capabilities of AI make it possible to provide solutions and create in-the-moment quizzes and other learning activities to evaluate students' knowledge as they learn. Additionally, the technology can customize recommendations and content to address identified gaps.

Despite growing concerns about generative AI among educators, many are beginning to see its potential benefits in enhancing teaching and learning but with boundaries. Our global survey of educators found that nearly three-quarters (74%) of Canadian educators believe that generative AI will benefit future generations of students[12]. Additionally, we found that 82% of Canadian educators believe generative AI should be used for teaching and learning but use should be limited[13]. These findings suggest that educators hold an optimistic view about the reliability and potential of generative AI as a tool for learning.

The traditional approach to higher education no longer meets the diverse needs of today's post-secondary students. Integrating AI-driven personalized learning provides a viable solution by providing customized, tech-driven learning experiences that resonate with evolving student demographics. This shift has the potential to foster a flexible, adaptive, and inclusive learning environment for students leading to improved outcomes and overall satisfaction with their educational experiences.

Nina Huntemann,
Ph.D.
Chief Academic Officer

Brittany Washington,
M.Ed.
Academic Research Analyst

11 Office of Educational Technology. (2023). Artificial intelligence and the future of teaching and learning: Insights and recommendations. https://www2.ed.gov/documents/ai-report/ai-report.pdf
12 Hanover Research. (2022). Chegg brand equity analysis. [Unpublished Report].
13 Hanover Research. (2022). Chegg brand equity analysis. [Unpublished Report].

Managing Disruption: Generative Artificial Intelligence and Academic Integrity

Wilfrid Laurier University Students' Union

Written by:
Ian Muller, Director, Policy Research and Advocacy

Technological change is continual but often inconsistently applied in post-secondary teaching and learning. As an elder millennial I can still remember professors in undergraduate classes grumbling about email use mandates or struggling to orient a piece of paper on the new digital overhead projector. With time comes adaptation and innovation in the classroom. The seemingly whiplash speed at which generative artificial intelligence (GenAI) programs have entered educational spaces raises familiar questions about how these tools will be incorporated into post-secondary instruction and assessment.

It is important to first note that defining artificial intelligence (AI), and specifically GenAI is complicated as the technology is changing rapidly and in a decentralized fashion encompassing private companies, not-for-profit organizations, and educational institutions. For the purpose of this article "GenAI" will be used broadly to include large language models, art systems, chat bots and other systems relevant to post-secondary education.

Looking specifically at coursework assessment, digital tools have been increasingly utilized by faculty members since their popularization in the mid-aughts. Plagiarism detectors like Turnitin use a dropbox submission tool to collect student written work and compare it with other papers submitted to the international Turnitin database. The dramatic pivot to remote learning necessitated by the COVID-19 pandemic further propagated assessment tools like Respondus Lockdown Browser, which is a program that blocks other software from operating on students' computers to prevent consulting search engines, communicating on messaging platforms, or using other digital aides while completing an online test or assignment. Respondus Monitor, a feature that can be added to Lockdown Browser, requires students to use a webcam to record video of themselves during an online exam. Monitor and similar programs from competitor services use AI to analyze video for perceived anomalies or unnatural movements that may indicate academic misconduct. A variety of concerns have emerged with these tools, including student privacy issues and the perpetuation of inequality and structural oppression related to the use of facial detection[1]. In the urgency to adapt to the online learning environment, these emerging issues were too often overlooked in order to bluntly address a perceived rise in academic misconduct cases.

With the release of ChatGPT and other similar GenAI tools, post-secondary educators have quickly mobilized to identify relevant issues and concerns. Institutional working groups and teaching and learning centres have held workshops and put together resource guides in advance of the fall 2023 term. Open questions span policy, pedagogy, access, and academic integrity. There is consensus that it will be critical for instructors and students to understand how and when GenAI tools can be used. Where is the line between an assistant software like Grammarly and a large language model GenAI tool like ChatGPT? This question only becomes more complicated as companies like Microsoft formerly incorporate GenAI into products like

1 Shea Swauger, "Software that monitors students during tests perpetuates inequality and violates their privacy," MIT Technology Review, August 7, 2020, https://www.technologyreview.com/2020/08/07/1006132/software-algorithms-proctoring-online-tests-ai-ethics/#:~:text=It's%20become%20clear%20to%20me,often%2C%20a%20civil%20rights%20violation.

Word, Excel, and Powerpoint [2]. Institutional policy clarifications that reflect these developments will be important guidelines for ensuring that GenAI use upholds the principles of academic integrity.

With the growth of available GenAI programs comes digital tools claiming to efficiently identify AI-assisted academic misconduct. GenAI detection as a practice, however, remains problematic. For example, researchers from Stanford University argue that GenAI detectors are biased against non-native English writers. The study found that detectors for programs like ChatGPT consistently misclassified non-native English writing samples as AI-generated[3]. Turnitin quickly produced its own AI writing detection service, however many Canadian universities opted to disable that feature for institutional users. The University of British Columbia indicated it was not able to adequately review and validate the accuracy of this feature following the limited notice from Turnitin of its release and was not confident that the service would be able to keep pace with the rapidly evolving language models[4].

The key to successfully navigating the disruption caused by GenAI lies with intentional pedagogy. Trying to match rapid developments in AI technology with detection software or other technology-based solution is futile. Instead of engaging in a digital arms race to prevent AI-assisted academic misconduct, learning outcomes will need to reflect the prevalence of AI in the workforce. Coursework can be designed to critically engage with GenAI and assessment can take different forms to emphasize evaluative methods that are less likely to be manipulated. In their chapter from Re-Imagining University Assessment in a Digital World, Margaret Bearman and Rosemary Luckin outline that assessments should increase a student's long-term ability to work and learn, including in future employment environments. They argue that "if future employment relies on a possibly exponential integration of intelligent machines into the workplace, then it is critical that universities recognise this both in their curricula in general and in their assessment in specific."[5]

Assessment strategies must be the product of a broader pedagogy that treats students as knowledge creators and not simply consumers. In Pedagogy of the Oppressed, Paulo Freire critiques the "banking" concept of teaching where education becomes an act of depositing and students are the depositories. Instead of communicating, the "teacher issues communiques and makes deposits which the students patiently receive, memorize, and repeat."[6] This type of transactional learning environment is ripe for academic misconduct as the student can become alienated from the educational goals. In Radical Hope: A Teaching Manifesto, Kevin Gannon advocates for learner-centred teaching. Influenced by Freire, Gannon maintains that students learn better when they are valued members of the class community and see that what they are learning is personally relevant. This includes allowing students to see part of themselves or their identities within the knowledge they encounter through their coursework.[7]

In a well circulated May 2023 Twitter thread, Assistant Professor of Religious Studies at Elon University Dr. Chris Howell explained how he incorporated ChatGPT into a class assignment. Howell provided a standardized essay prompt for ChatGPT and then instructed his students to grade the work that the GenAI tool produced. The exercise demonstrated to students the real reliability issues that plague GenAI, but in a way that highlighted the value of their own critical analysis skills[8]. From an academic integrity standpoint, creating an assignment where students create knowledge about GenAI fosters both a critical perspective about the tool and decreases opportunities for misconduct.

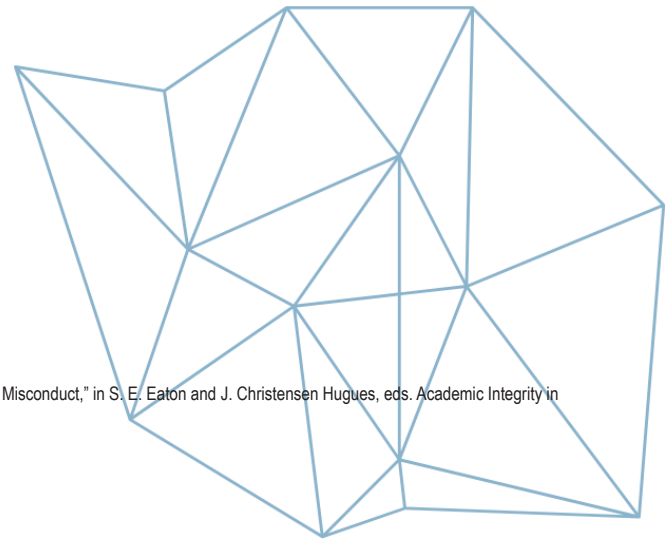
2 Jonathan Vanian, "Microsoft adds OpenAI technology to Word and Excel," CNBC, March 16, 2023, https://www.cnbc.com/2023/03/16/microsoft-to-improve-office-365-with-chatgpt-like-generative-ai-tech-.html.
3 Weixin Liang, Mert Yuksekgonul, Yining Mao, Eric Wu, and James Zou, "GPT detectors are biased against non-native English writers," Patterns 4, no. 7, July 14, 2023, https://doi.org/10.1016/j.patter.2023.100779.
4 "UBC not enabling Turnitin's AI-detection feature," The University of British Columbia, April 4, 2023, https://lthub.ubc.ca/2023/04/04/ubc-not-enabling-turnitins-ai-detection/.
5 Margaret Bearman and Rosemary Luckin, "Preparing University Assessment for a World with AI: Tasks for Human Intelligence," in Margaret Bearman, Phillip Dawson, Rola Ajjawi, Joanna Tai, and David Boud, eds. Re-Imagining University Assessment in a Digital World (Springer Cham, 2020), 49, https://doi.org/10.1007/978-3-030-41956-1.
6 Paulo Freire, Pedagogy of the Oppressed (Great Britain: Penguin Random House UK, 1993), 45.
7 Kevin M. Gannon, Radical Hope: A Teaching Manifesto (Morgantown: West Virginia University Press, 2020), 60-62.
8 C. W. Howell, "ChatGPT and the University's "Existential Crisis," www.cwhowell.com, June 24, 2023, https://www.cwhowell.com/chatgpt-and-the-universitys-existential-crisis/.

Whether through an intentional pedagogy or assessment adaptations, clear communication about the use of GenAI is critical. Course syllabi will need to specifically note the circumstances when and how GenAI may be used. This includes an explanation of what tools the instructor understands to be AI. There is also an onus on institutions and instructors to inform students that existing academic misconduct guidelines apply to all uses of AI. For example, at Wilfrid Laurier University, the Student Code of Conduct: Academic Misconduct contains a provision for unauthorized aids or assistance in the completion of assignments or examinations, which could form the grounds for an academic misconduct allegation involving AI use. This further complements clauses dealing with plagiarism and cheating. As with other research resources, students are responsible for the proper citation of AI tools when their use is permitted. There are ongoing discussions about best practices with respect to whether a citation or attribution is most appropriate for the use of AI tools. Attributing the use of ChatGPT may be more accurate than a traditional citation as consecutive text prompts may not produce consistent answers. Institutions will need to provide term-by-term updates to keep students and instructors informed and up to date with the continually changing nature of GenAI and specific academic integrity standards during this period of flux.

Institutions should also use the disruption of GenAI to further consider incorporating restorative practices into the academic misconduct process. In their chapter of Academic Integrity in Canada, Paul Sopcak and Kevin Hood discuss how a restorative resolution option based on restorative justice principles for cases of academic misconduct is in use at MacEwan University. Sopcak and Hood observe that there is often a disconnect between an institution's preventative or educational strategies and the policies governing responses to academic misconduct. Once a student enters the misconduct process they are faced with an adversarial, intimidating, formal, and oppositional process resulting in escalating punitive sanctions [9]. In contrast, they argue that a restorative resolution process actually upholds the institutional emphasis on academic integrity by ensuring that prevention and response are "grounded in the goals, values, and principles pertaining not only to universities' pedagogical missions, but also those related to civic and moral education, as well as community building."[10] A facilitated restorative resolution conference between the instructor and the student may be a better venue to unpack whether an institution's misconduct policies or guidelines are capturing and communicating the nuanced implications of rapid technological change than the traditional sanctions process.

Navigating technological change in post-secondary education necessitates a student-centric pedagogy, strong communication, and the willingness to consider a misconduct process that improves principles of academic integrity. The alternative is a reactionary response that will be ineffective in its attempts to interrupt disruption and will only succeed in alienating student learners.

Ian Muller, Director, Policy Research and Advocacy at WLUSU



9 Paul Sopcak and Kevin Hood, "Building a Culture of Restorative Practice and Restorative Responses to Academic Misconduct," in S. E. Eaton and J. Christensen Hugues, eds. Academic Integrity in Canada: An Enduring and Essential Challenge (Cham: Springer, 2022), 554, https://doi.org/10.1007/978-3-030-83255-1.

10 Sopcak and Hood, 556.

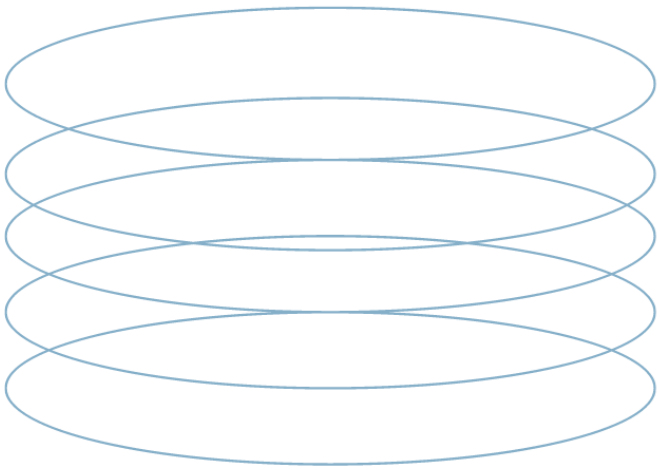
Reimagining Education: Bridging pandemic priorities to create a more inclusive future

Western University

Written by:
Nicole Campbell, PhD PME, Associate Professor, Physiology and Pharmacology
Director, Interdisciplinary Medical Sciences

The past few years have undoubtedly been a blur, but I can still remember March 12th, 2020, like it was yesterday. Our institution was one of the first to announce that classes would be moved online for the remainder of the winter term. In addition, classes were cancelled for five days to allow university faculty and staff time to make necessary changes to support this transition. What occurred following that announcement is something that I never could have anticipated, but I am so grateful I got to be a part of it at the time. If you had asked me five years ago what would happen if we were in this situation, I would have told you that we would have prioritized technology to support a rapid transition to remote teaching and learning. Technology obviously played a critical role throughout the pandemic, and we could not have adapted so quickly without it, but it is not the piece that stands out in my memories. Instead, when I sit back and reflect on the past couple of years, I am most proud of the efforts that were dedicated to support students and make education more inclusive. Specifically, there are three themes that I believe were crucial during different phases of the pandemic transitions and that continue to hold significance as we look ahead to improve our practices: **transparency**, **accessibility**, and **flexibility**. It is probably no surprise that what some thought was a temporary change in practice a few years ago would make many of us rethink our priorities, goals, and even values going forward. In this article, I aim to recount my journey throughout the pandemic as a teaching-intensive faculty member at a large research-intensive university, navigating new circumstances while supporting fellow colleagues along the way. I will delve into the three aforementioned themes and their integration with technology, which has redefined how education is delivered and experienced. I also hope to shed light on the conversations that I believe need to happen and where I think efforts should be focused to keep pushing for more inclusive educational practices. My perspectives and experiences may not be reflective of all educators and students across programs, but my hope is that readers will extract valuable insights based on the stories and reflections shared.

The day after our institution made the call that we would be moving all classes online for the duration of the semester, I found myself surrounded by an exceptional team of educators and administrators who were ready to navigate this unchartered territory and embrace a rapid shift to online learning. One of the top priorities that was identified by the team during our first meeting was the need to provide transparent communication to students so that they knew what to expect for the remaining weeks of their courses. Afterall, it was highly likely that this rapid shift to online learning would result in deviations from the assignments and expectations originally communicated in the syllabus at the start of the course.



In response to this, our program made a course syllabus revision template that was shared with all winter term instructors for them to highlight their course changes; these documents were submitted and approved by the administration, as per the institutional policy. This was quite the feat because we only had five days to accomplish the task and there were hundreds of courses that needed to be altered and approved. While all this was happening, undergraduate program leaders met frequently to discuss upcoming challenges that needed to be addressed. We broke into smaller groups based on areas of expertise and offered drop-in sessions to help one another—this was very much an educate-the-educators operation, and we all learned so much in the process. We pooled our resources and freely shared them to support other educators with new endeavours, including providing online lectures and creating new assessments such as recorded presentations and take-home examinations. One of the biggest challenges we faced as a unit was preparing for final exams. We did not have the resources to invest in new platforms because exam season was right around the corner, so we had to get creative. We leveraged technology and the tools we had available to us, and we created an exam texting line for students to communicate if they had any issues throughout their exam. Technology facilitated transparent communication by providing platforms for educators to share information about course expectations, changes, and resources. Despite how busy and uncertain of a time this was, I have fond memories of these days because of how we all came together with one goal in mind to support students.

As soon as the winter semester ended, we got started on planning for the upcoming academic year. Unlike the previous semester, we had more time and resources to prepare for online learning. We were quite fortunate that the institution invested in various initiatives to assist with this process. One of the initiatives they funded was students as partners positions, called Digital Media Interns (DMIs), to offer support for the upcoming academic year—to this day, our faculty still runs this program and leans on support from these interns to help with our courses. The first task the DMIs completed was creating a site full of instructions and resources for faculty and staff. This site guided educators to incorporate technology, but it also taught them how to make their courses more engaging and **accessible** in an online environment. We also had programming running out of our Centre for Teaching and Learning, and some of us worked with educational developers to redesign our courses for online formats. Looking back now, I believe this was the summer that changed the way many educators would think about teaching and learning. As we approached the 2020/2021 academic year, more educators were not just aware of accessibility, but they also developed the skills to make their courses more accessible—for example, it became common practice to record a session and turn on closed-captioning or to add alt text to images. Therefore, accessibility was not just about documentation and formal accommodations; for the first time, it was extended to everyone. This evolution showcased the pivotal role of technology in bridging the accessibility gap, allowing educators to learn and implement measures that made learning more inclusive and user-friendly for all. Because of what was happening in the world around us, we collectively started viewing accessibility through a broader and more inclusive lens.

Once educators and institutions had a better grasp on how to design their courses, they had to think about the delivery—some questions to consider included were they going to offer asynchronous or synchronous sessions, would sessions be recorded, and was attendance mandatory? That brings me to the next theme that emerged in education during the pandemic and one that likely will not come as a surprise to anyone—**flexibility**. I cannot speak on behalf of all educators, but from my perspective, at my institution and based on conversations with colleagues at other institutions, I think most people opted to offer flexibility with the delivery of their sessions. For some, there might have been constraints on how much flexibility was offered based on their type of course, but it did seem as though most were willing to offer some flexibility. Beyond the delivery of content, many educators anticipated that flexibility with assessments would need to be in place for the academic year. Whether it be due to illness, caregiving responsibilities, or other commitments, students were going to need flexibility—we would later learn that educators and staff benefit from and value the same leniency at times; it turns out we are all human! Some common examples of assessment flexibility included non-timed exams, dropping the lowest grade, and including grace periods (i.e., automatic extension for anyone who needed

it and usually no questions asked) for assignment submissions. These are just some examples of how educators offered flexibility throughout the pandemic. Most of the flexibility that was provided during the pandemic was only possible because of technology. Flexible learning environments meant that students could engage with course materials at their own pace and on their own schedules, allowing them to balance their education and other responsibilities.

Now that I have talked a bit about these themes and the way they supported students during the pandemic, let us explore how they are connected. I first introduced transparency with respect to how we responded when our institutions rapidly transitioned to online learning. What I did not mention, but is worth stating, is that transparent messaging continued to be a focus as we navigated various transitions to and from online learning. Transparent communication and designing/delivering courses in an accessible way are concepts that are closely linked because they are founded on the common principles of openness, fairness, and inclusivity. Transparent communication ensures that information about course materials, expectations, assessments, and any changes are readily available to all students. This transparency creates an environment where students, regardless of their backgrounds or circumstances, have equitable access to important information. When you think about it, flexibility and accessibility are also inherently intertwined. If a system or environment is truly accessible, it allows for adaptable approaches that cater to diverse needs and can respond to a wide range of circumstances. When coupled with accessibility and flexibility, transparent communication ensures that every student can engage with the course content effectively, promoting equal opportunities for success. These three themes are not novel priorities for higher education, and they have a long history in higher education. However, I believe that the way educators relied on technology during the pandemic facilitated the seamless integration of these themes. Even now, I find it challenging to disentangle these themes from one another.

The way many educators approached teaching and learning with these three themes in mind during the pandemic was virtuous and undoubtedly had a positive impact on many students. But what happens next? What happens when we presumably return to the way things were before the pandemic? In a perfect world, we would still apply those same themes (and many more) to our current academic environments, but that is not exactly what happened. I want to briefly share my perspectives on this topic because it has been on my mind for a while. As educators, we frequently heard from students that they wanted to be back in person and that many struggled with the online learning environment—it is worth mentioning that this was not true of all students, and some preferred the online delivery methods for various reasons. The more I reflect on this topic, the more I believe that students did want to be back in-person, but they also benefited so much from the accessibility and flexibility that was offered to them—it was not one or the other for them, they wanted both. I think it is natural for educators to want to jump back into the way things were because we can easily recall teaching and learning environments before the pandemic, but that is not the case for many of our current students who spent most of their degrees online. I frequently must remind myself that my experiences are different from theirs and that I should not make assumptions or compare them to previous cohorts. Unfortunately, there appears to be a misalignment of expectations between educators and students, and I think we have some collective work to do to improve these relationships. It starts with a willingness to listen to students to better understand their perspectives and needs.

Before we start making changes, it is important to acknowledge some of the challenges that were encountered because they may pose barriers for the future. For educators, the additional workload, especially course administrative tasks, was not sustainable. What is required of an educator has changed drastically over the ten years that I have been instructing. We are now at the point where something must give, or we need more support because we cannot just keep adding to our plates. Another challenge relates to technology and flexible educational environments. One of the biggest debates amongst educators right now is whether to live stream and/or record lectures. This is a very complex topic because there are so many factors and people involved.

The first requirement is that there needs to be adequate technology and support to offer hybrid or dual-delivery formats; we also need to consider what happens if the technology fails or the quality is not optimal at times, for those who depend on it. Another issue that comes up when talking about the delivery mode is class attendance, and this one is contentious. Many educators will tell you that there is a different vibe with a full room of students versus very few students in a large empty lecture hall. Beyond that, many educators have tried to incorporate more active learning practices, and they want to hear diverse contributions during their discussions, which might not be possible with lower attendance. Lastly, there is concern that some students might put off watching recorded lectures and get behind on their content and not do as well in the course. As you can see, there are many layers to this topic, and we will need to get creative to sustainably set students up for success. Looking ahead, there is no doubt that technology will play an essential role in addressing these challenges and ensuring a sustainable framework for educators while ensuring students' success.

So, where do we go from here? I do not want to end this article with a bunch of problems and not offer solutions. Over the past year, my research team has gained valuable insights from students and educators, especially with respect to flexibility. The biggest takeaway was that for the most part, students and educators are on the same page, but neither party is aware of this. This finding reiterates the need to bring together administrators, educators, staff, and students to have critical conversations about the future of education. We cannot rethink educational practices without considering all the people who are involved in or impacted by the decisions made. We need to keep in mind that one-size-fits-all approaches are not likely to be effective. Instead, policies should be created based on the context of the situation to have the greatest impact. We also should not forget the role that transparency plays in these conversations. Educators need to be reminded to share with students what they are doing and why they are doing it—do not assume anything! I am hopeful that with the help of students, we can collectively make meaningful change, but we must be willing put in the work and we cannot be afraid to make mistakes. If the past few years have taught me anything, it is that we can come together to do great things that have a big impact for many. Previous efforts and a commitment to fostering transparent, accessible, and flexible learning environments are a testament to the collective dedication to student success and equitable learning, which will make for a more inclusive future. So, find some good people and start your journey—we did it before and we can do it again.

Nicole Campbell (she/her), PhD PME, Associate Professor Physiology and Pharmacology. Director, Interdisciplinary Medical Sciences

Why Faculty Expertise is Essential to Implementing University Technology

Ontario Confederation of University Faculty Associations (OCUFA)

Written by:
Nigmendra Narain, President

Promise of technology in the classroom

The pandemic laid bare the possibilities and limitations of technology as a learning tool in Ontario's public universities. As faculty and academic librarians quickly pivoted to virtual learning in March 2020, they developed innovative ways to maintain a high standard of teaching, encourage student participation, and integrate technology into their curricula. We have seen that technological tools can help bridge cultural divides, may break down barriers to participation for some students, and may promote equity, diversity, and inclusion, both in and out of the classroom.[1] Indeed, technology can offer some pathways to a more accessible university education.

At the same time, as universities embrace new technologies, faculty and academic librarians must be meaningful contributors to campus policies and practices regarding these advances. Faculty are the experts, and it's from their expertise that student's education is enhanced. They must have agency to make choices about course delivery. And university administrations must work collaboratively with faculty—often through their faculty associations—to determine how to provide the best experience for students and faculty. This will be essential to ensuring student success going forward.

Challenges of technology in education

The experiences of faculty over the past three years revealed educational challenges brought to the fore by technology. Online course delivery that is not interactive or tailored can promote more passive student engagement[2]. Digesting content without opportunities for reciprocal interactions between students and faculty limits the student—and faculty—experience at university. Students and faculty want options for in-person, online, and hybrid learning models that match their pedagogical and curricular needs. They also want increased access to digital learning materials through library systems.

Any innovations in technology require university and government funding. This includes providing robust, sustainable government funding to hire faculty and academic librarians to administer, design, and implement such innovations. It also includes funding for student tuition assistance to ensure the universities of the future are accessible. Unfortunately, Ontario's public universities remain chronically underfunded. On a per-student basis, they receive the least amount of funding among all Canadian provinces.[3] The 2023 Ontario budget was no exception to this pattern. For the Ontario government to match the average per-student funding of the rest of Canada, the funding level needs to increase from slightly over $7,000 to over $12,000 annually[4]. Without investment from the Ontario government in our students and faculty, learning technology will never realize its full potential and

1 R.M. Barnett: Leading with meaning: Why diversity, equity and inclusion matters in US higher education, (Published Online: 1 Dec 2020). https://hdl.handle.net/10520/ejc-persed-v38-n2-a3
2 Alison Brown: Designing for learning: What are the essential features of an effective online course? (Australian Journal of Educational Technology 1997, 13(2), 115-126). https://ajet.org.au/index.php/AJET/article/view/1926/962
3 OCUFA 2023 Pre-Budget Submission: https://ocufa.on.ca/assets/13e2023-OCUFA-Pre-Budget-Submission.pdf
4 Ibid

overcome any limitations. The Ontario government must examine its current university funding levels and increase them to stay competitive in a global, connected postsecondary landscape.

Collective agreements and technology in the university classroom

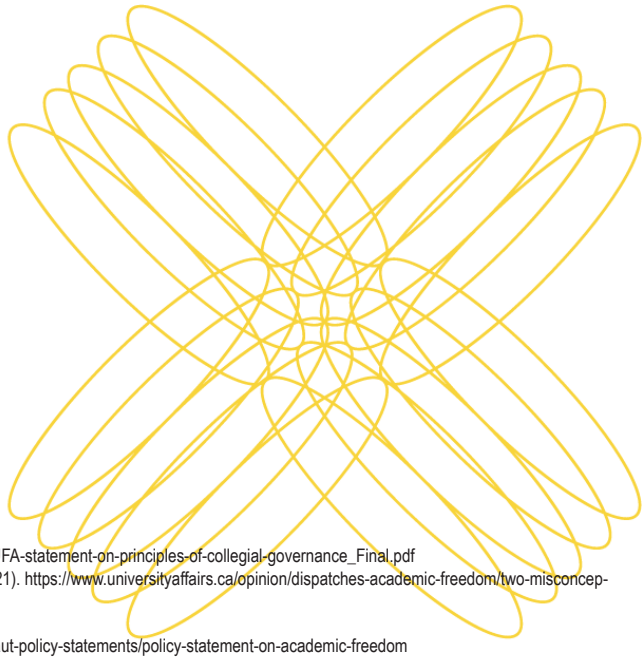
Faculty are keenly aware of a concerted shift to move classes to the online space. They sought to preserve their right to choose the method of delivery, free from imposition by administration. Some of OCUFA's 30 member organizations, representing more than 17,000 faculty, academic librarians, and academic professionals across the province, have amended their collective agreements and/or employment contracts to include provisions to preserve faculty consent in course delivery mode decisions. These provisions also delineate the processes by which course delivery decisions are made and can include robust conversations at the departmental and Senate level.

Examples of the ways in which faculty have enshrined important parameters and policies pertaining to online course delivery include collective agreements at Lakehead, Laurentian, and Western Universities. All agreements for these faculty associations contain provisions stipulating that only with professorial consent may an online course be assigned to an instructor. More recently, the University of Guelph Faculty Association preserved the right of choice with collective agreement language on faculty requests for modes of course delivery. Departmental administration will consult on faculty requests—which include the request to use blended and/or online synchronous delivery—in fairness and relative to the broader complement of course delivery within each department. The Wilfrid Laurier University Faculty Association also ratified a tentative agreement rejecting the imposition of online course delivery without faculty consent. Moreover, faculty gained supports for teaching, regardless of delivery method.

Faculty are the experts on their subject matter and on the most effective pedagogy for their courses—this includes course content and course delivery. Faculty associations thus play a vital role in ensuring that faculty can teach in a way that is effective and enriching for students. These achievements show that faculty autonomy over methods of course delivery is integral to effective curricular development and student experience. It is necessary, therefore, for faculty to continue to retain autonomy over how they teach, as the nature of that teaching changes.

Collegial Governance and Technology

Collegial governance is a shared governance model in universities, often structured with two branches. University Boards and Senates take on responsibilities to ensure good policies and the success of the institution. [5] Faculty are key members of these branches. Collegial governance "ensures that universities' academic programming is first and foremost guided by scholarship," by subject matter experts.[6] This programming includes determining the most effective modes of course delivery, evaluating the best tools for conducting research, and ensuring libraries can provide the most useful resources to the academic community.[7] The experts on these issues are faculty and academic librarians, who must be active, direct participants in the planning and implementation of any technological tools to assist in learning, teaching, and research on campus. Robust faculty participation in collegial governance processes is also a main tenet of academic freedom, requiring "that academic staff play a major role in the governance of [an] institution."[8] Technological changes, therefore, are building on a foundation of academic freedom and collegial governance. Faculty, and faculty associations, continue to uphold those values when it comes to implementing technology on campus.[9]



5 OCUFA Statement on Principles of Collegial Governance, 2017. https://ocufa.on.ca/assets/OCUFA-statement-on-principles-of-collegial-governance_Final.pdf

6 Shannon Dea: Two misconceptions about 'collegial governance', (University Affairs, 16 April 2021). https://www.universityaffairs.ca/opinion/dispatches-academic-freedom/two-misconceptions-about-collegial-governance/

7 Ibid.

8 CAUT Statement on Academic Freedom, 2019: https://www.caut.ca/about-us/caut-policy/lists/caut-policy-statements/policy-statement-on-academic-freedom

9 OCUFA Submission on Covid-19 and Universities, 20 May 2020: https://ocufa.on.ca/assets/2020-05-20-OCUFA-Submission-COVID-19-and-the-academy.pdf

Good governance includes deciding how courses are delivered and administered and establishing conditions for research and intellectual property rights. When faculty can make informed decisions about how and when to use technology, it can benefit students, the university, and their communities. One example of this is "blended learning," as seen in a study by three University of British Columbia faculty. The faculty defined blended learning as a method in which students "attend lectures in real-time, either virtually or in person, and this is accompanied by online learning activities completed outside of class time. For blended learning to be effective, the faculty member teaching the course should have control over the design and delivery method. In reporting their findings, the faculty members wrote: "When combined with traditional instruction, a judicious use of digital tools can encourage collaboration and personal responsibility for learning while allowing students to work at their own pace and adapt to rapidly changing technologies. Incorporating technology into teaching and learning doesn't mean throwing out previous approaches."[10] After all, interaction and integration into the postsecondary education ecosystem is key to student learning success and retention.[11]

With few choices when the pandemic halted in-person classes, faculty were rushed to transition their courses to online delivery, coined as "emergency remote teaching" by some experts.[12] They, and their colleagues in academic libraries, rose to the occasion and over the next three years, students, faculty, and academic librarians adapted to virtual learning and librarianship to ensure that students could maintain high educational standards and access to resources. Faculty learned how to use online platforms and designed innovative ways to engage students during an unprecedented crisis. At libraries, for example, academic librarians and staff accelerated digitization and licensing processes to ensure more resources could be made available online.[13]

At the same time, the experience of Covid showed that virtual-only is not an ideal approach to postsecondary education in the long term.[14] A 2020 poll commissioned by OCUFA and conducted by Navigator Inc. found that "62 per cent of students and 76 per cent of faculty members feel that online learning has negatively impacted the quality of university education in Ontario."[15] Faculty have also raised concerns that more online course offerings will mean more student support needs. Current resources are not enough to adequately hire enough staff and teaching assistants to provide students with the supports they will need to work with new technology in and out of the classroom These questions must be addressed through the collegial governance process, not through a top-down or one-size-fits-all administration directive.

Considerations for our future

OCUFA and its member organizations are keenly aware of the risk of university administrations mandating online course delivery, especially following our faculty's quick adaptation to emergency remote teaching during the pandemic.[16] Significant questions remain about academic freedom and intellectual property (IP) rights regarding the dissemination of online and hybrid course material. The IP contained within course materials is meant to enhance a student's education.[17] Depending on the institution, IP is either owned by faculty or the university itself, and therefore, unsanctioned dissemination of course materials is a violation of IP rights. How do remote learning and online course delivery impact the preservation of IP? And how important are IP protections to our faculty? Just this year, contract instructors at Carleton University voted to strike over IP rights.[18]

10 McPhee, Siobhán and Micheal Jerowsky, "What is 'blended learning' and how can it benefit post-secondary students?," The Conversation, 4 October 2022. https://theconversation.com/what-is-blended-learning-and-how-can-it-benefit-post-secondary-students-187971

11 Napierala, J., Pilla, N., Pichette, J., & Colyar, J. (2022) Ontario Learning During the COVID-19 Pandemic: Experiences of Ontario First-year Postsecondary Students in 2020–21. Toronto: Higher Education Quality Council of Ontario. https://heqco.ca/wp-content/uploads/2022/03/Ontario-Student-Experiences-with-COVID_FINAL.pdf

12 Kevin O'Neill: Do university students want more online learning, post-pandemic? Here's what some chose before COVID-19, (The Conversation, 16 August 2021). https://theconversation.com/do-university-students-want-more-online-learning-post-pandemic-heres-what-some-chose-before-covid-19-164044

13 https://www.universityaffairs.ca/news/news-article/canadian-university-libraries-shine-during-pandemic/

14 MAAN ALHMIDI Alhmidi, Maan, "Ontario university students struggle with impact of online classes as pandemic wears on," Globe and Mail, 25 January 22. https://www.theglobeandmail.com/canada/article-ontario-university-students-struggle-with-impact-of-online-classes-as/

15 OCUFA Study: COVID-19 and the Impact on University Life and Education. November 2022. https://ocufa.on.ca/assets/OCUFA-2020-Faculty-Student-Survey-opt.pdf

16 OCUFA Submission: Covid-19 and the Academy - What will the pandemic mean for Ontario's universities, faculty, and students? May 2020. https://ocufa.on.ca/assets/2020-05-20-OCUFA-Submission-COVID-19-and-the-academy.pdf

17 University of Waterloo: Statement on Academic Integrity, https://uwaterloo.ca/academic-integrity/integrity-instructors-and-tas/intellectual-property-and-copyright

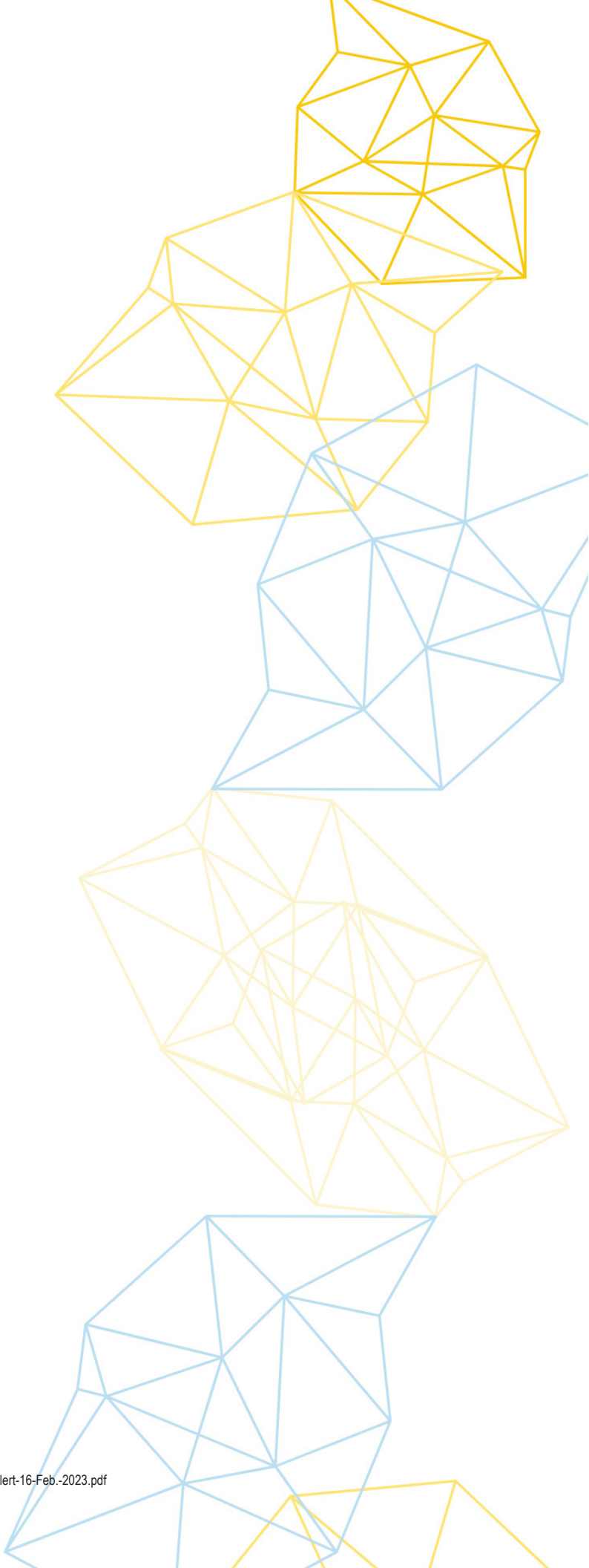
18 Ramzy, Mark: BREAKING: TAs, contract instructors to strike. The Charlatan. 27 March 2023. https://charlatan.ca/2023/03/27/breaking-tas-contract-instructors-to-strike/

Faculty at Queen's University recently ratified a tentative collective agreement that modifies the definition of IP, rejecting the administration's proposal for an automatic license to a Member's copyrighted work, especially with the potential for commercialization of this IP by the university.[19] Examples of provisions concerning IP and copyright are ubiquitous in OCUFA member organization collective agreements. Just as faculty have worked to preserve their right to autonomy in course delivery decisions, faculty are invested in protections regarding copyright and IP. These are vital to ensuring that faculty can use their expertise to the fullest extent in teaching, research, and student mentorship.

Bigger issues including the use of artificial intelligence on campus by faculty, staff, and students, must also be addressed with meaningful involvement from student groups and faculty associations at the ground level. One example of how universities might do this is through joint committees with faculty associations, student associations, and university administrators. When these committees are developed in a true collegial governance model, they can function effectively to develop solutions that work for all members of a campus community.

Joint committees comprised of faculty, university administrators, and students are important bodies that, when earnestly engaged, function very well to uphold collegial governance. As technology continues to evolve rapidly, especially within the artificial intelligence realm and its potential to irrevocably alter the postsecondary education landscape, joint committees allow faculty, students, and administration to engage in meaningful conversations about technological mediation and inclusion in all facets of the learning experience.

These are vital considerations for universities. Administrations must work closely and meaningfully with faculty associations to ensure that instructors retain ownership over their course materials, regardless of the delivery method.



19 QUFA Bulletin. 16 February 2023. https://www.qufa.ca/wp-content/uploads/2023/02/15-QUFA-Alert-16-Feb.-2023.pdf

Conclusion

When faced with big societal changes, such as the COVID-19 pandemic or the mass dissemination of AI software, universities often face pressure to respond quickly. Sometimes, those pressures can result in innovative, reliable solutions—such as the ones faculty developed to meet their students' needs for emergency remote learning. But other times, they turn to ineffective solutions introduced by private, for-profit companies that do not understand the public university sector or the needs of its students and faculty. University administrations should only implement technological teaching tools on campus with active, meaningful contributions from faculty and faculty associations. Faculty insights ensure the usefulness and effectiveness of specific course delivery methods and technologies such as virtual learning models, research tools, and even anti-plagiarism software. These insights are thus essential to the benefit of such tools for students.

Students should expect a transformative experience in a classroom. And it's our faculty who have the expertise to ensure that they do. Ontario public universities can be equipped to tackle the technology of the future only with proper government investment in our universities for good academic jobs and student tuition fee support. We are in a period of possibility in which universities are sites of technological innovation to enhance learning and research. But we must invest and collaborate to proceed well and boldly.

Nigmendra Narain (he/him) is the President of the Ontario Confederation of University Faculty Associations (OCUFA) and a Lecturer and Course Coordinator in Political Science at the University of Western Ontario. Founded in 1964, OCUFA represents 17,000 faculty, academic librarians, and other academic professionals in 30 member organizations across Ontario. It is committed to enhancing the quality of higher education in Ontario and recognizing the outstanding contributions of its members towards creating a world-class publicly-funded university system.

Technology as a Challenge and Opportunity for Ontario's Public Universities and Colleges

The Dais

Written by:
Sanjana Shah and André Côté

Ontario's post-secondary education system is critical for the province's prosperity and civic vitality — they are the primary vehicle for delivering education and training at scale, regional hubs of research and economic development, and contributors to civic engagement. Yet, the success and sustainability of Ontario's post-secondary system cannot be taken for granted, as institutions struggle to meet changing student expectations, manage ballooning administrative and operating costs, and navigate fiscal pressures related to provincial policy on operating grants and tuition. These pressures are amplified by the emergence of new competitors.

The past two decades have seen dramatic shifts in Ontario's higher education marketplace. Public colleges and universities now face unprecedented competition. New private universities and foreign subsidiaries now compete for learners in high-demand fields and for international student fees. A large network of private career colleges aggressively promote their shorter, more vocational programs. And global education companies like Coursera, LinkedIn Learning, and Google offer new alternative credentials through highly scalable platforms with low-cost or subscription-based online education models. These changes in the marketplace have been driven in large part by advances in educational technology, and broader trends and innovations in a rapidly digitizing economy.

Yet, none of this has spurred a deeper reimagining of what post-secondary education in a digital age should look like in Ontario. Currently, post-secondary institutions are not meeting learners where they are, or adapting to their rapidly evolving operating environment. In this article we outline some opportunities for both Ontario's post-secondary institutions and the Ministry of Colleges and Universities (MCU) to pursue two related goals: effectively catering to learners' specific needs and motivations in the digital age, and more clearly articulating their value to the Ontario public.

Meeting Students Where They Are

The profile of post-secondary learners has changed. Today's learners have different expectations and requirements for their education — and Ontario's colleges and universities need to adapt to meet them.

Today's learners are far more diverse than those that came before them. In 2022, 44% of surveyed first-year students described themselves as a "visible minority," more than triple the proportion who did in 2001.[1] A significant majority of learners are now female, a significant shift underway for a generation.[2] And a rising share comes from outside of Canada, with a full 43% of those enrolled in Ontario colleges being international students.[3]

The context in which Ontario's post-secondary students experience their education has also changed. Increasingly, the image of a young adult, fresh out of high school, living in student housing, and attending classes full time does not reflect the experience of Ontario's post-secondary learners. A growing proportion of Ontario's post-secondary students are mature adult learners with family commitments,

1 "2022 First Year Students Survey - Master Report," Canadian University Survey Consortium, June 2022, https://cusc-ccreu.ca/
2 Alex Usher, "The State of Postsecondary Education in Canada," Higher Education Strategy Associates, September 2022, https://higheredstrategy.com/wp-content/uploads/2022/09/SPEC_2022-1.pdf
3 Alex Usher, "Ontario Colleges, Again," Higher Education Strategy Associates, May 15, 2023, https://higheredstrategy.com/ontario-colleges-again/

independent financiers of their education, or first-generation students. [4] Given these demographic shifts, it is unsurprising that learners' expectations have shifted. The biggest change is students' focus on their career outcomes. As higher education thinker and investor Ryan Craig has noted, the single biggest change in post-secondary education is the increase in the proportion of students who are enrolling for job, career, or income reasons. Learner surveys bear this out. The top three reasons Ontario students now cite as motivations for attending post-secondary education are: increased likelihood of getting a job with a degree, preparation for a specific job or career, and getting a more fulfilling job than they could without a degree. [5]

The structure of college and university programs does not reflect the profiles and motivations of many of these learners. Students who are looking to develop the specific technical, digital, and platform skills that will help them secure entry-level jobs or accelerate their progress up the career ladder. And they need that training delivered in ways that allow them to balance competing family and financial obligations. Colleges and universities must think more about the needs of fluid learners: those who will "flow in and out of jobs and education, rather than pursue a degree in two or four years … [seeking to] direct their educational experience toward personalised career opportunities, while stacking and banking credentials and experience into degrees." [6]

We see several opportunities for a technology-enabled reimagining of post-secondary education to better meet the needs and motivations of today's learners.

First, to help students align their program choice and coursework to their desired job and career outcomes, colleges and universities should expand the use of digital pathways navigation tools for pre-enrollment and ongoing career services guidance. For instance, existing off-the-shelf applications like FutureFit AI allow prospective and progressing learners to map interests and aptitudes to educational opportunities and career pathways. However, these typically do not include program information from Canadian universities and colleges, leaving students to wade through university program catalogues and course descriptions too often written for senates rather than for students. More dynamic pathways tools should be developed in partnership with universities, allowing students to build more personalized programs of study tied to specific programs and courses that equip them with the necessary skills to successfully launch them into their chosen careers.

Second, the lenses of student choice, flexibility and accessibility should be central to post-secondary institutions' decision-making around educational technology investments. Colleges and universities should prioritize investments that enable choice in program and learning pathways, to accommodate today's more fluid learner. More technology-enabled virtual and hybrid learning options offer flexibility for students with varying lifestyles — for instance, those who are chronically ill, live in remote communities, have part-time jobs, or need to fulfil familial and caregiving responsibilities — to pursue their education whenever and wherever their schedules and needs allow. The new generation of edtech tools also offers the potential for better accessibility, whether through assistive technologies for students with visual impairments and disabilities, or for student success to help overcome learning barriers.

Finally, rather than seeking to replicate in-person learning online, reimagined digital-era education should take advantage of the unique possibilities afforded by technology. This applies to program models and instructional design, where institutions like Western Governors

4 "2022 First Year Students Survey - Master Report," Canadian University Survey Consortium, June 2022, https://cusc-ccreu.ca/

5 "A Look at the UCAS™: How Prospective Students Explored PSE in 2021," Academica Forum, March 28, 2022, https://forum.academica.ca/forum/a-look-at-ucas-2021-how-prospective-students-choose-their-school

6 Anne Khademian, "Fluid students flowing in and out of education are higher ed's future. Here's how colleges must adapt," Higher Ed Dive, August 2022, https://www.highereddive.com/news/fluid-students-flowing-in-and-out-of-education-are-higher-eds-future-here/629119/

University in the United States have built competency-based online programs to appeal to large communities of working learners. [7] It applies to pedagogy and learning content, with new forms of multimedia and gamified materials to teach and test content in more dynamic and interactive ways for digital native learners. And it applies to student engagement, co-curricular and career development, with digital tools that facilitate opportunities for students to connect with peers and experts from across the world, or platforms like Riipen that integrate employer-sponsored experiential learning into the classroom.

Demonstrating the Value of Post-Secondary Education

There is distressingly little understanding or analysis of Ontario's higher education outcomes. There is limited systems-level data on college and university completion rates (65% and 77% respectively), employment rates (around 80%, two years after graduation), and median post-graduate income (exceeds median Canadian personal income), however, beyond this system-level aggregate picture, there is little or no publicly available information on the quality or outcomes of specific university or college programs of study. What is publicly released is often inconsistent and out-of-date.

Due to the piecemeal nature of information on postsecondary outcomes, there is no accessible way to meaningfully compare programs or their performance. This lack of systematized information poses a challenge for students seeking to make informed choices about their education, and risks diminishing public trust in post-secondary institutions. In order to build credibility among prospective students and the public alike, especially as alternative credentials and online programs proliferate, it is essential that Ontario colleges and universities are rigorous about their approach to tracking outcomes and transparent about the results.

Several measures can facilitate increased transparency. For one, the Ministry of Colleges and Universities should make existing post-secondary administrative and key performance indicator information open and downloadable as raw data for researchers, entrepreneurs and policymakers — to enable new types of analysis, and the creation of new products and services to assist learners and others to navigate post-secondary education. Additionally, the MCU should require that all post-secondary institutions track student outcomes using the same metrics, allowing for comparison across institutions and specific programs.

While less exciting than digital innovation in the classroom and edtech tools that directly touch the student experience, these types of foundational initiatives supported by back-end information systems have the potential to be even more transformative to higher education in Ontario. This is because investment in this type of "outcomes infrastructure" is foundational to a high-performing system – supplying the data to inform learning and career pathways tools for students described above; the intelligence to inform post-secondary policymaking and system stewardship; and the measures of value to bolster the credibility of public post-secondary institutions.

Spurring Technology-Enabled Transformation

Meaningfully redesigning programs, classroom experiences and other facets of higher education is hard, expensive and labour-intensive. It will require the province to apply both stewardship levers and financial incentives to support initiatives that look to create the digital infrastructure needed to integrate technology into education. We conclude with a few bold proposals on this front.

First, the province should announce a fundamental change in post-secondary capital investment, to transition investment solely from "bricks-and-mortar" on-campus buildings and facilities to include "digital infrastructure", including one-time transformations and multi-year costs for technology systems, software, training and capacity building. An ambitious target would supplement or redirect a portion of the $2 billion committed to university and college capital grants over the next 10 years to a new category of digital infrastructure investments.[9]

7 "The University for You," Western Governors University, July 24, 2023, https://www.wgu.edu/.
8 Alex Usher, "The State of Postsecondary Education in Canada," Higher Education Strategy Associates, September 2022, https://higheredstrategy.com/wp-content/uploads/2022/09/SPEC_2022-1.pdf
9 "Ontario's Capital Plan Summary – Education and Postsecondary Education, Ministry of Colleges and Universities, March 2023, https://budget.ontario.ca/2023/brief.html#s-1

Second, the MCU should redouble investments and support for key post-secondary intermediaries that are supporting technology-enabled transitions. This could include ORION as a shared technology infrastructure provider and platform for innovation and training; eCampusOntario as the hub for online learning, faculty digital training and collaboration, microcredentials, and more; and ONCAT as the lead for articulation and student mobility across institutions, central elements to offering students choice, flexibility and clear learning pathways.

Finally, other stewardship levers can encourage universities and colleges to pursue ambitious commitments to new models of student-centred, technology-enabled reform. The next round of Strategic Mandate Agreements could establish these as a clear priority connected to performance funding metrics. The Post-Secondary Education Quality Assessment Board (PEQAB) program approvals process could fast-track new programs or renewals that meet a higher bar for technology-enabled choice, flexibility and accessibility for students – and reject applications that do not reflect any of these.

Ontario students are rightfully demanding more of higher education, given its promise for learning and skills-building, but also social formation and civic development. For Ontario's universities and colleges, adapting to meet this demand of new digitally-native generations of students is not only the right thing to do for their learners, but also essential to their continued sustainability in a more crowded marketplace. Can they seize the opportunity?

André Côté (he/him) is the Director of Policy and Research at the Dais, a public policy and leadership institute at Toronto Metropolitan University. He has served in a variety of roles at the intersection of policy, higher education, and tech, including as a mission-driven consultant; as a senior advisor to provincial ministers; as the chief operating and strategy officer of NEXT-Canada; and as an ed tech innovator, developing the Dive: Student Aid digital case learning model with TMU's Leadership Lab and other partners. André is a graduate of the Munk School's Master of Public Policy (MPP) program and Queen's University, and grew up in Ottawa.

Sanjana Shah (she/her) is a student in McMaster University's Arts and Science program. She is an intern at the Dais, a public policy and leadership institute at Toronto Metropolitan University, where she is exploring her interest in politics and policy. Prior to working at the Dais, Sanjana worked on local political campaigns at the municipal, provincial, and federal levels, and in her member of Parliament's constituency office.

Understanding the Remote WIL Environment: How Students, Employers and Administrators Experience Work-integrated Learning

The Higher Education Quality Council of Ontario (HEQCO)

Written by:
Lena Balata and Ken Chatoor

Introduction

Work-integrated learning (WIL) experiences reside at the intersection of work and education. They are forms of experiential learning (EL), including co-op, internships, field placements and community service, that integrate theoretical and/or formal education with practical learning within a relevant workplace setting. WIL supports job-readiness and employability prospects by offering professional experiences to students before they graduate. The WIL system is supported by a three-way partnership between students, postsecondary education (PSE) institutions and an employer or host organization.

In order for WIL to be high quality, however, it should not only prioritize student skill development, but it should also adapt to and reflect current labour market trends. The COVID-19 pandemic accelerated both innovations in automation and shifts to remote work and schooling. While WIL placements followed emergency shifts from in-person to remote and hybrid arrangements, little is known about student experiences of remote WIL (or EL); likewise, no Canadian studies have captured WIL administrator or employer perspectives on this topic. The shift from physical office spaces to remote work existed before the pandemic, of course, but it is forecasted that remote work is here to stay.[1,2,3]

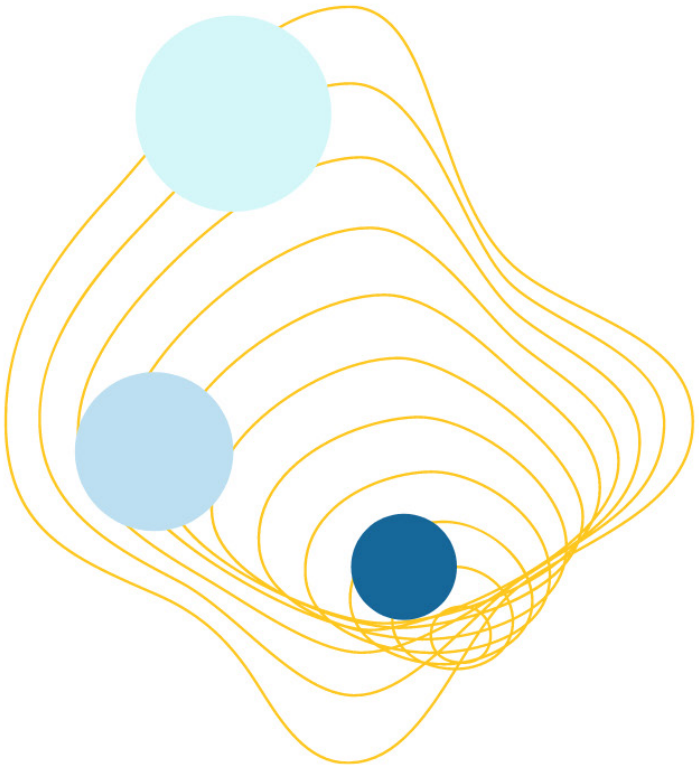
The Higher Education Quality Council of Ontario (HEQCO) recently published a report[4] sharing lessons from student, employer and institutional experiences with remote WIL during the 2020-21 academic year. HEQCO's project was guided by two research questions: What challenges did students, administrators and employers experience in the remote WIL environment in fall 2020? And what lessons emerged from the transition to remote WIL that can inform programming in the future?[5]

This article provides an overview of the report, including findings from surveys of all three stakeholders.[6]

Prior research on the benefits of WIL

The benefits of WIL for all stakeholders are well-documented in the literature. Students are able to enhance their skillsets through real-life work experience; employers gain access to a high-quality recruitment pipeline for the future; and institutions bolster student job-readiness by integrating feedback and understanding employment trends in real-time.[7] Research indicates that students do not view their credentials alone as a means to achieve their career goals, suggesting that they perceive a gap

1 Dean, B. A., & Campbell, M. (2020). Reshaping work-integrated learning in a post-COVID-19 world of work. International Journal of Work-Integrated Learning, 21(4), 355–364. https://www.ijwil.org/files/IJWIL_21_4_355_364.pdf
2 OECD. (2019, April). OECD employment outlook 2019: The future of work. https://doi.org/10.1787/9ee00155-en
3 Bowen, T. (2020). Work-integrated learning placements and remote working: Experiential learning online. International Journal of Work-Integrated Learning, 21(4), 377–386. https://www.ijwil.org/files/IJWIL_21_4_377_386.pdf
4 Chatoor, K. (2023). Working (and learning) online: Improving remote work-integrated learning experiences for students and employers. Higher Education Quality Council of Ontario. https://heqco.ca/pub/working-and-learning-online-improving-remote-work-integrated-learning-experiences-for-students-and-employers/
5 Remote WIL refers to WIL placements during the survey period that were entirely remote; hybrid refers to placements including a mix of remote and in-person components; and in-person refers to placements that were entirely in-person.
6 HEQCO developed the separate surveys in consultation with CEWIL and EWO.
7 Business + Higher Education Roundtable. (2021). Benefits of WIL. https://bher.ca/benefits-wil



in their path from education to the labour market. [8,9] WIL helps bridge this gap by offering students a means to develop transferable skills such as teamwork, communication and problem-solving.[10]

Lack of skill development in remote WIL

Data from our surveys indicated that remote and hybrid WIL students were significantly less likely than their in-person peers to report professional development in interpersonal skills and an understanding of workplace cultural norms. This presents a problem for students and employers. Employers look for and place a high value on these elements of professional preparation.[11,12] Students who don't have opportunities to develop these skills during their WIL may be disadvantaged when it comes to their future employability prospects.

Our study also indicated that students' perceptions of professional development were strongly linked to their satisfaction with the WIL experience. For example, students who felt that they developed skills such as critical thinking were far more likely to report higher satisfaction with their WIL experience. Higher satisfaction can help support student engagement and persistence in their placements, which can ultimately build their confidence as they transition from PSE to the labour market.

Employer and student perceptions of skill development during WIL diverged notably. Students in all WIL types (in-person, remote and hybrid) were confident that they developed critical thinking, interpersonal and program-related technical skills. Employers, conversely, reported significantly lower rates of skill development among students, regardless of WIL format. This could be attributed to the assessment component of WIL experiences. Students who had a formal assessment during their WIL were statistically more likely to say they developed interpersonal skills, program-related technical skills and critical-thinking skills compared to those who were not formally assessed. Assessments provide opportunities for a student's professional development through engagement with mentors and supervisors, and they play a critical role in a student's ability to articulate their skills to future employers.

Other challenges in remote WIL

Students noted that networking and making connections with co-workers and supervisors were the most difficult challenges associated with remote WIL. Students expressed challenges with access to mentorship opportunities, which limited their ability to build connections and understand expectations for their placements. Students also expressed feeling socially isolated from their colleagues and supervisors. Employers reported similar challenges around communication and connection with WIL students, specifically around mentorship, training

8 Sattler, P., & Peters, J. (2013). Work-integrated learning in Ontario's postsecondary sector: The experience of Ontario graduates. Higher Education Quality Council of Ontario. https://heqco.ca/pub/work-integrated-learning-in-ontarios-postsecondary-sector-the-experience-of-ontario-graduates/

9 Peters, J., Sattler, P., & Kelland, J. (2014). Work-integrated learning in Ontario's postsecondary sector: The pathways of recent college and university graduates. Higher Education Quality Council of Ontario. https://heqco.ca/pub/work-integrated-learning-in-ontarios-postsecondary-sector-the-pathways-of-recent-college-and-university-graduates/

10 Jackson, D. (2013). The contribution of work-integrated learning to undergraduate employability skill outcomes. Asia-Pacific Journal of Cooperative Education, 14(2), 99–115. https://files.eric.ed.gov/fulltext/EJ1113705.pdf

11 McGunagle, D., & Zizka, L. (2020). Employability skills for 21st-century STEM students: The employers' perspective. Higher Education, Skills and Work-Based Learning, 10(3), 591–606. https://doi-org.myaccess.library.utoronto.ca/10.1108/HESWBL-10-2019-0148

12 Fleming, J., Martin, A. J., Hughes, H., & Zinn, C. (2009). Maximizing work-integrated learning experiences through identifying graduate competencies for employability: A case study of sport studies in higher education. International Journal of Work-Integrated Learning, 10(3), 189–201. https://www.ijwil.org/files/APJCE_10_3_189_201.pdf

and providing meaningful work. These challenges are concerning given that employers prioritize interpersonal skills such as communication and teamwork. [13]

A significant proportion of remote WIL survey participants (75%) reported difficulty staying motivated during their WIL placements. In assessing the employability of students, one study found that motivation was crucial to "work readiness" and is linked to self-management and self-efficacy.[14] Another study found that self-motivation was among the five highest-ranked skills by employers that most impact the employability of new graduates[15]. In this context, motivation has implications beyond the duration of the WIL placement, as it is important for students' subsequent employability.

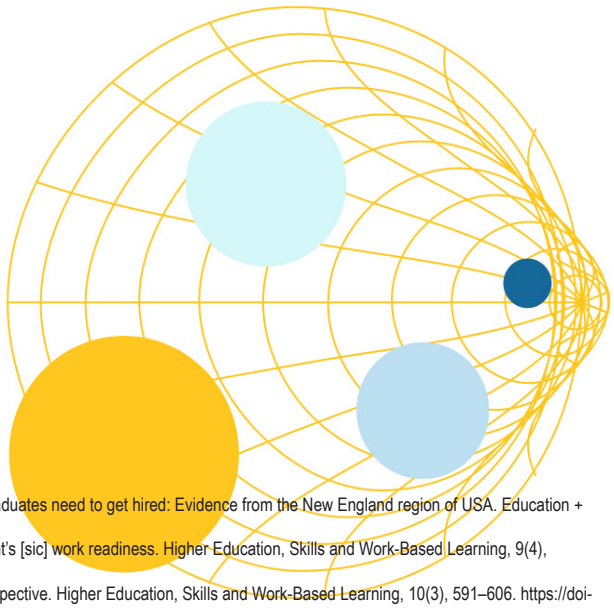
Students' motivation could also have been impacted by limited mentorship, undemanding work tasks and difficulties understanding expectations. Students in remote and hybrid WIL experiences were significantly more likely than those in in-person placements to cite challenges pertaining to workplace culture norms, including understanding expectations and knowing where to go for help.

Students noted significant challenges associated with remote management: 35% of remote and hybrid students had difficulty establishing a strong relationship[16] with their supervisors, compared to 10% of in-person WIL students. The literature suggests that quality WIL experiences should include strong student-supervisor relationships, as well as meaningful work activities that align with the learning objectives of the student's academic program and support the development of professional skills and competencies.[17] These elements are interrelated. Challenges related to motivation, management and relationships may compound in remote environments and can impact future employability.

Benefits of remote WIL

Though remote and hybrid WIL presented challenges, students, employers and WIL administrators expressed appreciation for the flexibility of remote and hybrid WIL arrangements. Students highlighted flexibility in work hours and a reduction in financial costs and travel time. For international students, remote WIL meant they could complete their placement requirements while living abroad. Domestic students could similarly participate in international or pan-Canadian WIL opportunities. The shift to remote WIL significantly expanded access for many students, opening doors that hadn't existed prior to the pandemic.

WIL administrators and employers reported similar benefits for students, including increased flexibility, geographic reach and savings related to transportation. Seventy-one percent of WIL administrators mentioned that offering remote WIL opportunities allowed their institution to serve a broader range of students. When asked about COVID-related policies, WIL administrators noted being able to streamline their hiring processes using digital tools (including interviews, orientation and training), which resulted in additional placements for students. Employers expressed similar enthusiasm for digital remote working tools, noting that online training guides and virtual and group interviews supported a more efficient WIL application process. These findings suggest that remote WIL presents an important access opportunity for students, employers and WIL administrators.



13 Baird, A. M., & Parayitam, S. (2019). Employers' ratings of importance of skills and competencies college graduates need to get hired: Evidence from the New England region of USA. Education + Training, 61(5), 622–634. https://doi.org/10.1108/ET-12-2018-0250

14 Kapareliotis, I., Voutsina, K., & Patsiotis, A. (2019). Internship and employability prospects: Assessing student's [sic] work readiness. Higher Education, Skills and Work-Based Learning, 9(4), 538–549. https://doi.org/10.1108/HESWBL-08-2018-0086

15 McGunagle, D., & Zizka, L. (2020). Employability skills for 21st-century STEM students: The employers' perspective. Higher Education, Skills and Work-Based Learning, 10(3), 591–606. https://doi-org.myaccess.library.utoronto.ca/10.1108/HESWBL-10-2019-0148

16 Jackson, D. (2013). The contribution of work-integrated learning to undergraduate employability skill outcomes. Asia-Pacific Journal of Cooperative Education, 14(2), 99–115. https://www.ijwil.org/files/APJCE_14_2_99_115.pdf

17 Smith, C. (2012). Evaluating the quality of work-integrated learning curricula: A comprehensive framework. Higher Education Research and Development, 31(2), 247–262. https://doi-org.myaccess.library.utoronto.ca/10.1080/07294360.2011.558072

Recommendations for quality remote WIL

The goal of WIL is to provide students with meaningful, relevant work experience that facilitates skill development and supports graduates' transitions into the workforce. High-quality WIL experiences, whether remote, hybrid or in-person, require cooperation, collaboration and shared responsibility among students, employers and institutions. To ensure that all students have high-quality WIL opportunities, we recommend the following:

Employers should expand opportunities for students' interpersonal skill development in remote WIL placements.

Formal mentorship and assessment can facilitate students' professional growth and interpersonal skill development. Additionally, employers should intentionally facilitate opportunities for team-building and networking for remote and hybrid students. Opportunities to engage with WIL workplace staff can help mitigate students' feelings of isolation that are common in remote arrangements. These interactions can also help WIL students develop their professional identities and hone their communication skills.

Institutions should maintain and build upon remote WIL features that enable greater accessibility and new types of WIL opportunities.

Remote WIL provided increased access to many students by reducing geographic restrictions and travel costs. Institutions should continue to leverage remote work arrangements to expand international and pan-national WIL placements. Opportunities for students to use digital tools as part of WIL administration processes will prepare them for the future of work, so institutions should continue to offer them.

WIL employers and students should work together to set expectations and goals for skill development and professional growth.

Students have a role to play in their own WIL success through self-advocacy. Students should consider and discuss what they would like to gain from WIL in conversation with their employers. Students can set learning goals, advocate for opportunities to discuss and monitor their progress and intentionally seek opportunities to engage with colleagues and mentors. WIL is an opportunity for students to practice and develop professional skills — including challenging themselves to learn how to navigate working in an increasingly remote workforce.

Lena Balata is a Researcher at the Higher Education Quality Council of Ontario, working on a variety of research projects relating to access, transferable skills and work-integrated learning. With almost ten years of experience in Ontario's higher education system, she has worked on grant and project management, policy development and analysis, and written and contributed to several HEQCO publications. Prior to joining HEQCO, Lena worked as a data specialist and project lead at the Ontario Council on Articulation and Transfer (ONCAT). Lena has worked closely with colleges and universities to develop policies and procedures that support student transfer pathways and success. She has a strong understanding of postsecondary research, program evaluation and knowledge mobilization and is passionate about supporting equity of access and success in postsecondary education for underrepresented groups. She holds a MA in higher education from the Ontario Institute for Studies in Education at the University of Toronto.

Ken Chatoor works on research projects related to access to post-secondary and the experiences and outcomes of students in Ontario. Ken currently works on projects related to mental health for Ontario students, equitable labour market outcomes for students, and experiences of inclusion in Work Integrated Learning. Ken previously conducted research to develop new therapies for brain cancer at McGill University, research on quality of life for individuals with complex disabilities and biomedical engineering for spine regeneration at Mount Sinai Hospital.

OUSA

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