



Ontario Undergraduate Student Alliance

POLICY PAPER

Tech-Enabled Learning

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ABOUT OUSA

OUSA represents the interests of 150,000 professional and undergraduate, full-time and part-time university students at eight student associations across Ontario. Our vision is for an accessible, affordable, accountable, and high quality post-secondary education in Ontario. To achieve this vision we've come together to develop solutions to challenges facing higher education, build broad consensus for our policy options, and lobby the government to implement them.

The member institutions and home office of the Ontario Undergraduate Student Alliance operate on the ancestral and traditional territories of the Attawandaron (Neutral), Haudenosaunee, Huron-Wendat, Leni-Lunaape, Anishnawbek, and Mississauga peoples.

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GLOSSARY

Digital Badges (aka Open Badges): Electronic symbols [that can be, but not always] used as micro-credentials to document achievement or skills mastered such as course completion, professional development participation, or training completion.¹

Distance Education: No classes are held on campus and all instruction is conducted at a distance..Remote learning is the tenet of distance education and it encompasses both online learning and other modes of delivering instruction and course materials at a distance.²

Emergency Remote Teaching: A temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances [which] involves the use of fully remote teaching solutions for instruction or education that would otherwise be delivered face-to-face or as blended or hybrid courses and that will return to that format once the crisis or emergency has abated.³

Hybrid Learning: Also referred to as blended learning, hybrid courses or programs are intentionally designed to combine both online and in-person instruction.⁴

Learning Management Systems (LMS): Online systems or platforms that provide centralised places to create, deliver, and manage a course or learning module. LMS contain standard sets of tools that can be accessed by students anytime, anywhere, and via multiple devices.⁵

MOOC (massive open online course): Free, easily accessible, completely online courses...don't always lead to formal qualifications...usually no entry requirements.⁶

Online Learning: A form of distance education where the primary delivery mechanism is via the Internet. Instruction is delivered synchronously or asynchronously and the course and materials are "intentionally designed in advance to be delivered fully online."⁷

Open Educational Resources: Teaching, learning, and research resources that, through permissions granted by their creator, allow others to use, distribute, keep, or make changes to them.⁸

Technology: Methods, systems, and devices which are the result of scientific knowledge being used for practical purposes.⁹

¹ Jill Stefaniak and Kimberly Carey, "Instilling purpose and value in the implementation of digital badges in higher education," *International Journal of Educational Technology in Higher Education* 16, no. 44 (2019), <https://doi.org/10.1186/s41239-019-0175-9>; see also

<https://ecampusontario.pressbooks.pub/techinthecurriculum/chapter/digital-badges-and-microcredentials/>

² Nicole Johnson, *Digital Learning in Canadian Higher Education in 2020: Ontario Report* (Canadian Digital Learning Research Association, 2020), 6.

³ Nicole Johnson, *Digital Learning in Canadian Higher Education in 2020: Ontario Report* (Canadian Digital Learning Research Association, 2020), 7.

⁴ Nicole Johnson, *Digital Learning in Canadian Higher Education in 2020: Ontario Report* (Canadian Digital Learning Research Association, 2020), 7.

⁵ Sandra Howell and Brian O'Donnell, *Digital Trends and Initiatives in Education: The Changing Landscape for Canadian Content* (Toronto, ON: Association of Canadian Publishers, 2017), 3.

⁶ "What is a MOOC?," *FutureLearn*, March 11, 2016, <https://www.futurelearn.com/info/blog/what-is-a-mooc-futurelearn>.

⁷ Nicole Johnson, *Digital Learning in Canadian Higher Education in 2020: Ontario Report* (Canadian Digital Learning Research Association, 2020), 6.

⁸ BCcampus, "What are Open Educational Resources?," *OpenEd*, accessed December 2, 2021, <https://open.bccampus.ca/what-is-open-education/what-are-open-educational-resources/>.

⁹ <https://www.collinsdictionary.com/dictionary/english/technology>

Technology-enabled learning: The adoption of technology in order to promote a better classroom experience for students or increase e-learning pedagogical activities.¹⁰

¹⁰ <https://www.ecampusontario.ca/knowledge-base/technology-enabled-and-online-learning/>

INTRODUCTION

Within the past decade, we have seen universities continuously using technology within classrooms to teach students through the use of new and innovative tools. With the COVID-19 crisis forcing universities to adapt to remote learning, the shift towards using more technology in education has been expedited. Students who graduated university five or ten years ago had the choice to use technology, but today's undergraduate and professional students *have to* use technology to attend university.

Technology has an opportunity to help transform higher education in Ontario, but only if post-secondary institutions get ahead of the curve. With the rapid shift to virtual learning, a number of gaps have been brought forward. In maintaining a high-quality education system, universities need to adapt to the new reality of learning and strengthen their knowledge of and skills when using technology-enabled learning.

Vickie Cook, a professor at the University of Illinois in Springfield, stated “universities must pay more attention to students’ digital learning methods in high school to get their head around new ways of student-learning.”¹¹ Technology-enabled learning opportunities are not only an opportunity to evolve as an institution, but they are essential to continuing to adapt as future generations of students grow up with digital technologies throughout their childhood. With other sectors slowly adapting new technologies, it is time for Ontario’s post-secondary institutions to follow suit. By doing so, our institutions will be ensuring that they continue to enhance the educational experience for undergraduate and professional students across the province.

The purpose of this policy paper is to capture students’ concerns about the current state of technology enabled learning at Ontario’s publicly-assisted post-secondary institutions.

This paper will offer a series of recommendations that are representative of the principles and concerns of Ontario’s undergraduate students. These recommendations will be aimed at the Ontario government and other sector stakeholders, with a respect for evidence-based policy maintained throughout. This paper will highlight and advocate for the following overarching goals: supporting faculty and students in improving their knowledge of technology, ensuring all students have access to technology given its growing importance in the sector, and ensuring that there are strict quality standards for online course instruction.

It is our hope that the evidence-based policy recommendations found below are considered by the provincial government and that we can work together to improve the accessibility, affordability, and quality of the university experience for students across Ontario.

¹¹ Olivia Bowden, “Canadian universities struggling to offer digital learning to tech-savvy Generation Z,” Financial Post, September 7, 2016, <https://business.financialpost.com/executive/smart-shift/canadian-universities-struggling-to-offer-digital-learning-to-techsavvy-generation-z>.

EXECUTIVE SUMMARY

The COVID-19 pandemic has changed the way post-secondary institutions approach teaching learning forever, with a bulk of instruction being taught virtually over the last two years. While the possibility of in-person instruction in the near future seems promising, there is a new world order and hybrid instruction will be the predominant mode of instruction in years to come. As we look forward to the next four years, students highlight the issues they have experienced while working and learning remotely and suggest the following recommendations on how to improve technology enabled learning.

THE PROBLEM

Institutional Accessibility

Students have identified that live closed captions in their lectures have no quality control standards and thus cause greater issues for students who require accommodations to succeed in a virtual learning environment. In addition, these captions often lack accuracy, which can harm disabled students in an online setting. The inaccurate nature could lead to students digesting the wrong material, interpreting content/messages wrong, or generally not understanding the content. Furthermore, when these live lectures are recorded and uploaded online, they often aren't uploaded in an accessible format, which creates a barrier for students who are deaf, hard of hearing, and/or have auditory processing disabilities. More broadly, having students pay to access required homework and assignment software for every course they are enrolled in has been an increasing concern for students, the high costs of the external resources can be unmanageable for some students and creates an inequitable learning experience for them.

With many students learning virtually due to the pandemic, access to reliable internet access is of the utmost importance. Private sector internet providers are not effectively incentivized to support access to, and the development of, quality internet service in rural and northern areas. Some individuals in Northern and rural communities don't have access to the internet at all or if they do it comes at a very high cost. The lack of will from private providers is likely due to the fact that providing internet access to low-density rural areas is often not a profitable endeavour, meaning many internet companies will refuse to expand their networks to cover these communities.

Furthermore, beyond reliable internet access, students also need reliable access to technology. Many households struggle to afford enough computers for students and other members within the household making online learning an unviable and unaffordable option for them. For those living in Northern, rural, and Indigenous communities, there is a lack of local access to computers and students in these areas would need to pay high shipping costs or travel costs to acquire the minimum requirement for success in an online environment. This has created a barrier for many students, as they are struggling financially and require specialised software to succeed in their courses and are unable to afford and access these necessary softwares.

Post-Secondary Affordability

Post secondary students should have access to clear financial support and resources to enable their educational pursuits. However, the cost of technology and software has increased with new programs and students are expected to front these costs as part of their expenses. Students have long called for more

affordable resources and software to be used in classrooms. The provincial government has not provided consistent and stable funding to students or post-secondary institutions to support the use of innovative and accessible platforms, software, and technology or the development and wide use of free resources like OERs. While this would greatly benefit students, post-secondary institutions' campus and online libraries and bookstores do not offer or advocate for affordable options when selling materials to students.

Accountability

Prospective students should have all available information such as the overall learning outcomes of their degree of choice and enrollment data when choosing a post-secondary institution to attend. University data such as research reports, spending reports, and information on student needs is often unavailable or difficult to access. This information can be incredibly beneficial in supporting a student's decision in choosing what university they would like to attend. Currently there are no requirements for institutions to release their data publicly, nor are there any requirements for institutions to collect data consistently for learning outcomes or student experience. At the present time, students believe that Ontario's existing data collection practices are insufficient to meaningfully assess its digital learning objectives.

Privacy, Intellectual Property, and Emerging Technologies

Students should have access to lecture materials in a variety of modalities. Unfortunately, Instructors are often hesitant to post lecture content online because they are worried about students distributing their intellectual property without their knowledge or permission.

Students have raised concerns with current online proctoring softwares. Online proctoring software can present increased barriers for racialized students who are often not detected by inequitably developed facial recognition features. The use of facial recognition can complicate the use of the software by individuals with religious headwear, contributing to additional student stress and undue pressure to remove their headwear to access their assessment. These platforms raise questions regarding student data being given to third party platforms. There have been known instances of security breaches wherein sensitive student data, such as names and addresses were leaked. Going further, ableist requirements that prohibit movement and restrict the use of accommodation aids make online proctoring software inaccessible for students with disabilities. Many instructors do not offer alternatives to proctoring software and/or make applying for alternative assessments intentionally cumbersome to dissuade students from accessing them. Despite there being known methods of discouraging academic dishonesty in online courses that are much less invasive, instructors and institutions continue to use proctor software, which many students believe is unfair.

Online Courses

All students should expect support in achieving the same learning outcomes in an online course as they would in a traditionally-delivered or hybrid course. However, as many courses are still dealing with the precarious and unknown future of whether courses will be in-person, virtual or hybrid, students may experience volatility in their abilities to engage with online courses due to a course's technological requirements. Current quality assurance criteria for changing the mode of delivery for some portion of a program to online delivery does not require appropriate consideration of instructional support needs, nor does not require appropriate consideration of student access.

Students have also expressed concerns that their institution is not incentivizing faculty to engage with pedagogical resources to improve methods of teaching and learning. The current Strategic Mandate Agreement and performance-based funding framework is not conducive to pedagogical experimentation/innovation. We recognize that some institutions may want to do such research, but they may lack the resources to effectively support the design, development, and delivery of online courses.

We heard considerable feedback over the past two years about In emergency transitions to online learning and that the unique pedagogy of online courses should be considered in the design, development, and delivery of online courses wherever possible. Students are reporting that emergency transitions to remote learning generally necessitate the efforts of individual instructors to update an existing in-person course for online delivery. Most instructors lack thorough training or support options to design, develop, and deliver an online course, especially in circumstances of emergency transitions to online learning. While these circumstances are not ideal for students, we recognize that they also aren't ideal for faculty and staff. As the past two years have been unprecedented, we recognize that providing adequate instructional and technological support for instructors is a costly endeavour which institutions cannot financially prepare for in a practical way.

Non-Degree Credentials

Digital badging provides a unique opportunity to improve on other skills-articulation programs that exist across the province, such as co-curricular records. Non-degree credentials, such as badging, can help students better articulate skills developed in extra-curricular activities. Unfortunately, badging is not yet widely acknowledged by employers or post-secondary education institutions in Ontario. There is a lack of data on the regulation of badging and how to most effectively utilize them, which affects their credibility outside of post-secondary institutions.

Open Educational Resources

OERs are a legitimate and effective approach to address student concerns on the affordability of textbooks and other forms of courseware. The rising costs of educational materials, such as textbooks, create increasingly large financial barriers for students pursuing post-secondary education; These rising costs disproportionately impact low-income students. As a result, there is evidence that suggests students often drop courses, choose not to enrol, or change their course section due to the cost of course materials. There are several cheaper alternatives in the marketplace to make course resources more accessible, including OER's. Despite the increased availability of digital material/resources sold by publishers with far lower costs of production than their print counterparts, financial accessibility has not significantly improved.

With widespread adoption of Open Educational Resources, students want to ensure that there are quality assurance protocols in place. Current OERs available to course instructors in Ontario are often left underutilized due to a lack of awareness regarding efficacy and quality of OERs. In addition, it is difficult for instructors to find vetted, trustworthy OERs due to the many disparate catalogues and databases of such resources. Further, there is currently little centralized data regarding the impacts of OERs on the teaching and learning experience in Ontario. There also isn't a standardized reporting structure for institutions to measure the usage, concerns, and successes (e.g., financial impact) of OERs. This data can significantly help dispel myths about OERs are support their widespread adoption.

Online Learning Materials

Online learning tools are a useful component of post-secondary education as they can enhance the accessibility and quality of education if used effectively and consistently. They provide more flexibility, affordability, and enhance adaptive learning for post-secondary students. While they have many benefits for students, there are also a number of concerns. Online learning tools are often not developed or appraised to meet the same standards of quality as traditional, physical learning tools. They are also not always compatible with common assistive technologies and devices, creating barriers for students and decreasing the accessibility of the tools. Furthermore, inconsistent and variable development and implementation of online learning tools within and across institutions can decrease the quality and

accessibility of education and introduce variable digital literacy requirements, creating barriers for students.

Learning management systems (LMS) are software applications generally used to administer courses and typically have integrated components that track, document, report, and/or automate various components of the course or program delivery. Students have stated that faculty and instructors' lack of technical skills and knowledge, as well as a lack of adequate institutional capacity and support, often prevents the use of LMS to their full potential, reducing their potential benefit to postsecondary education. In addition, LMS are often not appraised with the same level of rigorous quality appraisal standards as in-person learning environments. Students have also realized that LMS are often used and implemented to varying degrees and manners within institutions, creating confusion and barriers for students, negatively impacting learning experiences, and reducing educational quality.

Teaching Skills and Instructors

All instructors and faculty should feel comfortable with and be able to effectively and consistently use technology-enabled learning systems, resources, and tools to ensure the equitable provision of high-quality, accessible education for all post-secondary students. Unfortunately, instructors and faculty do not always possess the technical skills and knowledge to use technology-enabled learning systems, resources, and tools in an accessible, consistent, effective, and equitable manner. Additionally, faculty and instructors' lack of technical skills and knowledge around using technology-enabled learning systems, resources, and tools detracts from the quality and accessibility of education delivered in post-secondary institutions. We recognize that developing and implementing technology-enabled learning systems, resources, and tools used in post-secondary education can be overwhelming for faculty, instructors, and staff. However, more can be done to better support both students and faculty.

Infrastructure

With COVID-19 impacting students across the province, and globe, the emphasis has been for post-secondary institutions to temporarily move online with an end goal of returning to in-person instruction. As the province begins to move towards hybrid and in-person modes of learning, students have realized that not all classrooms are equipped to support the diverse needs of students in post-secondary. This has added barriers for students who are disabled; Students with disabilities and diverse access needs are often excluded from a post-secondary institution's plans to implement new technology or learning models. This public health crisis has significantly shifted learning for students, but has also impacted how faculty go about their jobs. Post-secondary institutions have not been able to support instructors and students with the technology and in-person support needed to facilitate hybrid learning options.

Public vs. Private

Decisions around which digital tools/resources are used in the classroom should be primarily based on their ability to meet institution, instructor and student needs. There are several benefits for students when their institution develops in-house pedagogical tools. However, pedagogical innovation is typically not seen as a worthwhile or career-advancing pursuit by instructors, and thus is not prioritized. Educational tools designed by for-profit companies prioritize profit and marketability to institutions/instructors over student learning and experience. Lack of involvement from public institutions in the design and development of educational tools leaves them dependent on what privately-owned companies produce, which as previously mentioned doesn't directly benefit a student's learning experience.

RECOMMENDATIONS

Access to Content

To address students' concern around equitable access to content, the provincial government should provide post-secondary institutions with funding to find, develop, and/or hire more accessible and equitable captioning technologies/staff. Students with disabilities face unique challenges in accessing course content. We believe that the Ministry of Colleges and Universities should work with Accessibility Offices at an institutional level to implement ways of presenting materials which are effective for students with visual impairments and which would give them equitable access to the classroom materials. Similarly, the Ministry of Colleges and Universities should mandate training on accessibility requirements in the online classroom environment to ensure each student has equitable access to learning materials. A large part of access issues is caused by the inability or unwillingness from faculty and staff. Training for staff on how to better provide accommodations within an online environment is beneficial for all students.

The Postsecondary Education Standards Development Committee recently released their report outlining recommendations that should be made within the post-secondary sector to improve the accessibility for students. Of note, we believe The Government of Ontario should implement recommendation 68 in the Development of Proposed Post-Secondary Education Report "each postsecondary institution must develop and make publicly available a plan to seamlessly include accessibility in the digital learning and technology used throughout the academic journey of all students with disabilities. In addition, the government of Ontario should implement recommendation 69 in the Development of Proposed Post-Secondary Education Report "the Digital Learning and Technology plan must be created in consultation with a diverse body of stakeholders that includes students with disabilities. To complement these two recommendations, the Ministry of Colleges and Universities should enact regulation which requires professors to give versions of classroom documents that meet the AODA standards for web content to accessibility offices at institutions when students with relevant accommodations require them.

To address and respond to the concerns regarding internet access, the provincial government should incentivize the private sector through tax credits to assist Ontario's Broadband and Cellular Action Plan and improve access to broadband internet for rural and northern communities. They should also provide students who demonstrate financial need and weak or no access to the internet in their place of residence with grants for internet installation. To support students who face difficulty gaining access to necessary technological resources, the Ministry of Colleges & Universities should provide grant funding to institutions' financial aid departments which would support students who lack the funding to purchase appropriate technology. The Provincial Government should also amend the computer allowance within OSAP to provide students with a grant of up to \$1500 to use at one point during their degree.

Improving Post-Secondary Affordability

In increasing the affordability of post-secondary, the provincial government should modify the existing OSAP framework to expand the number of grants available for students to access technology needed for all years of their post-secondary education. In addition, they should continue to provide funding to post-secondary institutions through the Virtual Learning Strategy for Post-Secondary Education based on the costs of technology associated with programs offered to allow institutions to provide the necessary technology for students. Furthermore, the provincial government should develop guidelines for the creation and acquisition of various technologies within post-secondary institutions in consultation with students, faculty members, administrations, industry stakeholders, and other community members through a province wide advisory group.

In bolstering the validity of the un-affordability of post secondary education, the province of Ontario should task the Higher Education Quality Control of Ontario with researching the rising cost of technology associated with post-secondary education as well as the impacts and successes of government

loans in alleviating barriers and improving transparency. The Ministry of Colleges and Universities should also narrow the Tuition Fee Framework and Ancillary Fees Guideline to limit the use of third party resources already offered by the university, over \$50 per term, and for use in assessments worth less than 20% of the final grade, in an effort to promote a more cost friendly, equitable, and accessible learning experience for all students. Lastly, the provincial government should collaborate with post-secondary libraries and bookstores to negotiate lower-cost licensing and purchasing agreements for courseware to reduce financial barriers for students.

Open Data

Prospective students should have all available information such as the overall learning outcomes of their degree of choice and enrollment data when choosing a post-secondary institution to attend. In reaching this goal, the Ministry of Colleges and Universities should task HEQCO with expanding their Open Data Inventory database to improve public access and accountability; this decision should be tied with enveloped funding for HEQCO to expand their Open University database. Lastly, we believe that the provincial government should task COU to develop a uniform data collection system for learning outcomes and student experience that is publicly available.

Data Collection

Tech-enabled learning has the potential to improve the accessibility, affordability, and quality of education for all Ontario students. Research should be conducted around data collection methods to ensure students are protected. One measure that should be taken is for the Ontario government to develop a set of metrics to assess its digital-learning objectives. The government should also commission HEQCO to identify how perspectives, barriers, and resources within tech-enabled learning have evolved since the pandemic, and adjust the province's digital-learning strategy accordingly. Finally, the Ontario government should expand its data collection procedures to identify students who take digital courses or are provided services by provincial agencies in order to allow the evaluation of key outcomes such as graduation rates, skills acquisition, and postgraduate employment.

Intellectual Property Rights

Students should have access to lecture materials in a variety of modalities, but instructors are hesitant to post content online due to the fear of their intellectual property being stolen. To address this, the provincial government should commission HEQCO to conduct a review of faculty members' concerns on intellectual property theft. Their research should investigate their main concerns, solutions that would make instructors feel more secure that their intellectual property will be safe, and the frequency of theft. Furthermore, the provincial government should commission HEQCO to conduct a review of faculty members' concerns on intellectual property theft. Their research should create a guide for best practises on mitigating concerns around property theft.

Online Proctoring

To support students concerns with proctoring software, the Ministry of Colleges and Universities should mandate that each institution develop a set of standards that proctor software used in post-secondary institutions must meet in terms of equitable assessment, privacy, accessibility, and data rendition/security practices, and that these policies be developed in consultation with students and student government representatives, including students from marginalized communities most impacted by proctor software. The Ministry of Colleges and Universities should mandate that institutions inform instructors of the risks and possible harms of proctoring software, and alternative assessment methods that do not require proctoring software. This could help dispel any untrue myths around proctoring software. Many students have indicated that professors and staff don't understand that many students

need accommodations and that proctoring software is not a one size fits all solution. The Ministry of Colleges and Universities should mandate policies pertaining to permitted uses of accommodation aids during online-proctored exams for disabled students, and/or have departments in charge of accessibility services in post-secondary institutions oversee those policies. As we continue to navigate various forms of learning and examinations, the MCU should mandate that universities commit to using the most minimally invasive practices for ensuring academic integrity during assessments, wherever possible.

Access

All students should expect support in achieving the same learning outcomes in an online course as they would in a traditionally-delivered or hybrid course. In achieving this goal, the Ontario Universities Council on Quality Assurance (OUCQA) should amend the Protocol for Major Modifications to require assessment of the existing criteria for changing a significant portion of a program from in-person to online. Furthermore, the provincial government should provide envelope funding to institutions to support institutional strategies that support students' ability to engage with online courses, such as technology loan programs.

Pedagogy Research, Innovation, and Guidance

In strengthening the pedagogy at universities in the province, the provincial government should task eCampus Ontario with the ongoing establishment of best-practice recommendations for the design, development, and delivery of online courses; where appropriate, different recommendations should be established for different types of learning outcomes. To complement this, the provincial government should provide envelope funding to institutions for activities contributing to innovation and experimentation in the field of online learning in post-secondary environments. Lastly, the provincial government should provide generous funding to support institutional bodies which support the design, development, and delivery of online courses.

Emergency Transitions to Online Learning

In preparing for any future emergency transitions to online learning, the provincial government should commit to offering immediate and adequate grant funding to institutions to facilitate an effective shift to remote course delivery in the case of future emergency transitions to remote learning.

Digital Badges

In supporting students better articulate skills developed outside of academics, the provincial government, through eCampusOntario, should establish a badging framework. In addition, the provincial government should consult employers, post-secondary institutions, and students in developing skills competencies for badges, as well as further communicating the value of skills articulation for employment. Lastly, the provincial government should task eCampusOntario in developing a badging or certificate program to acknowledge professional development in technology-enabled learning for faculty, teaching assistants, technicians, staff, and students.

Open Educational Resources

OERs continue to be an underutilized tool that can increase the affordability of post-secondary for many students. To support their widespread adoption, the provincial government should invest in increasing the number of high-quality Open Educational Resources, focusing first on common courses and disciplines where demand has not been met. In addition, the provincial government should reward institutions and instructors that replace expensive course materials with free and low-cost alternatives. Lastly, the provincial government should continue to subsidize the costs of course materials until OERs overtake them.

Ensuring Quality

While we are pushing for widespread OER adoption, we recognize that firm standards need to be in place to protect the quality of these resources. OUSA believes that the provincial government should work with faculty stakeholders in Ontario, including but not limited to the Council of Ontario Universities (COU) and Ontario Confederation of University Faculty Associations, to incorporate accurate and up-to-date information on OERs for faculty orientation across institutions. To complement this, the provincial government should increase funding allocated to eCampusOntario to work with Teaching and Learning Centres, and their equivalents, to peer review existing OERs with a focus on quality assurance. Finally, the provincial government should, through eCampusOntario, establish a quality assurance process to review OERs as they are developed.

Data Collection to Improve User Experience

With widespread adoption, more institutions will likely undergo research projects to assess the effectiveness of OERs. When institutions embark on collecting data, the provincial government should mandate and provide funding to institutions to report data in a standardized format regarding both students' and faculty members' experiences with OERs. Additionally, eCampusOntario is a major stakeholder in this space. OUSA believes that the provincial government should task eCampusOntario with the collection, analysis and publication of institutional user satisfaction data.

Incentivizing the Adoption, Adaption, and Creation of OERs by Instructors

Any strategy to increase the adoption of OERs in Ontario's postsecondary education system must be done in such a way that acknowledges individual instructors' right to select the educational resources they feel best aligns with their course. In supporting the adoption of OERs, the province should work with the Ontario Confederation of University Faculty Association (OCUFA) to develop meaningful incentives geared towards faculty for OER development. Furthermore, the province should work with the Council of Ontario Universities to develop a best practice system for incentivising OER development.

As previously mentioned eCampusOntario has an extensive library and remains a significant stakeholder in this sector. OUSA believes that the provincial government should provide envelope funding to support the expansion of eCampus Ontario's library to increase capacity and diversity of texts that encompasses all disciplines. Also, the creation and promotion of OERs should be included in Ontario's Strategic Mandate Agreements as a metric for effective pedagogy and faculty innovation, linking performance-based funding to increasing financial access to education.

Online Learning Tools

To support students in their use of various online learning tools, the Ontario Universities Council on Quality Assurance (OUCQA), in partnership with eCampusOntario and ContactNorth, should develop best practices for the development, implementation, and quality appraisal of online learning tools with a focus on accessibility, effectiveness, and consistency within and across institutions. In addition, the Ontario Universities Council on Quality Assurance (OUCQA) should integrate best practices around online learning tools into the Quality Assurance Framework used for Institutional Quality Assurance Processes. OUSA also believes that the Ministry of Colleges and Universities should fund and work with eCampusOntario and Contact North to centralize and distribute accessible and effective digital literacy education programs for instructors and students in Ontario post-secondary institutions.

In increasing the accessibility of these tools, the provincial government should require post-secondary institutions to ensure that online learning tools are accessible and user-friendly for all students and are

compatible for use with common assistive technologies and devices. The provincial government should also encourage postsecondary institutions to identify in advance and clearly communicate to students the accessibility features of the online learning tools needed to meet the essential requirements of a given course.

Learning Management Systems

Open-source Learning Management Systems (LMS), are more cost-effective and adaptable than licensed, proprietary systems. The Ministry of Colleges and Universities, in collaboration with eCampusOntario and ContactNorth, should encourage and provide technical support for the use of open-source LMS in post-secondary education. There should also be more research into LMS to support faculty and staff awareness of the pros and cons of these platforms. As a result, the Ministry of Colleges and Universities should work with eCampusOntario, and ContactNorth, and the Ontario Universities Council on Quality Assurance (OUCQA) to enhance institutional knowledge and capacity around LMS in Ontario post-secondary institutions. This should be complemented with the Ministry of Colleges and Universities developing, in partnership with the Ontario Universities Council on Quality Assurance (OUCQA), quality standards and best practices for post-secondary institutions when selecting and implementing LMS.

Teaching Skills and Instructors Support

Post-secondary institutions should have the infrastructure and resources to provide robust and effective training and support to faculty and instructors using technology-enabled learning systems, resources, and tools. In achieving this goal, the provincial government should provide grant funding to post-secondary institutions' teaching and learning departments to enhance the quality, effectiveness, and use of resources, tools, coaching, and training around technology-enabled learning offered to faculty, instructors, and staff. In addition, the provincial government should provide envelope funding to post-secondary institutions to recruit and/or retain Equity, Diversity & Inclusion (EDI) specialists in teaching and learning departments to support instructors in the equitable development and implementation of technology-enabled learning systems, resources, and tools.

To further encourage faculty to deepen their knowledge and awareness of tech-enabled tools, the province should develop a certificate/badging system. Specifically, OUSA believes that the Ministry of Colleges and Universities should direct eCampusOntario and Contact North to work with post-secondary institutions and stakeholders to develop and implement an open educational resource in the form of a dedicated and centralized certificate program that enhances faculty and instructors' abilities to develop, implement, and teach blended and online courses. This should be partnered with grants to post-secondary institutions for successful and widespread completion of the aforementioned dedicated and comprehensive certificate program by faculty and instructors.

Classroom Technology and Digital Infrastructure

To better support students' use of technology within classrooms, the provincial government should provide funding to post-secondary institutions to improve classroom technology to align with recommendations from the Postsecondary Education Standards Development Committee AODA. The province of Ontario should also create guidelines for post-secondary institutions to begin supporting hybrid learning through consultation with HEQCO, student groups, industry professionals, and equity and diversity experts. Lastly, the provincial government should provide envelope funding to post-secondary institutions to cover the additional costs associated with offering hybrid learning models, adequate support staff, and accessible technology and platforms.

Learning Innovations

Tools used for tech-enabled learning should be high-quality, accessible to a wide range of users and not pose additional financial barriers on students. Unfortunately, there can be confusion around what is defined as a tech-enabled learning tool, as well as other innovations. To better support students' access to such materials, the Ministry of Colleges and Universities should provide and adopt clear and consistent definitions across the education sector for key terms relating to digital learning and technology. In addition, each postsecondary institution must develop and make publicly available a plan to seamlessly include accessibility in the digital learning and technology used throughout the academic journey of all students with disabilities. Lastly, the provincial government should provide grant funding to institutions developing and expanding inter-institutional access to digital learning tools and platforms.

ACCESSIBILITY

EQUITABLE ACCESS TO CONTENT

Principle: All students should have access to the content provided within synchronous and asynchronous lectures without any barriers.

Principle: All students should be able to access and meaningfully engage with course content regardless of (dis)ability.

Principle: The cost of tuition should encompass all resources necessary for learning in a course, including assignments and homework, and these resources should be accessible to every student at a reasonable cost.

Principle: Students should have timely access to reliable captions or transcripts for their classes.

Concern: Live closed captions in lectures that take place over live video format have no quality control standards and thus cause more issues for students who require those accommodations to succeed in a learning environment.

Concern: Automatic live closed captions often lack accuracy, which can harm disabled individuals in an online setting.

Concern: Due to the lack of investment in accessible and equitable captioning technology, automatic live closed captions can replicate systemic oppression through the lack of acknowledgement of non-western language.

Concern: Recorded lectures can be inaccessible for students who are deaf, hard of hearing, or have auditory processing disorders.

Concern: For students with visual impairments, slides or written notes provided on a recorded lecture's screen can be too small or illegible and hinder their ability to obtain the material.

Concern: Many students have to pay to access homework and assignment software for every course they are enrolled in where professors utilize these external resources. High costs of these external resources can be unmanageable for some students and causes an inequitable learning experience for these individuals.

Recommendation: The provincial government should provide post-secondary institutions with funding to find, develop, and/or hire more accessible and equitable captioning technologies/staff.

Recommendation: The Ministry of Colleges and Universities should work with Accessibility Offices at an institutional level to implement ways of presenting materials which are effective for students with visual impairments and which would give them equitable access to the classroom materials.

Recommendation: The Ministry of Colleges and Universities should mandate training on accessibility requirements in the online classroom environment to ensure each student has equitable access to learning materials.

Recommendation: The Ministry of Colleges and Universities should enact regulation which requires professors to give versions of classroom documents that meet the AODA standards for web content to accessibility offices at institutions when students with relevant accommodations require them.

Recommendation: The Government of Ontario should implement recommendation 68 in the Development of Proposed Post-Secondary Education Report "each postsecondary institution must develop and make publicly available a plan to seamlessly include accessibility in the digital learning and technology used throughout the academic journey of all students with disabilities."

Recommendation: The government of Ontario should implement recommendation 69 in the Development of Proposed Post-Secondary Education Report “the Digital Learning and Technology plan must be created in consultation with a diverse body of stakeholders that includes students with disabilities.”

In the past few years, online lectures have become extremely prevalent in the postsecondary sector. Moving past an emergency measure, online lecturing both synchronously and asynchronously has become somewhat of a normal situation for many. In these online lectures, students do not always receive all course materials including but not limited to power points, videos and lecture notes. This is largely due to professors not being interested or comfortable with providing these materials and evidently results in difficulty achieving success especially for students with disabilities. The disabilities affected by this reluctance include but are not limited to visual impairments, deaf or hard of hearing students, and students with auditory processing impairments. Proper transcripts are important for both the community who is disabled as aforementioned and for the non-western language speaking population of students. This inaccuracy contributes to systemic oppression in our post secondary education system and can cause students on an individual basis to feel forgotten and marginalized. In an effort to quell this, we call upon The Government of Ontario along with the Ministry of Colleges and Universities to call on the Accessibility Offices or equivalent at each institution to ensure that solutions to accessibility barriers are addressed. Some examples of these solutions include; insuring that professors release all relevant class materials, expanding on note taking programs at institutions and providing proper transcripts to accompany information provided from within lectures.

Another important stakeholder in addressing accessibility barriers is The Postsecondary Education Standards Development Committee. This committee has created a comprehensive list of recommendations to identify and remove all systemic and environmental barriers that may hinder students’ access to digital learning. Some very relevant recommendations from this document include recommendation #68 which instructs institutions to create an accessibility plan open to the public for digital learning.¹² This plan will hold professors accountable for ensuring that courses are as accessible as possible for all students. Recommendation #69 is also aligned with the creation of an accessibility plan and mandates that any plans made must be created in collaboration with many different stakeholders such as students with disabilities to better discuss all angles involved in accessibility in a digital environment.¹³

INTERNET ACCESS

Principle: Internet access is a human right and an integral part of modern learning and every student should have equitable access to reliable internet speeds that allow them to succeed in an online environment.

Concern: Private sector internet providers are not effectively incentivized to support access to, and the development of, quality internet service in rural and northern areas. Some individuals in Northern and rural communities don’t have access to the internet at all or if they do it comes at a very high cost.

¹² Postsecondary Education Standards Development Committee. 2021. "Development Of Proposed Postsecondary Education Standards – 2021 Initial Recommendations Report". Toronto: Government of Ontario.
<https://www.ontario.ca/page/development-proposed-postsecondary-education-standards-2021-initial-recommendations-report>.

¹³ Ibid.

Concern: Providing internet access to low-density rural areas is often not a profitable endeavor, meaning many internet companies will refuse to expand their networks to cover these communities.:

Recommendation: The provincial government should incentivize the private sector through tax credits to assist Ontario's Broadband and Cellular Action Plan and improve access to broadband internet for rural and northern communities.

Recommendation: Students who demonstrate financial need and weak or no access to internet in their place of residence should be provided grants for internet installation from the Ministry of Colleges and Universities.

In 2016, the United Nations deemed internet access as a Human Right but students, particularly those in Northern and rural areas, still don't have access to reliable internet that can utilize all platforms necessary to complete their studies. Residing within these Northern and rural areas are a large majority of the Indigenous peoples of Ontario meaning that they are facing barriers which limit or disallow them from participating in an online learning environment and which continue the oppression that they often face. Platforms that may be required include but are not limited to streaming through the use of Zoom, Microsoft Teams, and Google Meet, utilizing software such as Desire 2 Learn, and accessing the google suite for completing work.

Satellite Internet is a new innovation providing another option that allows for students in Northern and Rural areas to easily access functional internet and connect with peers. While it is still in its infancy, it has already started to change the dynamics of internet access across the province. Starlink by SpaceX has already begun implementing satellite internet which is more sustainable than other satellite based internet.¹⁴ These satellites orbit lower than most others providing a more stable connection, take less time to decompose at the end of their lifespan, and due to their link to SpaceX, it is possible to launch more satellites as necessary.¹⁵ Given the up and coming reliability of this satellite internet, the Provincial Government should begin to deliver grants to students who demonstrate a lack of internet for the price of installation of satellite internet with the understanding that students should pay for the month to month upkeep. Not only will this be beneficial to Northern and rural students but it will also have an effect on students in urban settings such as the GTA. A study at Ryerson University showed that 38% of households in Toronto alone report download speeds lower than the recommended speed of 50 megabits per second (Mbps) and that 34% of low income households in Toronto are concerned about their ability to pay for internet.¹⁶ In this new era the internet is a tool for communication, connection, and education. Ensuring all people who desire a post secondary education can achieve it is the responsibility of the government and this includes adequate internet connection.

¹⁴ "WORLD'S MOST ADVANCED BROADBAND INTERNET SYSTEM". 2022. <https://www.starlink.com/satellites>.

¹⁵ Ibid.

¹⁶ Andrey, Sam, Nisa Malli, and Selasi Dorkenoo. 2021. "Mapping Toronto'S Digital Divide". Toronto: Ryerson Leadership Lab. <https://www.ryersonleadlab.com/digital-divide>.

ACCESS TO TECHNOLOGICAL RESOURCES

Principle: Every student should have access to a reliable computer with the hardware and software capability to support online learning initiatives specific to the software of their courses

Principle: Institutions should provide students access to the software and applications required to succeed in their programs.

Concern: Many households struggle to afford enough computers for students and other members within the household making online learning an unviable and unaffordable option for them.

Concern: Many Northern, rural, and Indigenous communities lack local access to computers and would need to pay high shipping costs or travel costs to acquire the minimum requirement for success in an online environment.

Concern: Many students who struggle financially and require specialized software to succeed in their courses and are unable to afford and access these necessary softwares.

Recommendation: The Ministry of Colleges & Universities should provide grant funding to institutions' financial aid departments which would support students who lack the funding to purchase appropriate technology.

Recommendation: The Provincial Government should amend the computer allowance within OSAP to provide students with a grant of up to \$1500 to use at one point during their degree.

Covid-19 has shown that classrooms can still be functional outside of a physical space with the use of technology. That is only true if every student has access to physical resources such as laptops or tablets outfitted with proper software. With increasing costs to technology, access to physical resources has proved to be difficult for many individuals. A study conducted by Ryerson University (Mapping Toronto's Digital Divide) states that "Among Toronto households with less than \$50,000 in income, there is an average of 0.7 computers per person".¹⁷ This demonstrates a severe financial struggle amongst many individuals to ensure that the household has enough technology for all individuals to succeed; this of course includes any students who reside in the household. This lack of adequate technology causes barriers for post secondary students both in online or on campus delivery due to the common use of online softwares such as D2L for content and homework delivery. Previously, OSAP provided undergraduate students with \$500 for technology every year of study, and this has since been amended to only \$500 in a student's first year of study. We would call upon the Government of Ontario to provide students with \$1500 in their first year as a technology grant in order to provide them with sufficient technology for academic success in a post secondary environment.

In Northern and Rural communities, there is an increased issue with obtaining computers for students. This is largely due to the egregious shipping costs which many students in these communities face. Another issue which is largely overseen is when unforeseen circumstances cause technology to cease functioning from wear and tear or simple malfunctioning. We would

¹⁷ Andrey, Sam, Nisa Malli, and Selasi Dorkenoo. 2021. "Mapping Toronto'S Digital Divide". Toronto: Ryerson Leadership Lab. <https://www.ryersonleadlab.com/digital-divide>.

call upon the Ministry of Colleges and Universities to work alongside institutions to implement programming for the borrowing or purchasing of technology with proof from students of financial need and a lack of technology.

AFFORDABILITY

Principle: Post secondary students should have access to clear financial support and resources to enable their educational pursuits.

Principle: The province of Ontario and post-secondary institutions – as opposed to students – should be the primary cost-bearers for expenses related to tech, softwares, and non-tuition costs.

Principle: The province of Ontario and post-secondary institutions should be actively collaborating to minimize expenses related to technology, software, and other non-tuition costs.

Concern: The cost of technology and software has increased with new programs and advances, however, students are expected to front these costs as part of their expenses.

Concern: The provincial government has not provided consistent and stable funding to students or post-secondary institutions to support the use of innovative and accessible platforms, software, and technology or the development and wide use of OERs.

Concern: Post-secondary institutions' campus and online libraries and bookstores do not offer or advocate for affordable options when selling materials to students.

Recommendation: The provincial government should modify the existing OSAP framework to expand the number of grants available for students to access technology needed for all years of their post-secondary education.

Recommendation: The province of Ontario should continue to provide funding to post-secondary institutions through the Virtual Learning Strategy for Post-Secondary Education based on the costs of technology associated with programs offered to allow institutions to provide the necessary technology for students.

Recommendation: The provincial government should develop guidelines for the creation and acquisition of various technologies within post-secondary institutions in consultation with students, faculty members, administrations, industry stakeholders, and other community members through a province wide advisory group.

Recommendation: The Ministry of Colleges and Universities should narrow the Tuition Fee Framework and Ancillary Fees Guideline to limit the use of third party resources already offered by the university, over \$50 per term, and for use in assessments worth less than 20% of the final grade, in an effort to promote a more cost friendly, equitable, and accessible learning experience for all students.

Recommendation: The province of Ontario should task the Higher Education Quality Control of Ontario with researching the rising cost of technology associated with post-secondary education as well as the impacts and successes of government loans in alleviating barriers and improving transparency.

Recommendation: The provincial government should collaborate with post-secondary libraries and bookstores to negotiate lower-cost licensing and purchasing agreements for courseware to reduce financial barriers for students.

In recent decades, the cost of technology has risen substantially and with it, the costs associated with pursuing a post-secondary degree. Students are expected to pay not only tuition but also additional fees for online platforms, testing software, digital resources, and programs relevant to the program and degree. While post-secondary institutions should offer courses and learning outcomes that align with future career expectations, such as fluency with various software and programs, the financial burden to acquire these skills falls predominantly on students. In 2020, 51% of students surveyed in OUSA's 2020 fall survey purchased all required textbooks, however 49% did not. The average cost of textbooks and course packs for one semester was \$563 with 50% of the students noting they were required to pay additional fees.¹⁸ Post-secondary students have noted budget constraints and rising textbook prices for years, however additional fees without support from post-secondary institutions or the provincial government only serves to create additional barriers for students from equity-deserving groups. Currently, the Tuition Fee Framework and Ancillary Fees Guideline outlines the additional costs post-secondary institutions are allowed to require students to incur throughout their degree however there is a significant disconnect across institutions and the province in determining the limit of additional costs. Students across the province need to have access to transparent support and resources to help fund the cost of digital learning costs and technology through both the province and their home institution. Although there are a number of ways to improve the affordability of technology and digital learning tools, one of the most immediate and direct methods for the province of Ontario to address these issues is to expand the existing OSAP framework by increasing the number of grants available to access technology over the course of their degree. Although OSAP currently offers a \$500 allowance for students entering their first year of university to purchase a computer, the additional costs associated with software and other digital learning tools do not end after the first year of post-secondary.

From the institutional side, there is a need to continue developing digital infrastructure that improves the learning experience and enhances learning outcomes. For students and instructors alike, shifting from solely in-person modules to entirely virtual was a challenging hurdle that created numerous barriers for people with needs for additional support. Many institutions provided basic instructional materials for instructors to facilitate classes and tests through virtual environments however with post-secondary education in Ontario transitioning back to in-person, the need for hybrid models prevails. Explored by Johnson in the *Digital Learning in Canadian Higher Education in 2020: Ontario Report*, "hybrid courses or programs are intentionally designed to combine both online and in-person instruction," however aspects like comfort with technology and faculty preparedness have created barriers to truly replacing emergency learning with hybrid models.¹⁹ In December of 2020, the Ontario government announced an investment of \$50 million for virtual learning innovation and in October of 2021 an additional \$10.7 million in funding was made available with support from eCampus Ontario and ContactNorth.²⁰ The funding supported 400 projects across the province however ongoing funding is needed to ensure the development of OERs, digital learning tools, and the acquisition of innovative learning management systems continues to become more available for all post-secondary students.

The opportunities to improve accessibility and support students with various learning needs are numerous with the help of technology, however ensuring all students are able to access these resources needs to be a provincial and institutional priority. The COVID-19 pandemic has exacerbated the pressure for students and instructors alike to shift toward online medium and new teaching methods however there is a lack of guidance from the Ministry of Colleges and Universities as well as institutional leaders to guide instructors toward accessible formats but also provide funding to support innovative delivery of materials that exceed expectations. In consultation with institutional leaders through the Council of Ontario Universities and Council of Ontario Colleges, industry stakeholders like ContactNorth, eCampus

¹⁸ OUSA. 2020. Ontario Undergraduate Student Survey.

¹⁹ Nicole Johnson, *Digital Learning in Canadian Higher Education in 2020: Ontario Report* (Canadian Digital Learning Research Association, 2020), 7, 12 & .

²⁰ Ontario Government. 2021. "Ontario Invests in Virtual Learning Strategy". <https://news.ontario.ca/en/release/1001058/ontario-expanding-high-quality-accessible-virtual-learning> and Ontario Government. 2021. "Ontario Expanding High-Quality, Accessible Virtual Learning". <https://news.ontario.ca/en/release/1001058/ontario-expanding-high-quality-accessible-virtual-learning>.

Ontario, and the Higher Education Quality Council of Ontario, and student leaders from post-secondary institutions, the province of Ontario should establish an advisory group to draft best practices and guidelines.

ACCOUNTABILITY

OPEN DATA

Principle: Prospective students should have all available information such as the overall learning outcomes of their degree of choice and enrollment data when choosing a post-secondary institution to attend.

Principle: Open University Data can encourage innovations which improve the university experience both in person and in online environments.

Concern: University data such as research reports, spending reports, and information on student needs is often unavailable or difficult to access.

Concern: Currently there are no requirements for institutions to release their data publicly.

Concern: Not all institutions collect data consistently for learning outcomes or student experience.

Recommendation: The Ministry of Colleges and Universities should task HEQCO with expanding their Open Data Inventory database to improve public access and accountability.

Recommendation: The provincial government should provide envelope funding for HEQCO to expand their Open University database.

Recommendation: The provincial government should task COU to develop a uniform data collection system for learning outcomes and student experience that is publicly available.

Open data can provide a great deal of insight while also holding post-secondary institutions accountable. OUSA believes making data such as admission requirements, costs, available bursaries and grants, living arrangement of students, campus accessibility, support services as well as employment outcomes openly available would stand to benefit post-secondary students. Upon entering university, students should have all available data such as learning outcomes and enrollment in order to make an informed decision when choosing a post-secondary institution. Furthermore University data can aid fiscal oversight and accountability while also sharing best practices with other institutions. The Ontario University Council on Quality Assurance should be tasked with providing students with open data on learning outcomes and the Ministry of Colleges and Universities should be tasked with providing students with open data related to the student experience.

DATA COLLECTION

Principle: Tech-enabled learning (if implemented correctly)-has the potential to improve the accessibility, affordability, and quality of education for all Ontario students.

Principle: Legislation surrounding the collection of data within post-secondary education should be rooted in evidence, best practises, and used to improve the student experience, accessibility, and equity within the sector.

Principle: Public policy decisions should be rooted in evidence, best practices, and should be regularly evaluated for efficacy.

Concern: Ontario’s existing data collection practices are insufficient to meaningfully assess its digital learning objectives

Recommendation: The Ontario government should develop a set of metrics to assess its digital-learning objectives.

Recommendation: The Ontario government should commission HEQCO to identify how perspectives, barriers, and resources within tech-enabled learning have evolved since the pandemic, and adjust the province’s digital-learning strategy accordingly.

Recommendation: The Ontario government should expand its data collection procedures to identify students who take digital courses or are provided services by provincial agencies in order to allow the evaluation of key outcomes such as graduation rates, skills acquisition, and postgraduate employment.

Collecting data is very important in furthering one’s knowledge of what is happening on campus and the issues students may be facing. Though, as seen in earlier sections, there is a lag in legislation regarding what constitutes ethical data collection and use. Specifically in the case of post-secondary institutions, the lack of definition and guideline, especially as it pertains to new technology, is odd as it implies that participation in the public education system requires sacrificing privacy rights.

Moving away from the ethics of data collection, OUSA sees the importance of data in the identification of areas in need of improvement and subsequent creation of evidence-based solutions. As noted in a 2020 report published by the Higher Education Quality Council of Ontario (HEQCO), actors in the province’s tech-enabled learning system are not working in tandem with each other as they should, and (at least part of this problem) is reflected in a lack of systems vision and oversight. From the student perspective, we are best served when actors in the post-secondary sector work constructively with one another, and public money is spent strategically. As such, we endorse the recommendations made by HEQCO; and investments into further research that improves tech-enabled learning and implementation.

In 2010, the Higher Education Quality Council of Ontario (HEQCO) issued a call for research projects on technology-enhanced learning. According to its 2015 report, the call for proposals and subsequent research had two goals:

- 1) Increase the amount of research on the impact of technology on teaching and learning, thereby informing best practice at the classroom, institution, and policy levels
- 2) Encourage self-reflection by institutions and instructors on technology’s impact on educational quality

Assuming this project was successful, it may be worthwhile revisiting. In addition, instructors and policy makers often assumed students in 2010 were ‘digital natives’, but comfort and ability to use technology in classrooms varied considerably; Moreover, student surveys suggested that students did not necessarily “crave technology”. Most wanted more face-to-face time with their instructors, and preferred online assignments/resources/activities over the delivery of lecture content online. In the transition back to in-person instruction, and the rise of hybrid models, the province should set clear metrics as to assess their digital learning objectives. In their virtual learning strategy, the government talks about positioning themselves as a global leader, supporting micro credentials, and increasing the availability of virtual

learning opportunities. With little information provided on how they deem these measures as a success, it is difficult to evaluate whether or not they have fulfilled their commitments. Strict metrics that are disclosed to the public would make their position more clear and aid the public in holding them accountable.

PRIVACY, INTELLECTUAL PROPERTY, & EMERGING TECHNOLOGIES

This section pertains to privacy, and intellectual property as it impacts students, instructors, and institutions

With the increased integration of digital tools/resources in the classroom and post-secondary sector more broadly, student data and information is being collected at unprecedented rates by a variety of system actors. Personal data can be useful and is often also *necessary* for digital tools to perform the tasks they were brought in to do. However, it is imperative that personal data be collected, retained, and used in ethical ways, and with informed consent.

While institutions may have robust data collection and usage policies for the information they collect directly, these policies often do not extend to the third-party tools required in classes [CITE]. With the rapid uptake of remote proctor software during the pandemic, students are increasingly concerned that their privacy and data is not adequately being safeguarded/respected. Beyond this, they are noticing the ways facial recognition, AI, and the general idea of remote proctoring can unfairly penalize racial and religious minorities, low-income students, and students with disabilities/medical conditions.

Conversely, plagiarism detection software has been broadly welcomed by students with many appreciating its role in safeguarding academic integrity (CITE). (This is important to note as many see students' resistance to remote proctoring platforms as being rooted in a desire to cheat.) Despite the more positive reception, students still feel it is important that they are made aware that many of these platforms (specifically, TurnItIn) permanently store student works for reference later. As it stands, students are unclear what this actually means with regards to intellectual property.

Quandaries in privacy, intellectual property rights, and data collection also have impacts on instructors, institutions, and the PSE sector more broadly.

- In a 2020 report, [HEQCO](#) identified that there was worryingly little data available to inform the province's tech-enabled learning strategy, let alone gauge its progress or troubleshoot
- This gap in provincial-level data prevents system actors from identifying areas of improvement, developing evidence-based policy, but more so ensuring effective use of public funds
- Instructor concerns about theft of their intellectual property acts as a barrier to the availability of online content for students.

Broadly, this section focuses on: student concerns and experience with plagiarism detection and proctoring software, the need of improved data collection to inform Ontario's tech-enabled learning strategy, and how instructor concerns about theft of their intellectual property acts as a barrier to the availability of online content for students.

INTELLECTUAL PROPERTY RIGHTS & OWNERSHIP OF MATERIALS

Principle: Students should have access to lecture materials in a variety of modalities.

Principle: Instructors should, by default, retain ownership over the materials they create for their courses and teaching duties

Concern: Instructors are often hesitant to post lecture content online because they are worried about students distributing their intellectual property without their knowledge or permission.

Recommendation: The provincial government should commission HEQCO to conduct a review of faculty members' concerns on intellectual property theft. Their research should investigate their main concerns, solutions that would make instructors feel more secure that their intellectual property will be safe, and the frequency of theft.

Recommendation: The provincial government should commission HEQCO to conduct a review of faculty members' concerns on intellectual property theft. Their research should create a guide for best practises on mitigating concerns around property theft.

Recommendation: As a solution to the intellectual properties of instructors the provincial government should incentivize institutions to use OER's.

Throughout a student's post-secondary career, a multitude of situations arise where students are forced to miss lectures. Whether that be caring for a dependent, having to work, or taking time off due to illness, students are not always in the place to watch lectures in real time. Furthermore, there are also situations where even when watching live students may miss content due to a professor who speaks too fast or a student getting distracted. These are all reasons why we believe that students should have access to lecture materials in various forms. The ways in which every student learns is unique and students should be able to learn at their own pace, when needed. We recognize that instructors are hesitant to post content online due to the fear of their intellectual property being stolen; We believe that instructors should retain ownership over their content. However, there is little evidence to suggest that this is a widespread issue on university campuses. The provincial government should work with the Higher Education Quality Council of Ontario (HEQCO) to investigate faculty members' concerns and suggest best practises on how best to address these issues.

ONLINE PROCTORING

Principle: Academic integrity should be upheld in both online and in-person settings.

Principle: Students' privacy should be prioritized through the use of minimally invasive methods of academic dishonesty prevention.

Principle: A student should not be over-surveilled or suspected of cheating as a result of their race, religion, medical condition, and/or disability.

Concern: Online proctoring software can present increased barriers for racialized students who are often not detected by inequitably developed facial recognition features.

Concern: The use of facial recognition can complicate the use of the software by individuals with religious headwear, contributing to additional student stress and undue pressure to remove their headwear to access their assessment.

Concern: There have been known instances of security breaches wherein sensitive student data, such as names and addresses were leaked.

Concern: Ableist requirements that prohibit movement and restrict the use of accommodation aids make online proctoring software inaccessible for students with disabilities.

Concern: Many instructors do not offer alternatives to proctoring software and/or make applying for alternative assessments intentionally cumbersome to dissuade students from accessing them.

Concern: Despite there being known methods of discouraging academic dishonesty in online courses that are much less invasive, instructors and institutions continue to use proctor software

Recommendation: The Ministry of Colleges and Universities should mandate that each institution develop a set of standards that proctor software used in post-secondary institutions must meet in terms of equitable assessment, privacy, accessibility, and data rendition/security practices, and that these policies be developed in consultation with students and student government representatives, including students from marginalized communities most impacted by proctor software.

Recommendation: The MCU should mandate that universities commit to using the most minimally invasive practises for ensuring academic integrity during assessments, wherever possible.

Recommendation: The Ministry of Colleges and Universities should mandate policies pertaining to permitted uses of accomodation aids during online-proctored exams for disabled students, and/or have departments in charge of accessibility services in post-secondary institutions oversee those policies.

Recommendation: The Ministry of Colleges and Universities should mandate that institutions inform instructors of the risks and possible harms of proctoring software, and alternative assessment methods that do not require proctoring software.

The shift from in-person to emergency remote learning has left many institutions scrambling to find strategies to uphold academic integrity. For courses that rely upon assessments such as tests, quizzes, and exams, a common strategy to restrict unauthorized aids/collaboration is to have the student complete the assessment in a supervised environment. Online proctoring software, to many, represent a way to continue these types of assessments in a virtual setting. However, this move has not been without criticism from students, educators, and privacy experts alike. Students feel that it is an invasion of their privacy to be monitored in their bedrooms/homes by a professor, TA, or invigilator. The average student will only have access to so many spaces where they can work alone, uninterrupted, and maintain reliable internet access. It is unreasonable to expect that students will have access to an isolated space they can work out of.

Furthermore, students have reported that they were concerned that they would be unfairly targeted by the software due to being racialized, a religious minority, and/or having a disability/medical condition; These concerns are not unfounded as numerous studies have identified systematic bias in the AI used by such software; There are also a number of reports of students being unable to start their exams due to failure of the software to identify their face, which contributes to additional student stress. This is not a surprise, as research suggests that the use of facial recognition can complicate the use of the software by individuals with religious headwear, contributing to additional student stress and undue pressure to remove their headwear to access their assessment. Researchers have said “As proctoring tools and services are being adopted at institutions serving millions of students, the higher education community needs to responsibly grapple with the implications of this use, reflect on how these shifts respond to actual needs, evaluate the costs of these shifts (in terms of money, privacy, and distrust toward students), and consider whether adopting such tools so quickly and broadly is the best solution to the problems we are trying to solve.”²¹

As of March 2021, few universities/colleges have institutional policies on best practises for faculty when choosing proctoring software. While ideally, we hope that each institution comes to recognize the importance of these policies and the need for student consultation in their development, we believe it is important for the provincial government take steps to safeguard and ensure the rights of students, as it

²¹ Kimmons, Royce, and George Veletsianos. 2021. "Proctoring Software In Higher Ed: Prevalence And Patterns". *Cybersecurity And Privacy*, , 2021.
<https://er.educause.edu/articles/2021/2/proctoring-software-in-higher-ed-prevalence-and-patterns>.

has done many times before by requesting institutions develop a number of other important policies and ensuring an equitable learning environment that upholds student dignity.

There are a number of less invasive methods that professors and faculty can adopt that would move away from online proctoring services. One being summative assignments. Summative assignments are end of term assignments that can either be a culminating assignment or it can focus on a specific set of learning objectives. A culminating assignment assess a students' ability to synthesize and apply core concepts from the entire course, similar to that of an exam. Using an assignment removes the need of any invigilator or online proctoring system and prioritize the protection of student privacy and data. This is just one of many examples on how institutions can better serve students while navigating online learning.

ONLINE COURSES

ACCESS & QUALITY

Principle: All students should have access to an accessible, affordable education.

Principle: All students should expect support in achieving the same learning outcomes in an online course as they would in a traditionally-delivered or hybrid course.

Concern: Students may experience volatility in their abilities to engage with online courses due to a course's technological requirements.

Concern: Current quality assurance criteria for changing the mode of delivery for some portion of a program to online delivery does not require appropriate consideration of instructional support needs.

Concern: Current quality assurance criteria for changing the mode of delivery for some portion of a program to online delivery does not require appropriate consideration of student access.

Recommendation: The provincial government should provide envelope funding to institutions to support institutional strategies that support students' ability to engage with online courses, such as technology loan programs.

Recommendation: The Ontario Universities Council on Quality Assurance (OUCQA) should amend the Protocol for Major Modifications to require assessment of the existing criteria for changing a significant portion of a program from in-person to online.

With online courses, access to adequate technology is integral to being able to engage and achieve the intended learning outcomes. However, students during consultations noted their concerns regarding reliable access to the technology needed to succeed and the importance of funding for technology access programs at post-secondary institutions. To mitigate some of the challenges that students face with engaging in online courses, institutions often run technology loan programs—these loan programs usually offer laptops, and sometimes other equipment, for short periods of time. Examples include the Student Laptop Loaner Program at Wilfrid Laurier University²² and the equipment loaning service through the McMaster University Library.²³ However, these loan programs tend to have limited inventory and/or funding, leaving some students unable to access the resource in times of need. Of course, this disproportionately affects students of lower socioeconomic status. As part of the effort to maximize students' ability to achieve their program's learning outcomes, the provincial government should take

²² "Student Laptop Loaner Program". 2022. *Services And Spaces*.

<https://students.wlu.ca/services-and-spaces/tech-services/laptop-loaner-program.html>.

²³ "Equipment". 2022. <https://library.mcmaster.ca/equipment>.

steps to support institutional strategies that seek to guarantee student access to technology in circumstances of short-term need, however an institution sees fit.

Furthermore, student access ought to be considered in the initial quality assurance stages of building online courses. The Ontario Universities Council on Quality Assurance (OUCQA) is the provincial body “responsible for assuring the quality of all programs leading to degrees” and operates at an arm’s length from the provincial government.²⁴ OUCQA has an established province-wide Quality Assurance Framework, which interplays with each university’s Institutional Quality Assurance Process (IQAP). Together, these documents publicly outline protocols and definitions for new programs, major modifications to existing programs, and regular review of existing programs.

Currently, the document has a single set of guidelines for when “changing the mode of delivery of a program to online for all or a significant portion of a program that was previously delivered in-person”.²⁵ These criteria are, as stated in Section 4. Protocol for Major Modifications:

- a. Maintenance of and/or changes to the program objectives and program-level learning outcomes;
- b. Adequacy of the technological platform and tools;
- c. Sufficiency of support services and training for teaching staff;
- d. Sufficiency and type of support for students in the new learning environment; and
- e. Access.

OUSA believes that these criteria should be required considerations when making Major Modifications to programs. However, in the current edition of the Quality Assurance Framework, they are only encouraged for consideration—an unnecessary gap in quality assurance that may negatively impact the quality and access of students’ undergraduate educations.

PEDAGOGY RESEARCH, INNOVATION, AND GUIDANCE

Principle: The unique pedagogy of online courses should be considered in the design, development, and delivery of online courses.

Principle: Pedagogical innovation is a valuable facet of the post-secondary education sector.

Concern: There may not be sufficient research into the pedagogy of online learning in a post-secondary environment.

Concern: Universities may lack the resources to effectively support the design, development, and delivery of online courses.

Concern: The current Strategic Mandate Agreement and performance-based funding framework is not conducive to pedagogical experimentation/innovation.

Recommendation: The provincial government should provide generous funding to support institutional bodies which support the design, development, and delivery of online courses.

Recommendation: The provincial government should task eCampus Ontario with the ongoing establishment of best-practice recommendations for the design, development, and delivery of online courses; where appropriate, different recommendations should be established for different types of learning outcomes.

²⁴ "What We Do". 2022. <https://oucqa.ca>.

²⁵ Ontario Universities Council on Quality Assurance. 2021. "Quality Assurance Framework". Toronto: Ontario Universities Council on Quality Assurance. <https://oucqa.ca/wp-content/uploads/2021/10/Quality-Assurance-Framework-Oct-2021-1.pdf>.

Recommendation: The provincial government should provide envelope funding to institutions for activities contributing to innovation and experimentation in the field of online learning in post-secondary environments.

Online courses possess some fundamental differences from traditional courses—most markedly, delivery method. Students have noted that online courses can be especially challenging to engage with when they are not built with the unique elements of online delivery in mind, such as the barriers to impromptu learning conversations or engaging with peers and instructors, both of which are understood to be meaningful features of in-person learning settings (Blackmon, S. J., & Major, C. (2012). Student experiences in online courses: A qualitative research synthesis. *The Quarterly Review of Distance Education*, 13(2), 2012, 77-85; Troop, M., White, D., Wilson, K.E., Zeni, P. (2020).²⁶ "The user experience design for learning (UXDL) framework: The undergraduate student perspective." *The Canadian Journal for the Scholarship of Teaching and Learning*, 11(3)). As research into the field continues, it is valuable for a repository of identified best practices to be easily accessible to instructors to promote successful student achievement of learning outcomes.

Universities often have established departments which assist instructors in the design, development, and/or delivery of online courses. These departments may provide a variety of types of support, including through instructional workshops, course consultations, and course design and redesign. Western University's Centre for Teaching and Learning houses an eLearning Team that provides resources to instructors alongside educational programming to promote high-quality tech-enabled learning at the university.²⁷ The University of Waterloo's Centre for Extended Learning, alongside on-the-ground support to instructors, is "actively engaged in research with a mandate to advance online learning"²⁸ and has published several papers on online learning, made possible through funding from grants such as the University of Waterloo's Learning Innovation and Teaching Enhancement Grants and the eCampusOntario Research and Innovation Grant.²⁹ These types of support units are critical to preserving and achieving further educational excellence in the province, and OUSA recommends that the provincial government ensure that institutions are able to secure generous funding to support these activities.

Alongside the many priorities of universities, the Ontarian post-secondary education sector has had a history of extremely fruitful pedagogical innovation. Harvey Weingarten argues that there have been two identifiable innovations in undergraduate education generated by Ontario universities, both in the mid-1900's: the co-operative education program, through the University of Waterloo, and the problem-based learning curriculum for medical students at McMaster University (Nothing Less Than Great: Reforming Canada's Universities, Harvey P. Weingarten). It is worth recognizing the significant impact that both of these innovations have had on the broader sector—in fact, co-operative education programs have become a keystone in Ontario's current SMA framework³⁰ and contributed greatly to the Ontario economy as a whole.³¹ However, one also notices the stark lack of significant innovations in the last fifty years since. While there are no clear-cut reasons for this, it is obvious that pedagogical innovation

²⁶ Blackmon, Stephanie, and Claire Major. 2012. "STUDENT EXPERIENCES IN ONLINE COURSES A Qualitative Research Synthesis". The University of Alabama.

²⁷ "Elearning In The CTL". 2022. <https://teaching.uwo.ca/elearning/about-ctl.html>.

²⁸ "Teach Online". 2022. *Centre For Extended Learning*. <https://uwaterloo.ca/extended-learning/teach-online>.

²⁹ "Teach Online". 2022. *Centre For Extended Learning*. <https://uwaterloo.ca/extended-learning>

³⁰ "College And University Strategic Mandate Agreements". 2021. *Ministry Of Colleges And Universities*. <https://www.ontario.ca/page/all-college-and-university-strategic-mandate-agreements>.

³¹ "Future Proven: How Co-Op Can Boost Your Bottom Line". 2022. Waterloo: University of Waterloo. Accessed March 31.

https://uwaterloo.ca/co-op-can-boost-business-bottom-line/sites/ca.co-op-can-boost-business-bottom-line/files/uploads/files/c018437_blitz_campaign_white_paper_1-_accessible_final-ua_98562.pdf.

comes with risk, and the current post-secondary funding landscape significantly limits institutional capacities for risk. Understanding the rewards of fostering innovation, the provincial government should take steps to mitigate the challenges that institutions face in exploring pedagogical innovations that may very well be the future of online learning: a meaningful tool to do so would be the provision of grant funding to universities for investment in pedagogical experimentation.

EMERGENCY TRANSITIONS TO ONLINE LEARNING

Principle: Students should expect to receive support in achieving the same learning outcomes in an online course as they would in a traditionally-delivered or hybrid course.

Principle: In emergency transitions to online learning, the unique pedagogy of online courses should be considered in the design, development, and delivery of online courses wherever possible.

Principle: In the circumstances of emergency transition to remote learning, providing adequate instructional and technological support for instructors is necessary to maintain quality of education.

Concern: Emergency transitions to remote learning generally necessitate the efforts of individual instructors to update an existing in-person course for online delivery.

Concern: Most instructors lack thorough training or support options to design, develop, and deliver an online course, especially in circumstances of emergency transitions to online learning.

Concern: In an emergency transition circumstance, providing adequate instructional and technological support for instructors is a costly endeavour which institutions cannot financially prepare for in a practical way.

Concern: Students may experience volatility in their ability to engage with online courses due to a course's technological requirements, which is likely to be exacerbated in circumstances where emergency transitions to online learning have occurred.

Recommendation: The provincial government should commit to offering immediate and adequate grant funding to institutions to facilitate an effective shift to remote course delivery in the case of future emergency transitions to remote learning.

Emergency transitions to online learning on a large scale quickly overwhelm any existing support structures for remote or online course delivery. Dedicated institutional units support the design, development, and delivery of online courses, such as the University of Waterloo's Centre for Extended Learning, which works closely with instructors to build online courses from the ground up based on industry best practices and the unique learning outcomes of the course. However, these units generally have limited capacity and are meant to support long-term timelines for developing online courses, as opposed to sudden shifts to widespread online delivery as were necessitated by COVID-19 public health measures. Universities also employ instructional support positions, such as teaching assistants, year-round to support instruction, but unexpected shifts to online course delivery necessitate additional instructional and technological support to meet the needs of each course; this is a vital support team that cannot be feasibly prepared for, logistically or financially.

In the face of these emergency shifts to online learning, some institutions have also implemented strategies to financially support students in meeting the technological requirements of online courses. In 2020, the University of Waterloo established the Academic Readiness Bursary, which provided

“assistance for students who...incur costs related to studying remotely as a result of COVID-19”.³² The bursary operated on a reimbursement model and required students to demonstrate financial need through OSAP. Online learning inherently demands of students access to higher standards of technology, which leaves behind individuals of lower socioeconomic status and exacerbates existing inequities in the province.

Thus, it is essential that the provincial government commits, in advance of unforeseen emergencies, to supporting institutions in securing those instructional and technological supports whenever emergency shifts to online learning occur. In particular, this grant funding should heavily consider institutional needs for instructional and technological support for course delivery, as well as potential institutional strategies to subsidize student access to necessary technology. Without those supports, institutions struggle to maintain adequate quality and accessibility of course delivery, and undergraduate students bear the brunt of this struggle in current and future academic terms.

NON-DEGREE CREDENTIALS

DIGITAL BADGES

Principle: The identification and description of soft skills should be easily accessible and clearly communicable for post-secondary students.

Principle: Students should be encouraged to develop both their academic and soft skills to be better prepared for the workforce.

Principle: Employers should endorse and recognize badges for improved recognition of all skills including soft skills, which may be developed through technology-enabled learning opportunities.

Principle: Badging should be accessible to everyone.

Concern: Badging is not yet widely acknowledged by employers or post-secondary education institutions in Ontario.

Concern: There is a lack of data on the regulation of badging and how to most effectively utilize them.

Recommendation: The provincial government, through eCampusOntario, should establish a badging framework.

Recommendation: The provincial government should consult employers, post-secondary institutions, and students in developing skills competencies for badges, as well as further communicating the value of skills articulation for employment.

Recommendation: The provincial government should, task eCampusOntario in developing a badging or certificate program to acknowledge professional development in technology-enabled learning for faculty, teaching assistants, technicians, staff, and students.

Globally, post-secondary institutions have started to adopt the concept of badging as a way to address a skills articulation gap that many graduates face. Badging provides an opportunity to bridge the gap between employers and recent graduates by providing a method which serves as a supplementary alternative to aid in the recognition of talents, characteristics, and skills developed during post-secondary

³² University of Waterloo. 2020. "Academic Readiness Bursary Now Available To Students". <https://uwaterloo.ca/student-success/news/academic-readiness-bursary-now-available-students>.

studies. Badges provide students and recent graduates an avenue to articulate and highlight skills they have acquired or developed, which is relevant for both employees and employers.

Digital badging provides a unique opportunity to improve on other skills-articulation programs that exist across the province, such as co-curricular records. If uptake were to happen across the province, badging would provide the opportunity for employers and post-secondary institutions to both receive and provide a transparent medium to articulate skills that students develop during their studies; a stark alternative from self-identified skills in a co-curricular record. There are a couple of notable mentions regarding current implementation of digital badging which help us navigate these new waters.

Employers and educators have doubts regarding the value of badging and the credibility of badges. That is, badging is not widely acknowledged by employers or post-secondary education due to inconsistent metrics. There is a lack of data on the regulation of badging and how to most effectively utilize them. Secondly, some research shows there is a lack of transparency and proof to show employers that new graduates possess non-academic skills in addition to their academic skills.

To get to a point where employers can be assured that there is a credible form of recognition for the skills developed during post-secondary studies, a formal badging framework must be developed by the government. As such, the provincial government should develop a formalized framework through consultation with all sector stakeholders, including students, post-secondary institutions, and employers. Additionally, post-secondary badges should be centralized, and the development of a platform housed by eCampusOntario would allow for consistency between institutions, providing the credibility required for employers to feel confident that badges provided by students genuinely provide insight into the skills that they developed during their post-secondary studies.

OPEN EDUCATIONAL RESOURCES

OERs as an Approach to Affordability

Principle: All students, regardless of financial background, should have equal opportunity to succeed and prosper in their courses

Principle: A student's financial background should not limit their access to textbooks and courseware materials required or recommended for their courses.

Principle: OERs are a legitimate and effective approach to address student concerns on the affordability of textbooks and other forms of courseware

Concern: The rising cost of educational materials, such as textbooks, create increasingly larger financial barriers for students pursuing post-secondary education.

Concern: Students who experience financial precarity are disproportionately impacted by the high costs of course materials

Concern: Students often drop courses, choose not to enroll, or change their course section due to the cost of course materials

Concern: Due to the high cost of course materials, students frequently delay or forego their purchase until they are absolutely sure they will be necessary for the course

Concern: Despite the increased availability of digital material/resources sold by publishers with far

lower costs of production than their print counterparts, financial accessibility has not significantly improved

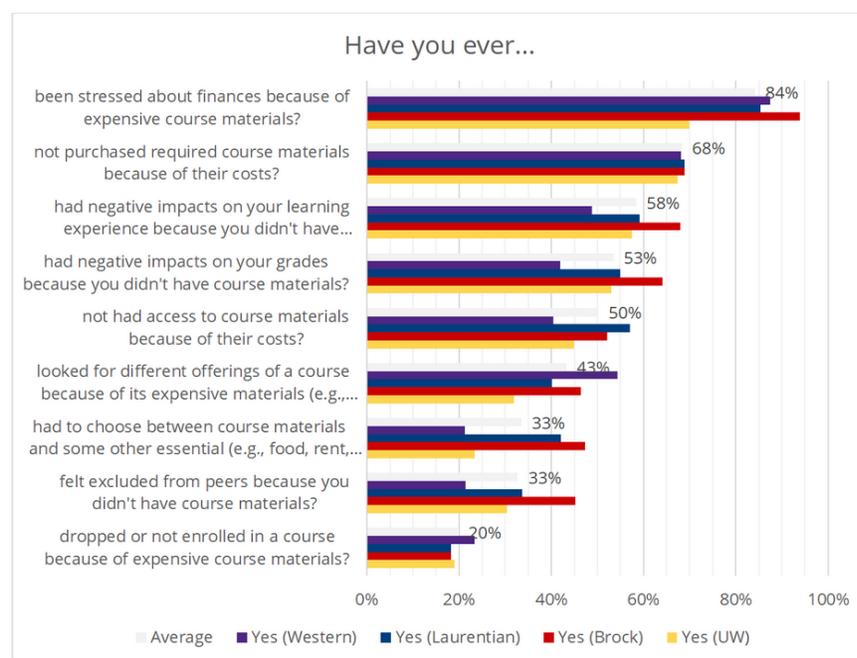
Recommendation: The provincial government should invest in increasing the number of high-quality Open Educational Resources, focusing first on common courses and disciplines where demand has not been met.

Recommendation: The provincial government should reward institutions and instructors that replace expensive course materials with free and low-cost alternatives.

Recommendation: The provincial government should continue to subsidize the costs of course materials until OERs overtake them.

Open Educational Resources (OERs) are open and free course materials that pose alternatives to paid and commercial textbooks. OERs may include, but are not limited to, textbooks, course notes, practice tests, slide decks, video or audio content, and much more. They are teaching and learning materials that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.

In Fall 2021/Winter 2022, six out of the eight of OUSA’s member schools circulated a survey to collect data on their respective student populations’ experiences with OERs- as well as, with textbooks and



course materials more generally. The following data was drawn from these surveys:

- **More than half of students** surveyed indicated that they’ve **experienced negative impacts on their grades and learning experiences due to not having course materials.**
- About $\frac{2}{3}$ of respondents indicated that they **frequently delay the purchase of course materials until they’re sure they need them.** (48% of students “always delay buying their course materials”, while an additional 20% of students do so for all but 1-2 courses per year). This is done as an effort to cut down on cost.

- In line with other research [CITE], we find that students are not choosing to forgo their course materials out of some lax or laissez-faire attitude, but are genuinely concerned about the impacts of this on their learning.

OERs address both access to knowledge and self-efficacy beliefs, with the potential to improve learning outcomes and equity in three ways. Students who have access to their materials from the beginning of a class (rather than delaying their purchase) do not have to “catch up” on content, starting from a better place than their peers without ready access to course materials. Students also have the same opportunities to learn, rather than leaving students who cannot afford the course materials with less-relevant alternatives or no materials at all. A lack of course materials also decreases self-efficacy beliefs, which may also reduce motivation [cite this model of motivation] and thus engagement with learning activities (including studying), also contributing to this trend. There exists in the literature a frequently-observed trend that not only do students in courses that use OERs perform better than their counterparts in courses that require paid materials, the floor for their performance is higher; that is, the lower-achieving students in the OER course perform better on the whole than their lower-achieving counterparts in the non-OER equivalent courses.

There are also significant impacts to the barriers associated with course materials beyond the classroom.

- 33% of students have had to choose between course materials and affording some other essential (e.g. food, rent, transport)
- A similar one-third reported feelings of exclusion from their peers due to a lack of course materials. In addition to the social impact, this can reduce their capability to contribute in group settings (e.g., discussions, collaborative projects).

Financial stresses associated with course materials are significant, and weigh more heavily on those who are less financially stable. This is an issue of equity as well as financial burdens. This is not limited to physical textbooks, which can be available at a lower price as used copies and resold to recoup some of their cost. Digital-access textbooks and subscription-based services pose significant financial barriers to students as well, and are generally increasing in popularity and usage.

While not the only solution, OERs function as an important tool in enhancing the affordability of PSE. Unlike grants/loans, they **ensure** every student has access to both necessary and supplementary course material at the get-go. [Note that students are likely to continue delaying the purchase of required course materials so long as they remain fungible]. Beyond this, widespread adoption of OERs reduces the need for the provincial government to subsidize the cost of textbooks/third-party learning resources through OSAP.

Ensuring Quality

Principle: All educational resources, regardless of format, should be of high quality.

Concern: There is a perception that OERs are of lower quality than traditional educational resources, which acts as a barrier to OER adoption, development, and adaptation.

Concern: OERs available to course instructors in Ontario are often left underutilized due to a lack of awareness regarding efficacy and quality of OERs.

Concern: It is difficult for instructors to find vetted, trustworthy OERs due to the many disparate catalogues and databases of such resources.

Recommendation: The provincial government should work with faculty stakeholders in Ontario, including but not limited to the Council of Ontario Universities (COU) and Ontario Confederation of

University Faculty Associations, to incorporate accurate and up-to-date information on OERs for faculty orientation across institutions.

Recommendation: The provincial government should increase funding allocated to eCampusOntario to work with Teaching and Learning Centres, and their equivalents, to peer review existing OERs with a focus on quality assurance.

Recommendation: The provincial government should, through eCampusOntario, establish a quality assurance process to review OERs as they are developed.

Learning resources can include textbooks, videos, seminars and testing mechanisms, all of which have a significant impact on student learning and achievement. These should all be of high quality regardless of format to ensure students have an effective post-secondary experience.

In many cases, peer reviews can act as a quality indicator for utilizing a specific course text. OERs currently have a less structured and less rigorous peer review process compared to commercial textbooks which can often lead to greater misconceptions surrounding quality.³³ In BCcampus' 2016 Survey, it was identified that perceived quality was the second largest barrier to utilizing an OER in the classroom and was one of the most significant enabling factors for OER use is that the resource is from a reputable producer.³⁴

To reduce misconceptions surrounding OER quality, the government should work to increase funding to eCampusOntario to incentivize faculty to review existing and new OERs. In increasing peer reviews, it is hopeful that course instructors and faculty will be more likely to choose an OER and that the OER itself is of higher quality. To further ensure quality, MTCU should work with eCampus Ontario to develop and establish a quality assurance process that addresses the loose structure in online text development, to make these texts more appealing to faculty and meet the need for a high-quality text.

DATA COLLECTION TO IMPROVE USER EXPERIENCE

Principle: OERs should be implemented with the purpose of enhancing the teaching and learning experience at post-secondary institutions, as well as affordability

Concern: There is currently little centralized data regarding the impacts of OERs on the teaching and learning experience in Ontario.

Concern: There is currently no standardized reporting structure for institutions to measure the usage, concerns, and successes (e.g., financial impact) of OERs.

Recommendation: The provincial government should mandate and provide funding to institutions to report data in a standardized format regarding both students' and faculty members' experiences with OERs.

Recommendation: The provincial government should task eCampusOntario with the collection, analysis and publication of institutional user satisfaction data.

OERs should both enhance the affordability and accessibility of courses and should complement and

³³ Bates, T, Guidelines for Reviewing an Open Textbook. (Contact North, 2015).

³⁴ Jhangiani, R, Rebecca Pitt, Christina Hendricks, Jessie Key and Clint Lalonde, Exploring Faculty use of Open Educational Resources at British Columbia Post-Secondary Institutions (Victoria: BCcampus, 2016), 19

enhance teaching and learning at post-secondary institutions. Furthermore, in order to ensure that faculty can institute a smooth implementation of OERs in the classroom, information and data on OERs use should be readily available and accessible to the public. Positive data can also act as a catalyst for more institutions to move to the utilization of OERs.

In BCcampus' study on faculty use of OERs, some of the top listed barriers to not being able to use OERs include: difficulty finding relevant and quality resources as well as not having enough time to look/try to adapt OERs.³⁵ With little data in existence on the use of OERs, many professors have to develop the course with no guidance or guarantee that these resources will improve the academic experience. This can make it difficult for faculty and institutions to recognize the value of OERs. With the lack of centralized data, it is difficult for developers of OERs to understand the needs of faculty and students in developing their content. Currently there is little centralized data surrounding OER use, especially Ontario specific data which can act as a barrier to adoption. In BCcampus' 2016 study, it was found that 66% of respondents report that their institution either did not have or they were unaware of institutional policy surrounding OER use⁶⁰. Beyond little institutional policy, there is no standardized structure to report data including usage, satisfaction, and financial impact of OERs making reporting and collection both difficult.

In order to increase data collection, the provincial government should mandate that all institutions report data on their usage of OERs to be collected and centralized in order to help enhance and encourage the use of OERs in the classroom. In order to centralize this data where it can be easily accessed, the government should task eCampus Ontario with collecting and analyzing this data. The amount of available data and information especially through the credible channels of eCampus Ontario and MCU, should help in the adoption of OERs in the classroom with proven methods for effectiveness. In addition, OUSA believes that the provincial government should provide funding to institutions to report data in a standardized format regarding both students' and faculty members' experiences with OERs. Increasing the data available will provide faculty and institutions with the incentive to further their investment, albeit financial or labour, towards the development of OERs.

Incentivizing the Adoption, Adaptation, and Creation of OERs by Instructors

Principle: The responsibility of promoting and facilitating broader uptake and development of OERs across Ontario post-secondary institutions is that of both individual institutions and the provincial government

Principle: Faculty should feel supported and empowered by their institution to adopt, adapt, and/or create OERs

Principle: Any strategy to increase the adoption of OERs in Ontario's postsecondary education system must be done in such a way that acknowledges individual instructors' right to select the educational resources they feel best aligns with their course

Principle: Faculty members across Ontario should be recognized by their institutions and the province for their work pertaining to the development of OERs.

Concern: Post-secondary institutions do not adequately incentivize faculty to commit to the development of OERs at their institutions.

³⁵ Jhangiani, R, Rebecca Pitt, Christina Hendricks, Jessie Key and Clint Lalonde, Exploring Faculty use of Open Educational Resources at British Columbia Post-Secondary Institutions (Victoria: BCcampus, 2016), 19

Concern: Many institutions have underdeveloped cultures of excellence in teaching and learning, and view substantive efforts to improve learning experiences as in tension with other priorities, such as SMA performance

Recommendation: The province should work with the Ontario Confederation of University Faculty Association (OCUFA) to develop meaningful incentives geared towards faculty for OER development.

Recommendation: The province should work with the Council of Ontario Universities to develop a best practice system for incentivising OER development.

Recommendation: The provincial government should provide envelope funding to support the expansion of eCampus Ontario's library to increase capacity and diversity of texts that encompasses all disciplines.

Recommendation: The creation and promotion of OERs should be included in Ontario's Strategic Mandate Agreements as a metric for effective pedagogy and faculty innovation, linking performance-based funding to increasing financial access to education.

Recommendation: The provincial government should provide grant funding to hire students to support instructors in adaptation and creation of OERs.

Advocating for Open Educational Resources (OERs) has been a priority for OUSA for several years. A recent student conducted at Waterloo University found that 85% of students feel they would gain more from their education if their courses used Open Educational Resources rather than current costly textbooks and subscriptions.³⁶ Students are eager for open educational resources, not only because they are free, but also because of the range of formats available, greater alignment with course content, and opportunity to engage directly with the resource. In increasing the adoption and use of OERs, a large barrier is the incentive on faculty. Many faculty members have deals with publishers to use certain textbooks for their courses and don't feel the need to transition to free online textbooks. A study conducted at McMaster found that 80% of instructors surveyed at McMaster agree that if more funding were available for the adoption, adaptation, or creation of Open Educational Resources, they would consider replacing their commercial course materials with OERs.

Direct grant funding, funding for a support student, and course release are the most impactful incentives to improve uptake of OERs by instructors.

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- PSEIs should provide instructors funding to hire students to adapt OERs for their courses
- PSEIs should consider the adaptation or creation of OERs as similar to substantive revisions of existing courses and provide course release to instructors planning to engage in this work.

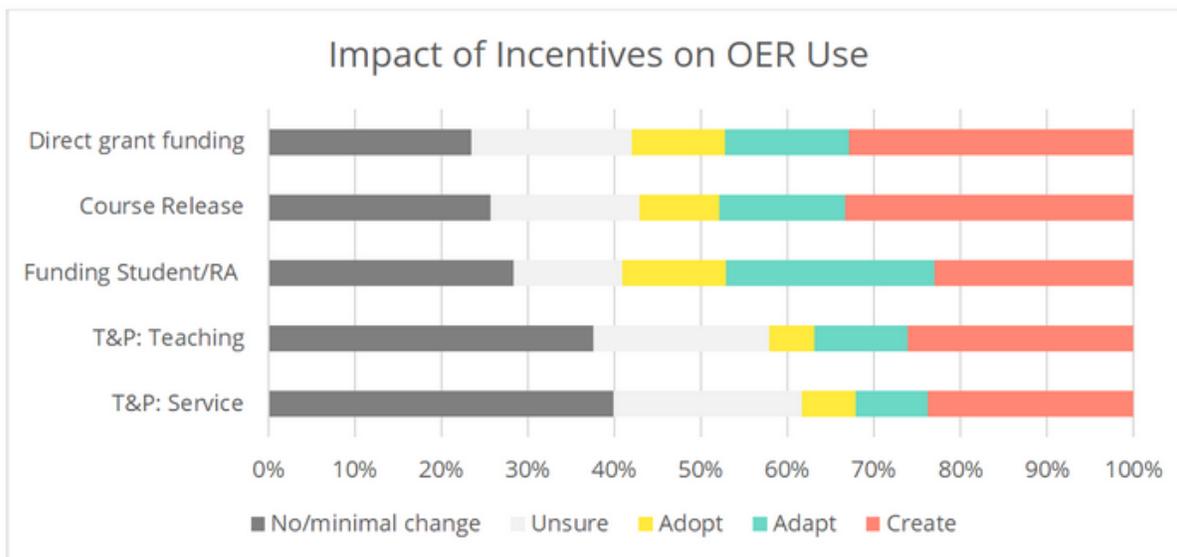
A large part of what is preventing Ontario from advancing in the domain of OERs is *inadequate identification and support*. Unfortunately, the world of post-secondary is a zero-sum game. Time and financial resources spent on one objective, takes away from another- and the system is not designed in a way OERs can be developed (as this would require collaboration across scales).

In addition to the survey circulated to students, five of OUSA's member schools opted to distribute a similar survey to Faculty and instructors. These schools were: UWaterloo, McMaster, Brock, Western, and Queen's. In addition to gauging instructors' knowledge of and attitude towards OERs, the surveys also

³⁶ Open Educational Resources. [unpublished data]. University of Waterloo.

asked what instructors factored in most when selecting course material, as well as, what- if anything- would incentivize them to use/develop OERs.

Overall, direct grant funding, funding for a support student, and course release were identified as the most impactful incentives to improve uptake of OERs by instructors. Note that all of these strategies depend on the co-operation of the institution. If instructors are not supported or empowered in developing/adapting existing OERs by their institutions, there is little the province or an extension thereof can do. This is not to say the province should just give up, but rather- that incentives for institutions will likely be necessary. And this is likely best accomplished through the use of SMAs, which act to set about institutional priorities.



Overall, direct grant funding and course release are the most effective at increasing overall uptake of OERs and creation of them. Since they seem to have the same amount of impact, institutions should consider the amount of labour they're willing to put into an OER effort compared to the amount of money they're willing to spend. If human capabilities are limited, simple course release with a few check-ins is likely sufficient if the people approved for such course release have demonstrated high drive and capability to get their projects finished. For instructors who may be newer to these efforts or where an institution is willing to invest significantly in ensuring the products of an OER project are high-quality, direct grant funding, with additional inbuilt checkpoints, milestones, and support from qualified staff, will result in more well-created OERs.

To increase adaptation of existing OERs to courses, the best strategy is to fund students, RAs, or other staff in support roles. This addresses a primary barrier of the time required to adapt OERs to the needs of a course and instructor, and is more motivating to instructors, who overwhelmingly prioritize alignment with course content in their course material decision-making. Such a process takes away less from Academic Support Units who are already under strain and provides opportunities for students to learn valuable skills and deepen their understanding of a field of study. [Recall, a pretty sizeable number of students are interested in that kind of job without ANY info as to how much it might pay or what hours might be, so you'll probs have a good # of applicants.]

Based on this survey, the top three factors instructors consider when selecting course materials is as follows: i) alignment with/relevance to specific course content ii) cost to students, and iii) recency of the content. Conversely, instructors placed little value in i) the availability of packaged content for students

(e.g. quizzes, activities, related materials), ii) packaged content for instructors (e.g. assessment question bank, slide decks, activities), and iii) progress monitoring features. Interestingly, what instructors value the least is often what's advertised most heavily by edutech companies.

ONLINE LEARNING MATERIALS

ONLINE LEARNING TOOLS

Principle: Online learning tools are a useful component of post-secondary education as they can enhance the accessibility and quality of education if used effectively and consistently.

Principle: Online learning tools can provide more flexibility, affordability, and enhance adaptive learning for post-secondary students.

Principle: Online learning tools should be accessible, relevant, and engaging for all post-secondary students.

Concern: Online learning tools are often not developed or appraised to meet the same standards of quality as traditional, physical learning tools.

Concern: Inconsistent and variable development and implementation of online learning tools within and across institutions can decrease the quality and accessibility of education and introduce variable digital literacy requirements, creating barriers for students.

Concern: Online learning tools may not always be compatible with common assistive technologies and devices, creating barriers for students and decreasing the accessibility of the tools.

Concern: Accessibility features associated with online learning tools are not communicated to students in a clear and timely fashion.

Recommendation: The Ontario Universities Council on Quality Assurance (OUCQA), in partnership with eCampusOntario and ContactNorth, should develop best practices for the development, implementation, and quality appraisal of online learning tools with a focus on accessibility, effectiveness, and consistency within and across institutions.

Recommendation: The Ontario Universities Council on Quality Assurance (OUCQA) should integrate best practices around online learning tools into the Quality Assurance Framework used for Institutional Quality Assurance Processes.

Recommendation: The Ministry of Colleges and Universities should fund and work with eCampusOntario and Contact North to centralize and distribute accessible and effective digital literacy education programs for instructors and students in Ontario post-secondary institutions.

Recommendation: The provincial government should require post-secondary institutions to ensure that online learning tools are accessible and user-friendly for all students and are compatible for use with common assistive technologies and devices.

Recommendation: The provincial government should encourage postsecondary institutions to identify in advance and clearly communicate to students the accessibility features of the online learning tools needed to meet the essential requirements of a given course.

Online learning tools typically consist of any virtual programs, applications, or other forms of technology (often internet-connected) that facilitate teaching and learning for instructors and students.³⁷ The use of online learning tools in post-secondary education can facilitate learning, improve the student experience, and enhance the quality of education in post-secondary institutions. Online learning tools can also increase accessibility and provide more flexible and adaptive educational experiences for learners. A qualitative study from the University of San Francisco found that students identified flexibility and self-directed learning as two major benefits provided by online learning tools.³⁸ Accordingly, integrating online learning tools into post-secondary education in Ontario in a manner that is accessible, relevant, and engaging can be extremely beneficial for students' learning and academic success.

Nevertheless, consultations with OUSA member schools revealed that online learning tools can sometimes be perceived as lower in quality than their traditional, physical counterparts. Additionally, OUSA consultations indicated that a lack of quality and consistency in the development and implementation of online learning tools can increase barriers for students by reducing accessibility and potentially requiring varying levels of digital literacy and technical skill development. Moreover, evidence shows that students often perceive the negative elements of online learning tools to be associated with their use and implementation, rather than being inherent to the tool itself.³⁹ This is particularly concerning considering the rapid growth in the quantity and variety of online learning tools, and their increased use due to the COVID-19 pandemic.⁴⁰ Thus, there arises a need for centralized best practices that guide the development and implementation of online learning tools to ensure effective and consistent use within and across institutions in Ontario's post-secondary education. Additionally, given the lack of criteria regarding the evaluation and appraisal of online learning tools within Ontario's Institutional Quality Assurance Processes (IQAPs), there arises a need for rigorous quality appraisal standards that mirror those of online learning tools' traditional physical counterparts, such as hardcopy textbooks, lab- and studio-based learning, simulated environments, and so on.⁴¹

Given that the Ontario Universities Council on Quality Assurance (OUCQA) oversees the IQAPs in Ontario's publicly-assisted universities, OUCQA is well-positioned to lead the development of best practices around the creation, implementation, and quality appraisal of online learning tools.⁴² Additionally, considering eCampusOntario and ContactNorth's extensive work and expertise in the field of technology-enabled learning, these best practices should be developed in collaboration with these two organizations. Furthermore, upon successful development of these best practices, OUCQA should integrate these best practices into the evaluation criteria used to appraise major modifications (specifically with respect to the adequacy of technological tools) as per the Quality Assurance Framework.⁴³

Digital literacy is another major component associated with the effective and consistent use of online learning tools in post-secondary education. As mentioned, the varying implementation and use of online learning tool can increase the digital literacy and technological skills required to effectively use online learning to teach and learn. Accordingly, the Ministry of Colleges and Universities (MCU) should collaborate with eCampusOntario & ContactNorth to further develop, centralize, and distribute digital

³⁷ Study.com. "What Are Online Learning Tools? - Definition, Types & Examples." Accessed February 24, 2022. <https://study.com/academy/lesson/what-are-online-learning-tools-definition-types-examples.html>.

³⁸ Armstrong, David A. "Students' Perceptions of Online Learning and Instructional Tools: A Qualitative Study of Undergraduate Students Use of Online Tools." *Turkish Online Journal of Educational Technology - TOJET* 10, no. 3 (July 2011): 222–26.

³⁹ Ibid

⁴⁰ Dhawan, Shivangi. "Online Learning: A Panacea in the Time of COVID-19 Crisis." *Journal of Educational Technology Systems* 49, no. 1 (September 1, 2020): 5–22. <https://doi.org/10.1177/0047239520934018>.

⁴¹ Ontario Universities Council on Quality Assurance. "Quality Assurance Framework," February 2021. <https://oucqa.ca/wp-content/uploads/2021/10/Quality-Assurance-Framework-Oct-2021-1.pdf>. Pg. 32

⁴² Ontario Universities Council on Quality Assurance. "What We Do in Quality Assurance." Accessed February 24, 2022. <https://oucqa.ca/what-we-do/what-we-do-in-quality-assurance/>.

⁴³ Ontario Universities Council on Quality Assurance. "Quality Assurance Framework," February 2021. <https://oucqa.ca/wp-content/uploads/2021/10/Quality-Assurance-Framework-Oct-2021-1.pdf>.

literacy education programs for both instructors and student in Ontario’s publicly-assisted universities. Fortunately, both eCampusOntario & Contact North have pre-existing digital literacy resources and initiatives that develop technological skills and capacity within both the learner and instructor groups in Ontario.⁴⁴ Through directed MCU funding, these resources and initiatives can be centralized, scaled, and distributed to Ontario post-secondary institutions for widespread integration to increase digital literacy and promote effective and consistent use of online learning tools.

LEARNING MANAGEMENT SYSTEMS

Principle: Open-source Learning Management Systems (LMS), are more cost-effective and adaptable than licensed, proprietary systems.

Principle: LMS are useful and dynamic educational tools in post-secondary education as they enhance pedagogical quality and experience by creating immersive learning environments.

Principle: Consistent implementation and use of LMS across various education programs and courses within an institution ensures ease of access and use for all students.

Concern: The majority of LMS usage in Ontario post-secondary education consists of proprietary LMS.

Concern: LMS are often used as basic content delivery platforms rather than dynamic and immersive learning environments.

Concern: LMS are often not appraised with the same level of rigorous quality appraisal standards as in-person learning environments.

Concern: Faculty and instructors’ lack of technical skills and knowledge, as well as a lack of adequate institutional capacity and support, often prevents the use of LMS to their full potential, reducing their potential benefit to postsecondary education.

Concern: LMS are often used and implemented to varying degrees and manners within institutions, creating confusion and barriers for students, negatively impacting learning experiences, and reducing educational quality.

Recommendation: The Ministry of Colleges and Universities, in collaboration with eCampusOntario and ContactNorth, should encourage and provide technical support for the use of open-source LMS in post-secondary education.

Recommendation: The Ministry of Colleges and Universities should work with eCampusOntario, and ContactNorth, and the Ontario Universities Council on Quality Assurance (OUCQA) to enhance institutional knowledge and capacity around LMS in Ontario post-secondary institutions.

Recommendation: The Ministry of Colleges and Universities should develop, in partnership with the Ontario Universities Council on Quality Assurance (OUCQA), quality standards and best practices for post-secondary institutions when selecting and implementing LMS.

Recommendation: The Ontario Universities Council on Quality Assurance (OUCQA) should integrate quality standards and best practices around LMS into the Quality Assurance Framework used for

⁴⁴ The Higher Education Quality and Council of Ontario. “Government’s Role in Digital Learning: Review and Recommendations for the Ontario Ministry of Colleges and Universities.” Toronto, 2020.

https://heqco.ca/wp-content/uploads/2020/02/Formatted_digital-learning_FINAL.pdf.

Learning management systems (LMS) are software applications generally used to administer courses and typically have integrated components that track, document, report, and/or automate various components of the course or program delivery.^{45,46} Examples of LMS include Moodle, Brightspace, and Blackboard. LMS can be useful and beneficial to education insofar as they centralize administration, increasing ease of access—if used effectively and consistently. Additionally, effective use of LMS can create immersive learning environments for students, increasing the educational quality and enhancing learning experiences.⁴⁷ Notably, data as of 2019—even before COVID-19—demonstrate that 100% of Canadian universities use at least one LMS⁴⁸, indicating that LMS play role in the post-secondary education of students across Ontario; this assumption is only more plausible given the increased use of digital learning environments (read: LMS) during the COVID-19 pandemic.⁴⁹

Nevertheless, an LMS is only as effective as the person (or people) operationalizing it. Without adequate skills, experience, and familiarity—compounded by a lack of institutional support and capacity—instructors fall short of leveraging LMS to their full potential. Additionally, a lack of consistent implementation and use of LMS can create barriers for students, negatively impacting their learning and educational experiences. Accordingly, the Ministry of Colleges and Universities, in collaboration with eCampusOntario and ContactNorth, should work to enhance institutional knowledge and capacity of LMS and develop best practices around the consistent and effective use of LMS by instructors. This could be achieved through collaboration with individual institution's Teaching and Learning Department(s), who would then operationalize support for instructors within their respective educational programs and courses.

Given that the Ontario Universities Council on Quality Assurance (OUCQA) oversees the IQAPs in Ontario's publicly-assisted universities, OUCQA is well-positioned to lead the development of quality standards and best practices associated with the selection of LMS. Furthermore, upon successful development of these quality standards and best practices, OUCQA should integrate them into the evaluation criteria used to appraise academic and/or learning environments and major modifications (specifically with respect to the adequacy of technological platforms) as per the Quality Assurance Framework.⁵⁰

In addition to the use of LMS, it is important to consider *which* LMS are being utilized. LMS typically fall into one of two categories: open-source or licensed proprietary systems. Open-source LMS are free to use and are designed such that the user (e.g., a university administration) can customize to LMS as needed to suit their educational context; examples of open-source LMS include Moodle and Canvas LMS.⁵¹ A representative example of this is York University's integration of their open-source LMS (uClass; based on Moodle) with Zoom and in-house artificial intelligence tools.⁵² On the other hand, licensed proprietary

⁴⁵ Ryann K Ellis. "A Field Guide to Learning Management Systems." American Society for Training & Development, 2009. https://web.archive.org/web/20140824102458/http://www.astd.org/~media/Files/Publications/LMS_fieldguide_20091.

⁴⁶ Distefano, Anna, Kjell Rudestam, and Robert Silverman. "Learning Management Systems (LMS)." In *Encyclopedia of Distributed Learning*, 291–93. Thousand Oaks: SAGE Publications, Inc., 2004. <https://doi.org/10.4135/9781412950596>.

⁴⁷ ContactNorth. "An Opportunity to Make Ontario Canada's Leader in Online Learning in Secondary Schools," November 2019. https://contactnorth.ca/sites/default/files/pdf/external-presentations/contact_north_l_contact_nord_-_an_opportunity_to_make_ontario_canadas_l.pdf.

⁴⁸ Listedtech. "Learning Management Systems in Canada," June 28, 2020. <https://listedtech.com/blog/learning-management-system-canada/>.

⁴⁹ Diane Peters. "Learning Management Systems Are More Important than Ever." *University Affairs*, January 13, 2021. <https://www.universityaffairs.ca/features/feature-article/learning-management-systems-are-more-important-than-ever/>.

⁵⁰ Ontario Universities Council on Quality Assurance. "Quality Assurance Framework," February 2021. <https://oucqa.ca/wp-content/uploads/2021/10/Quality-Assurance-Framework-Oct-2021-1.pdf>. Pgs. 32, 38, 40

⁵¹ Ankush Das. "7 Best Open Source LMS for Creating Online Course Websites." *Its FOSS (blog)*, October 25, 2021. <https://itsfoss.com/best-open-source-lms/>.

⁵² Diane Peters. "Learning Management Systems Are More Important than Ever." *University Affairs*, January 13, 2021. <https://www.universityaffairs.ca/features/feature-article/learning-management-systems-are-more-important-than-ever/>.

LMS are exactly that—LMS built on closed-source software that require users to pay in order to access the LMS (i.e., license the software). Often, this payment takes the form of a per-user fee. Some examples of licensed proprietary LMS include Brightspace and Blackboard.⁵³ As of 2012, in Ontario, 90% of LMS used in post-secondary institutions were proprietary; 68% of the market share was dominated by three proprietary LMS: Blackboard, Desire2Learn (D2L), and WebCT.⁵⁴ Given the need for continuous improvement and innovation in technology-enabled learning, not to mention affordability, the lack of robust competition in the LMS market within Ontario is particularly concerning. However, greater use of open-source (as opposed to proprietary) LMS presents an opportunity for institutions adapt LMS to their unique contexts; the modular nature of open-source LMS means that an institution can tailor them directly to the needs of their instructors and students. Nevertheless, customizing and maintaining open-source LMS can require more technical knowledge and capacity on the part of the institution—using open-source LMS often require in-house technical support, as seen at York University and Brock University, both of which use open-source LMS with the assistance of local support teams.^{55,56} In terms of affordability, proprietary LMS are expensive to use for institutions, costing anywhere from \$15 to \$100 per user annually.⁵⁷ Although open-source LMS retain the cost of running servers for the software, they bypass recurring licensing fees, increasing cost-effectiveness; in fact, analysis from the University of Alberta found that using an open-source LMS could be 75% cheaper than its proprietary counterpart, even in the face of the cost of increased technical support.⁵⁸ Hence the recommendation here is two-fold: The MCU should not only encourage the use of open-source LMS through targeted grants and incentives, but also work with eCampusOntario and ContactNorth to support institutions in building sufficient capacity to effectively operationalize open-source LMS.

TEACHING SKILLS & INSTRUCTOR SUPPORT

Principle: All instructors and faculty should feel comfortable with and be able to effectively and consistently use technology-enabled learning systems, resources, and tools to ensure the equitable provision of high-quality, accessible education for all post-secondary students.

Principle: Post-secondary institutions should have the infrastructure and resources to provide robust and effective training and support to faculty and instructors using technology-enabled learning systems, resources, and tools.

Concern: Instructors and faculty do not always possess the technical skills and knowledge to use technology-enabled learning systems, resources, and tools in an accessible, consistent, effective, and equitable manner.

Concern: Faculty and instructors' lack of technical skills and knowledge around using technology-enabled learning systems, resources, and tools detracts from the quality and accessibility of education delivered in post-secondary institutions.

Concern: Developing and implementing technology-enabled learning systems, resources, and tools used

⁵³ ContactNorth. "Learning Management Systems in Ontario – Who's Using What?," 2012.

https://teachonline.ca/sites/default/files/contactNorth/files/pdf/trends-and-directions/lms_series_-_module_1.pdf.

⁵⁴ Ibid.

⁵⁵ eLeaP. "5 Key Benefits of Open Source Learning Management Systems." Accessed February 24, 2022.

<https://www.eleapsoftware.com/open-source-learning-management-systems/>.

⁵⁶ Diane Peters. "Learning Management Systems Are More Important than Ever." University Affairs, January 13, 2021.

<https://www.universityaffairs.ca/features/feature-article/learning-management-systems-are-more-important-than-ever/>.

⁵⁷ Yupango, Jim, "Open Source Vs. Proprietary LMS: Assessing Return On Investment," eLearning Industry, January 13, 2018,

<https://elearningindustry.com/assessing-return-on-investment-open-source-vs-proprietary-lms>

⁵⁸ Diane Peters. "Learning Management Systems Are More Important than Ever." University Affairs, January 13, 2021.

<https://www.universityaffairs.ca/features/feature-article/learning-management-systems-are-more-important-than-ever/>.

in post-secondary education can be overwhelming for faculty, instructors, and staff.

Concern: There is a lack of adequate and robust training and support in post-secondary institutions for instructors and faculty around using technology-enabled learning systems, resources, and tools in an accessible, consistent, effective, and equitable manner.

Recommendation: The provincial government should provide grant funding to post-secondary institutions' teaching and learning departments to enhance the quality, effectiveness, and use of resources, tools, coaching, and training around technology-enabled learning offered to faculty, instructors, and staff.

Recommendation: The provincial government should provide envelope funding to post-secondary institutions to recruit and/or retain Equity, Diversity & Inclusion (EDI) specialists in teaching and learning departments to support instructors in the equitable development and implementation of technology-enabled learning systems, resources, and tools.

Recommendation: The Ministry of Colleges and Universities should direct eCampusOntario and Contact North to work with post-secondary institutions and stakeholders to develop and implement an open educational resource in the form of a dedicated and centralized certificate program that enhances faculty and instructors' abilities to develop, implement, and teach blended and online courses.

Recommendation: The Ministry of Colleges and Universities should, after consultation with the Ontario Confederation of University Faculty Associations and Council of Ontario Universities, provide grants to post-secondary institutions for successful and widespread completion of the aforementioned dedicated and comprehensive certificate program by faculty and instructors.

Faculty and instructor (sessional instructors, teaching assistants, etc.) capacity and technical skills are essential for successful and effective technology-enabled learning. Evidence demonstrates that gaps in teaching faculty's technological skills is seen by students as the major driving force behind ineffective and confusing use and implementation of technology-enabled learning.⁵⁹ Unfortunately, the evidence also demonstrates that "most teachers teach as they are taught"—and because most instructors typically do not have extensive experience as *learners* in technology-enabled pedagogical settings, they often struggle to adequately deliver technology-enabled education, ultimately negatively impacting students' learning experiences and academic outcomes.⁶⁰ Hence, it is not surprising that 57% of Ontario undergraduate students were not satisfied with online learning in Fall 2020 and mentioned poor teaching and pedagogical organization as a main source of dissatisfaction.⁶¹ Additionally, technological skills and troubleshooting are identified as one of six core competencies of an effective educator in technology-enabled learning.⁶² From an instructor perspective, in Fall 2020, the Canadian Digital Learning Association found that 50% of faculty and senior administrators were concerned about their ability to deliver equitable learning experiences in an online environment.⁶³

⁵⁹ Armstrong, David A. "Students' Perceptions of Online Learning and Instructional Tools: A Qualitative Study of Undergraduate Students Use of Online Tools." *Turkish Online Journal of Educational Technology - TOJET* 10, no. 3 (July 2011): 222–26.

⁶⁰ Schmidt, Steven W., Elizabeth M. Hodge, and Christina M. Tschida. "How University Faculty Members Developed Their Online Teaching Skills." *Quarterly Review of Distance Education* 14, no. 3 (2013): 131–40.

⁶¹ DeCosta, Britney and Dhanani, Malika. 2022. "Ontario Undergraduate Student Survey". Affordability. Ontario Undergraduate Student Survey.

⁶² Albrahim, Fatimah A. "Online Teaching Skills and Competencies." *Turkish Online Journal of Educational Technology - TOJET* 19, no. 1 (January 2020): 9–20.

⁶³ Nicole Johnson. "Digital Learning in Canadian Higher Education in 2020: Ontario Report." Canadian Digital Learning Research Association, 2020.

<https://www.ecampusontario.ca/wp-content/uploads/2021/04/Digital-Learning-in-Canadian-Higher-Education-in-2020-The-Ontario-Report-EN.pdf> pg. 23

Accordingly, it becomes imperative that post-secondary institutions have the infrastructure and capacity to train instructors in developing their technology-enabled teaching skills. The literature has shown the effectiveness of professional development (in the form of workshops, courses, role modeling, and previous experience) in bolstering instructors' teaching skills in technology-enabled settings.⁶⁴ Nevertheless, professional development around technology-enabled (and specifically online) teaching skills remains a challenge for Ontario's universities.⁶⁵ For this reason, the province should invest in institutions' teaching and learning departments⁶⁶ through grant funding, scaling up capacity in order to provide more robust and effective professional development.

Technology-enabled learning is situated within larger social systems of oppression including, but not limited to, racism, colonialism, and ableism.⁶⁷ Furthermore, evidence demonstrates that students from marginalized communities, such as Indigenous students, racialized students, and students with disabilities, face increased barriers to and when interacting with technology-enabled learning in post-secondary education.^{68,69} This is particularly troubling from the perspective of teaching skills and instructor support as the cost of Equity, Diversity & Inclusion (EDI) training can be prohibitively expensive to fund independently at an institution-wide level, resulting in the ineffective use of technology-enabled learning systems, resources, and tools—which acts to entrench and perpetuate the disparities in high-quality education marginalized students face in post-secondary education systems.⁷⁰ To address this, OUSA strongly recommends the provincial government provide envelope funding to institutional teaching and learning departments to recruit, hire, and/or retain EDI specialists to support instructors in the equitable development and implementation of technology-enabled learning systems, resources, and tools within the university. This recommendation is particularly feasible as EDI training and support aligns with both established precedent for the Ministry of Colleges and Universities' funding envelopes⁷¹ and the province's Virtual Learning Strategy through Ontario Onwards.⁷²

On a provincial level, the Canadian Digital Learning Research Association reported in Fall 2020 about “an interest, and a need, for further sharing of innovative pedagogies and best practices for teaching with technologies among institutions.”⁷³ While there exist multiple institutional professional development resources created and administered by each university's teaching and learning departments, there is a lack of open and widely accessible professional development courses or certificates to enhance teaching

⁶⁴ Schmidt, Steven W., Elizabeth M. Hodge, and Christina M. Tschida. “How University Faculty Members Developed Their Online Teaching Skills.” *Quarterly Review of Distance Education* 14, no. 3 (2013): 131–40.

⁶⁵ Nicole Johnson. “Digital Learning in Canadian Higher Education in 2020: Ontario Report.” Canadian Digital Learning Research Association, 2020. <https://www.ecampusontario.ca/wp-content/uploads/2021/04/Digital-Learning-in-Canadian-Higher-Education-in-2020-The-Ontario-Report-EN.pdf> pg. 9

⁶⁶ ContactNorth. “Ontario Faculty & Instructor Training Resources.” teachonline.ca. Accessed February 24, 2022. <https://teachonline.ca/training-opportunities/ontario-faculty-instructor-training>.

⁶⁷ Natow, Rebecca S., Vikash Reddy, and Markeisha Grant. “Technology Use in Developmental Education: Experiences, Challenges, and Rationales.” *Community College Journal of Research and Practice* 44, no. 10–12 (December 1, 2020): 738–56. <https://doi.org/10.1080/10668926.2019.1642263>.

⁶⁸ Ibid.

⁶⁹ Fichten, Catherine S., Jennison Asuncion, and Rafael Scapin. “Digital Technology, Learning, and Postsecondary Students with Disabilities: Where We've Been and Where We're Going.” *Journal of Postsecondary Education and Disability* 27, no. 4 (2014): 369–79. <https://eric.ed.gov/?id=EJ1059994>

⁷⁰ Rebecca S. Natow. “Using Technology to Advance Equity in Higher Education.” *Forum of the American Journal of Education*, September 13, 2021. <http://www.ajeforum.com/using-technology-to-advance-equity-in-higher-education-by-rebecca-s-natow/>.

⁷¹ Ontario Confederation of University Faculty Associations (OCUFA). “Envelope Funding for Ontario Universities,” June 2008. [http://notes.ocufa.on.ca/OCUFARsrch.nsf/9da1693cdc3d700f852573db006561fc/9c5080429e3b78bd8525746a004ec757/\\$FILE/Envelope%20Funding%20discussion%20paper.pdf](http://notes.ocufa.on.ca/OCUFARsrch.nsf/9da1693cdc3d700f852573db006561fc/9c5080429e3b78bd8525746a004ec757/$FILE/Envelope%20Funding%20discussion%20paper.pdf). Pg. 4.

⁷² Government of Ontario. “A Made-in-Ontario Virtual Learning Strategy for Postsecondary Education.” news.ontario.ca, December 11, 2020.

<https://news.ontario.ca/en/backgrounder/59593/a-made-in-ontario-virtual-learning-strategy-for-postsecondary-education>.

⁷³ Nicole Johnson. “Digital Learning in Canadian Higher Education in 2020: Ontario Report.” Canadian Digital Learning Research Association, 2020.

<https://www.ecampusontario.ca/wp-content/uploads/2021/04/Digital-Learning-in-Canadian-Higher-Education-in-2020-The-Ontario-Report-EN.pdf> pg. 10

skills in technology-enabled learning environments. This creates the opportunity for the province, in collaboration with eCampusOntario, Contact North, and universities, to develop a dedicated and centralized certificate program that enhances faculty and instructors' abilities to develop, implement, and teach blended and online courses. This recommendation is made feasible by two existing open professional development certificate programs; namely, the Carleton University Certificate in Blended and Online Teaching (CBOT)⁷⁴ and eCampusOntario's Ontario Extend micro-credential program.⁷⁵ These open professional development resources provide a strong foundation for the creation of a centralized provincial certificate program that can be accessed by faculty and instructors across all of Ontario's post-secondary institutions. Additionally, the centralization of such a certificate program would facilitate provincial incentivization for instructor's professional development. Specifically, by centralizing this certificate program, the MCU can disburse targeted grants to universities whose faculty and instructors have successfully completed the certificate program, promoting widespread completion with the ultimate goal of improving students' learning experiences and academic success.

It should be noted here that the recommendations around operationalizing grant funding and incentivization to scale up instructor support in post-secondary institutions align with the provincial government's plan to increase digital capacity and fluency as outlined in the province's Virtual Learning Strategy (VLS) through Ontario Onwards.⁷⁶ However, OUSA strongly believes that the funding used in alignment with the VLS should **not** originate from funds allocated to the Ontario Student Assistance Program (OSAP), nor should the VLS in any way result in reductions to OSAP funding available to Ontario's post-secondary students.

INFRASTRUCTURE

CLASSROOM TECHNOLOGY AND DIGITAL INFRASTRUCTURE

Principle: Students' learning needs should be met and prioritized within classrooms through the use of technology and educational aids.

Principle: All students should receive supports relevant to their program and encouraged to succeed both on campus and through suitable online learning platforms.

Principle: Students and instructors should be provided with the same level of high-quality teaching and learning on virtual platforms as they would in-person.

Principle: Post-secondary institutions should offer flexible and hybrid learning options both during the COVID-19 pandemic, and while campuses move toward in-person models.

Concern: Not all classrooms are equipped to support the diverse needs of students in post-secondary.

Concern: Students with disabilities and diverse access needs are often excluded from a post-secondary institutions plans to implement new technology or learning models.

Concern: The COVID-19 pandemic has created additional barriers for students and post-secondary institutions trying to support both in person, online, and through hybrid models.

⁷⁴ CU Open. "Blended and Online Teaching" Carleton University. Accessed February 24, 2022. <https://carleton.ca/cuopen/certificate-in-blended-and-online-teaching/>.

⁷⁵ eCampusOntario. "Welcome to Ontario Extend: Professional Learning for Educators." extend.ecampusontario.ca. Accessed February 24, 2022. <https://extend.ecampusontario.ca/>.

⁷⁶ Government of Ontario. "A Made-in-Ontario Virtual Learning Strategy for Postsecondary Education." news.ontario.ca, December 11, 2020. <https://news.ontario.ca/en/backgrounder/59593/a-made-in-ontario-virtual-learning-strategy-for-postsecondary-education>.

Concern: Post-secondary institutions have not been able to support instructors and students with the technology and in-person support needed to facilitate hybrid learning options.

Recommendation: The provincial government should provide funding to post-secondary institutions to improve classroom technology to align with recommendations from the Postsecondary Education Standards Development Committee AODA.

Recommendation: The province of Ontario should create guidelines for post-secondary institutions to begin supporting hybrid learning through consultation with HEQCO, student groups, industry professionals, and equity and diversity experts.

Recommendation: The provincial government should provide envelope funding to post-secondary institutions to cover the additional costs associated with offering hybrid learning models, adequate support staff, and accessible technology and platforms.

With COVID-19 impacting students across the province, and globe, the emphasis has been for post-secondary institutions to temporarily move online with an end goal of returning to in-person instruction. While these plans are well merited, it's important to note that prior to the pandemic, enrollment in distance education was on the rise. Throughout the work, "Five online learning trends you should know about," McPhie noted the rise over 14 years with 32% of students electing to take at least one course through distance education.⁷⁷ The flexibility, transferability, and wealth of options allows students to supplement their degree and fulfill requirements in a variety of different ways. In OUSA's Ontario Undergraduate Student Survey from 2017, 49% of students who had taken an online course said they would take another course through distance education however in 2020, only 16% said the same.⁷⁸ Some reasons for the disconnect are evidently the lack of choices presented to students as well as burnout, however within those overarching problems there is also a lack of digital infrastructure and classroom technology to support engaging and high quality online, hybrid, and in-person options. Post-secondary students need to be enabled in their educational pursuits both on and off-campus with software and educational tools promoting further learning rather than creating barriers.

PUBLIC VS. PRIVATE

Note: This section discusses the importance of public investment and involvement in the development of tech-enabled learning tools and resources. More importantly however, it attempts to get at the question of how can industry and government work together in a way that results in the most public good (especially as it pertains to post-secondary education). In many ways, our publicly-assisted institutions depend on private industry to source what we lack the expertise, capacity, or resources to do in-house. For resources like toilet paper, it's easy to see why we'd just purchase the stuff, but the answer is a lot less clear-cut when we talk about educational tools like- LMS, course registration software, and so on.

Increasingly, we're seeing edutech companies developing products, applications, and software for use by post-secondary institutions. Some of which students find genuinely useful. Others, students find it frustrating. While there is something to be said about assignments and tests/quizzes that are put behind paywalls, this concern is addressed [somewhat] by the requirement that universities "have a policy with respect to their students' interest" in situations "where a course or program relies substantially on assessments that are included with a learning resource" (located in MCU's *Tuition Fee Framework and Ancillary Fee Guidelines for Publicly-Assisted Universities*)

⁷⁷ Kellie McPhie, "Five online learning trends you should know about," *D2L*, June 20, 2019, <https://www.d2l.com/blog/five-online-learning-trends-you-should-know-about/>.

⁷⁸ OUSA surveys from 2017 and 2020

While edutech can satisfy the needs of students, instructors, and institutions, there is always a risk that these products are designed more-so with profit in mind than their groundedness in pedagogical best practices. Broadly, while OUSA respects professors' right to academic freedom- we are worried about the misuse of this important freedom to justify the use of expensive third-party resources that offer no benefit to student's learning. This can be seen as having a disproportionate impact on low-income students.

- a) The responsibility of driving forward innovation in tech-enabled learning should be that of both private industry and publicly-funded institutions. The involvement of publicly-funded institutions is necessary to ensure that whatever is developed is grounded in best-practices.
- b) While it may not be feasible for one institution to develop tools for itself, it may be feasible for the government/one institution to develop something for the Ontario PSE sector more broadly. This would offer institutions, as a whole, more control, oversight, and customizability
- c) It's important that the government create an environment that rewards and adequately supports this work

LEARNING INNOVATIONS

Principle: Tools used for tech-enabled learning should be high-quality, accessible to a wide range of users and not pose additional financial barriers on students.

Principle: Decisions around which digital tools/resources are used in the classroom should be primarily based on their ability to meet institution, instructor and student needs.

Principle: Digital tools/resources developed by for-profit companies can offer genuine value to students, instructors, and their institutions, and thus should not be barred outright

Principle: Post-Secondary institutions should be involved in the research and development of new pedagogical approaches and tools.

Concern: Pedagogical innovation is typically not seen as a worthwhile or career-advancing pursuit by instructors, and thus is not prioritized.

Concern: Educational tools designed by for-profit companies may prioritize profit and marketability to institutions/instructors over student learning and experience

Concern: Lack of involvement from public institutions in the design and development of educational tools leaves them dependent on what privately-owned companies produce

Concern: Tools developed by for-profit companies may have an expansive enough market that it is unlikely that they will adapt their practices to meet accessibility or data/privacy requirements set about by individual institutions or even provincial governments.

Recommendation: Within six months of regulation being enacted, the Ministry of Colleges and Universities should provide and adopt clear and consistent definitions across the education sector for key terms relating to digital learning and technology.

Recommendation: Within six months of regulation being enacted, each postsecondary institution must develop and make publicly available a plan to seamlessly include accessibility in the digital learning and technology used throughout the academic journey of all students with disabilities.

Recommendation: The provincial government should provide grant funding to institutions developing and expanding inter-institutional access to digital learning tools and platforms.

A welcome shift that is and will continue to happen is the creation and adoption of new learning innovations to support the various modes of learning being used by universities. With these new tools being used, we believe that tools used for tech-enabled learning should be high-quality, accessible to a wide range of users and not pose additional financial barriers on students. Weller (2020) argues that once institutions adopt a technology, it becomes difficult for it to unadopt it- commenting that PSEs must take care when choosing what technology they choose to integrate into their operations. (*“Simply cancelling annual contracts is not enough, since the internal processes designed to support such technologies amount to long-term investments in them (e.g., training hundreds of faculty to use particular tools means that an institution is now invested in that tool in numerous ways).”*) He refers to this phenomenon as “software sedimentation”, a term borrowed from Jaron Lanier. Weller also suggests that institutions are overfocusing on “tool-focused solutionism”, encouraging individuals to look for specific tools/technology to solve their problems, rather than process-oriented and practice-oriented solutionism. Rather than asking what surveillance tool can improve academic integrity, institutions should perhaps be focusing on what changes to assessments, pedagogies and relationships with students can breed better outcomes.

We would like to see these two developed in-house by universities themselves. Every institution is unique and the tools used by students can vary significantly based on their institution. Having universities create the tools they need provides the with the opportunity to tailor services based on the specific needs of students. Alternatively, when third party platforms develop these tools they often make the platform widely accessible to all students that may use the platform, making the benefits of tailoring the service impossible.

In their papers Selwyn et al (2020) and Williamson (2020) ask what the long-term impact of the rapid adoption of edutech solutions by post-secondary institutions will be, particularly if we continue to use these technologies without interrogating whether they are the best options long-term for student success. While, in the short-term, they were crucial to many instructors' ability to quickly shift online, in the long-term institutions should evaluate what approach to tech-enabled learning they take beyond the pandemic and whether that is best-achieved through the use of the tools that we rapidly adopted during the pandemic. While the decision of what tools to use is complicated by academic freedom, there are frameworks institutions can employ- such as the University of Waterloo’s guidelines on third-party learning resources that a student is expected y their instructor to purchase in order to be able to complete graded assessments in the course- to ensure these third-party resources provide additional value to a students educational experience that warrants its cost in addition to tuition.

While developing in-house tools would greatly benefit students, there isn’t much interest from faculty to develop such tools. A project such as this would take several months and require not only time, but funding for the project. Securing the support and funding alone can be a task within itself, which deters many faculty members from going down this route when thinking of learning tools and platforms to use in their courses. This is why we believe that the provincial government should provide grant funding to institutions developing and expanding inter-institutional access to digital learning tools and platforms. This would decrease the largest barrier, securing funding, and pave the way to faculty members to conduct the necessary research and time into developing unique tools for their students.

POLICY STATEMENT

Whereas: All students should have access to the content provided within synchronous and asynchronous lectures without any barriers.

Whereas: All students should be able to access and meaningfully engage with course content regardless of (dis)ability.

Whereas: The cost of tuition should encompass all resources necessary for learning in a course, including assignments and homework, and these resources should be accessible to every student at a reasonable cost.

Whereas: Students should have timely access to reliable captions or transcripts for their classes.

Whereas: Internet access is a human right and an integral part of modern learning and every student should have equitable access to reliable internet speeds that allow them to succeed in an online environment.

Whereas: Every student should have access to a reliable computer with the hardware and software capability to support online learning initiatives specific to the software of their courses.

Whereas: Institutions should provide students access to the software and applications required to succeed in their programs.

Whereas: Post secondary students should have access to clear financial support and resources to enable their educational pursuits.

Whereas: The province of Ontario and post-secondary institutions – as opposed to students – should be the primary cost-bearers for expenses related to tech, softwares, and non-tuition costs.

Whereas: The province of Ontario and post-secondary institutions should be actively collaborating to minimize expenses related to technology, software, and other non-tuition costs.

Whereas: Prospective students should have all available information such as the overall learning outcomes of their degree of choice and enrollment data when choosing a post-secondary institution to attend.

Whereas: Open University Data can encourage innovations which improve the university experience both in person and in online environments.

Whereas: Tech-enabled learning (if implemented correctly)-has the potential to improve the accessibility, affordability, and quality of education for all Ontario students.

Whereas: Legislation surrounding the collection of data within post-secondary education should be rooted in evidence, best practises, and used to improve the student experience, accessibility, and equity within the sector.

Whereas: Public policy decisions should be rooted in evidence, best practices, and should be regularly evaluated for efficacy.

Whereas: Students should have access to lecture materials in a variety of modalities.

Whereas: Instructors should, by default, retain ownership over the materials they create for their courses and teaching duties.

Whereas: Academic integrity should be upheld in both online and in-person settings.

Whereas: Students' privacy should be prioritized through the use of minimally invasive methods of academic dishonesty prevention.

Whereas: A student should not be over-surveilled or suspected of cheating as a result of their race, religion, medical condition, and/or disability.

Whereas: All students should have access to an accessible, affordable education.

Whereas: All students should expect support in achieving the same learning outcomes in an online course as they would in a traditionally-delivered or hybrid course.

Whereas: The unique pedagogy of online courses should be considered in the design, development, and delivery of online courses.

Whereas: Pedagogical innovation is a valuable facet of the post-secondary education sector.

Whereas: Students should expect to receive support in achieving the same learning outcomes in an online course as they would in a traditionally-delivered or hybrid course.

Whereas: In emergency transitions to online learning, the unique pedagogy of online courses should be considered in the design, development, and delivery of online courses wherever possible.

Whereas: In the circumstances of emergency transition to remote learning, providing adequate instructional and technological support for instructors is necessary to maintain quality of education.

Whereas: The identification and description of soft skills should be easily accessible and clearly communicable for post-secondary students.

Whereas: Students should be encouraged to develop both their academic and soft skills to be better prepared for the workforce.

Whereas: Employers should endorse and recognize badges for improved recognition of all skills including soft skills, which may be developed through technology-enabled learning opportunities.

Whereas: Badging should be accessible to everyone.

Whereas: All students, regardless of financial background, should have equal opportunity to succeed and prosper in their courses.

Whereas: A student's financial background should not limit their access to textbooks and courseware materials required or recommended for their courses.

Whereas: OERs are a legitimate and effective approach to address student concerns on the affordability of textbooks and other forms of courseware.

Whereas: All educational resources, regardless of format, should be of high quality.

Whereas: OERs should be implemented with the purpose of enhancing the teaching and learning experience at post-secondary institutions, as well as affordability.

Whereas: The responsibility of promoting and facilitating broader uptake and development of OERs across Ontario post-secondary institutions is that of both individual institutions and the provincial government.

Whereas: Faculty should feel supported and empowered by their institution to adopt, adapt, and/or create OERs.

Whereas: Any strategy to increase the adoption of OERs in Ontario's postsecondary education system must be done in such a way that acknowledges individual instructors' right to select the educational resources they feel best aligns with their course.

Whereas: Faculty members across Ontario should be recognized by their institutions and the province for their work pertaining to the development of OERs.

Whereas: Online learning tools are a useful component of post-secondary education as they can enhance the accessibility and quality of education if used effectively and consistently.

Whereas: Online learning tools can provide more flexibility, affordability, and enhance adaptive learning for post-secondary students.

Whereas: Online learning tools should be accessible, relevant, and engaging for all post-secondary students.

Whereas: Open-source Learning Management Systems (LMS), are more cost-effective and adaptable than licensed, proprietary systems.

Whereas: LMS are useful and dynamic educational tools in post-secondary education as they enhance pedagogical quality and experience by creating immersive learning environments.

Whereas: Consistent implementation and use of LMS across various education programs and courses within an institution ensures ease of access and use for all students.

Whereas: All instructors and faculty should feel comfortable with and be able to effectively and consistently use technology-enabled learning systems, resources, and tools to ensure the equitable provision of high-quality, accessible education for all post-secondary students.

Whereas: Post-secondary institutions should have the infrastructure and resources to provide robust and effective training and support to faculty and instructors using technology-enabled learning systems, resources, and tools.

Whereas: Students' learning needs should be met and prioritized within classrooms through the use of technology and educational aids.

Whereas: All students should receive supports relevant to their program and encouraged to succeed both on campus and through suitable online learning platforms.

Whereas: Students and instructors should be provided with the same level of high-quality teaching and learning on virtual platforms as they would in-person.

Whereas: Post-secondary institutions should offer flexible and hybrid learning options both during the COVID-19 pandemic, and while campuses move toward in-person models.

Whereas: Tools used for tech-enabled learning should be high-quality, accessible to a wide range of users and not pose additional financial barriers on students.

Whereas: Decisions around which digital tools/resources are used in the classroom should be primarily based on their ability to meet institution, instructor and student needs.

Whereas: Digital tools/resources developed by for-profit companies can offer genuine value to students, instructors, and their institutions, and thus should not be barred outright.

Whereas: Post-Secondary institutions should be involved in the research and development of new pedagogical approaches and tools.

Be it resolved that: The provincial government should provide post-secondary institutions with funding to find, develop, and/or hire more accessible and equitable captioning technologies/staff.

Be it further resolved that (BIFRT): The Ministry of Colleges and Universities should work with Accessibility Offices at an institutional level to implement ways of presenting materials which is effective for students with visual impairments and which would give them equitable access to the classroom materials.

BIFRT: The Ministry of Colleges and Universities should mandate training on accessibility requirements in the online classroom environment to ensure each student has equitable access to learning materials.

BIFRT: The Ministry of Colleges and Universities should enact regulation which requires professors to give versions of classroom documents that meet the AODA standards for web content to accessibility offices at institutions when students with relevant accommodations require them.

BIFRT: The Government of Ontario should implement recommendation 68 in the Development of Proposed Post-Secondary Education Report “each postsecondary institution must develop and make publicly available a plan to seamlessly include accessibility in the digital learning and technology used throughout the academic journey of all students with disabilities.

BIFRT: The government of Ontario should implement recommendation 69 in the Development of Proposed Post-Secondary Education Report “the Digital Learning and Technology plan must be created in consultation with a diverse body of stakeholders that includes students with disabilities.

BIFRT: The provincial government should incentivize the private sector through tax credits to assist Ontario’s Broadband and Cellular Action Plan and improve access to broadband internet for rural and northern communities.

BIFRT: Students who demonstrate financial need and weak or no access to internet in their place of residence should be provided grants for internet installation from the Ministry of Colleges and Universities.

BIFRT: The Ministry of Colleges & Universities should provide grant funding to institutions’ financial aid departments which would support students who lack the funding to purchase appropriate technology.

BIFRT: The Provincial Government should amend the computer allowance within OSAP to provide students with a grant of up to \$1500 to use at one point during their degree.

BIFRT: The province of Ontario should continue to provide funding to post-secondary institutions through the Virtual Learning Strategy for Post-Secondary Education based on the costs of technology associated with programs offered to allow institutions to provide the necessary technology for students.

BIFRT: The provincial government should develop guidelines for the creation and acquisition of various technologies within post-secondary institutions in consultation with students, faculty members, administrations, industry stakeholders, and other community members through a province wide advisory group.

BIFRT: The Ministry of Colleges and Universities should narrow the Tuition Fee Framework and Ancillary Fees Guideline to limit the use of third party resources already offered by the university, over \$50 per term, and for use in assessments worth less than 20% of the final grade, in an effort to promote a more cost friendly, equitable, and accessible learning experience for all students.

BIFRT: The province of Ontario should task the Higher Education Quality Control of Ontario with researching the rising cost of technology associated with post-secondary education as well as the impacts and successes of government loans in alleviating barriers and improving transparency.

BIFRT: The provincial government should collaborate with post-secondary libraries and bookstores to negotiate lower-cost licensing and purchasing agreements for courseware to reduce financial barriers for students.

BIFRT: The Ministry of Colleges and Universities should task HEQCO with expanding their Open Data Inventory database to improve public access and accountability.

BIFRT: The provincial government should provide envelope funding for HEQCO to expand their Open University database.

BIFRT: The provincial government should task COU to develop a uniform data collection system for learning outcomes and student experience that is publicly available.

BIFRT: The Ontario government should develop a set of metrics to assess its digital-learning objectives.

BIFRT: The Ontario government should commission HEQCO to identify how perspectives, barriers, and resources within tech-enabled learning have evolved since the pandemic, and adjust the province's digital-learning strategy accordingly.

BIFRT: The Ontario government should expand its data collection procedures to identify students who take digital courses or are provided services by provincial agencies in order to allow the evaluation of key outcomes such as graduation rates, skills acquisition, and postgraduate employment.

BIFRT: The provincial government should commission HEQCO to conduct a review of faculty members' concerns on intellectual property theft. Their research should investigate their main concerns, solutions that would make instructors feel more secure that their intellectual property will be safe, and the frequency of theft.

BIFRT: The provincial government should commission HEQCO to conduct a review of faculty members' concerns on intellectual property theft. Their research should create a guide for best practises on mitigating concerns around property theft.

BIFRT: As a solution to the intellectual properties of instructors the provincial government should incentivize institutions to use OER's.

BIFRT: The Ministry of Colleges and Universities should mandate that each institution develop a set of standards that proctor software used in post-secondary institutions must meet in terms of equitable assessment, privacy, accessibility, and data rendition/security practices, and that these policies be developed in consultation with students and student government representatives, including students from marginalized communities most impacted by proctor software.

BIFRT: The MCU should mandate that universities commit to using the most minimally invasive practises for ensuring academic integrity during assessments, wherever possible.

BIFRT: The Ministry of Colleges and Universities should mandate policies pertaining to permitted uses of accomodation aids during online-proctored exams for disabled students, and/or have departments in charge of accessibility services in post-secondary institutions oversee those policies.

BIFRT: The Ministry of Colleges and Universities should mandate that institutions inform instructors of the risks and possible harms of proctoring software, and alternative assessment methods that do not require proctoring software.

BIFRT: The provincial government should provide envelope funding to institutions to support institutional strategies that support students' ability to engage with online courses, such as technology loan programs.

BIFRT: The Ontario Universities Council on Quality Assurance (OUCQA) should amend the Protocol for Major Modifications to require assessment of the existing criteria for changing a significant portion of a program from in-person to online.

BIFRT: The provincial government should provide generous funding to support institutional bodies which support the design, development, and delivery of online courses.

BIFRT: The provincial government should task eCampus Ontario with the ongoing establishment of best-practice recommendations for the design, development, and delivery of online courses; where appropriate, different recommendations should be established for different types of learning outcomes.

BIFRT: The provincial government should provide envelope funding to institutions for activities contributing to innovation and experimentation in the field of online learning in post-secondary environments.

BIFRT: The provincial government should commit to offering immediate and adequate grant funding to institutions to facilitate an effective shift to remote course delivery in the case of future emergency transitions to remote learning.

BIFRT: The provincial government, through eCampusOntario, should establish a badging framework.

BIFRT: The provincial government should consult employers, post-secondary institutions, and students in developing skills competencies for badges, as well as further communicating the value of skills articulation for employment.

BIFRT: The provincial government should, task eCampusOntario in developing a badging or certificate program to acknowledge professional development in technology-enabled learning for faculty, teaching assistants, technicians, staff, and students.

BIFRT: The provincial government should invest in increasing the number of high-quality Open Educational Resources, focusing first on common courses and disciplines where demand has not been met.

BIFRT: The provincial government should reward institutions and instructors that replace expensive course materials with free and low-cost alternatives.

BIFRT: The provincial government should continue to subsidize the costs of course materials until OERs overtake them.

BIFRT: The provincial government should work with faculty stakeholders in Ontario, including but not limited to the Council of Ontario Universities (COU) and Ontario Confederation of University Faculty Associations, to incorporate accurate and up-to-date information on OERs for faculty orientation across institutions.

BIFRT: The provincial government should increase funding allocated to eCampusOntario to work with Teaching and Learning Centres, and their equivalents, to peer review existing OERs with a focus on quality assurance.

BIFRT: The provincial government should, through eCampusOntario, establish a quality assurance process to review OERs as they are developed.

BIFRT: The provincial government should mandate and provide funding to institutions to report data in a standardized format regarding both students' and faculty members' experiences with OERs.

BIFRT: The provincial government should task eCampusOntario with the collection, analysis and publication of institutional user satisfaction data.

BIFRT: The province should work with the Ontario Confederation of University Faculty Association (OCUFA) to develop meaningful incentives geared towards faculty for OER development.

BIFRT: The province should work with the Council of Ontario Universities to develop a best practice system for incentivising OER development.

BIFRT: The provincial government should provide envelope funding to support the expansion of eCampus Ontario's library to increase capacity and diversity of texts that encompasses all disciplines.

BIFRT: The creation and promotion of OERs should be included in Ontario's Strategic Mandate Agreements as a metric for effective pedagogy and faculty innovation, linking performance-based funding to increasing financial access to education.

BIFRT: The provincial government should provide grant funding to hire students to support instructors in adaptation and creation of OERs.

BIFRT: The Ontario Universities Council on Quality Assurance (OUCQA), in partnership with eCampusOntario and ContactNorth, should develop best practices for the development, implementation, and quality appraisal of online learning tools with a focus on accessibility, effectiveness, and consistency within and across institutions.

BIFRT: The Ontario Universities Council on Quality Assurance (OUCQA) should integrate best practices around online learning tools into the Quality Assurance Framework used for Institutional Quality Assurance Processes.

BIFRT: The Ministry of Colleges and Universities should fund and work with eCampusOntario and Contact North to centralize and distribute accessible and effective digital literacy education programs for instructors and students in Ontario post-secondary institutions.

BIFRT: The provincial government should require post-secondary institutions to ensure that online learning tools are accessible and user-friendly for all students and are compatible for use with common assistive technologies and devices.

BIFRT: The provincial government should encourage postsecondary institutions to identify in advance and clearly communicate to students the accessibility features of the online learning tools needed to meet the essential requirements of a given course.

BIFRT: The Ministry of Colleges and Universities, in collaboration with eCampusOntario and ContactNorth, should encourage and provide technical support for the use of open-source LMS in post-secondary education.

BIFRT: The Ministry of Colleges and Universities should work with eCampusOntario, and ContactNorth, and the Ontario Universities Council on Quality Assurance (OUCQA) to enhance institutional knowledge and capacity around LMS in Ontario post-secondary institutions.

BIFRT: The Ministry of Colleges and Universities should develop, in partnership with the Ontario Universities Council on Quality Assurance (OUCQA), quality standards and best practices for post-secondary institutions when selecting and implementing LMS.

BIFRT: The Ontario Universities Council on Quality Assurance (OUCQA) should integrate quality standards and best practices around LMS into the Quality Assurance Framework used for Institutional Quality Assurance Processes.

BIFRT: The provincial government should provide grant funding to post-secondary institutions' teaching and learning departments to enhance the quality, effectiveness, and use of resources, tools, coaching, and training around technology-enabled learning offered to faculty, instructors, and staff.

BIFRT: The provincial government should provide envelope funding to post-secondary institutions to recruit and/or retain Equity, Diversity & Inclusion (EDI) specialists in teaching and learning departments to support instructors in the equitable development and implementation of technology-enabled learning systems, resources, and tools.

BIFRT: The Ministry of Colleges and Universities should direct eCampusOntario and Contact North to work with post-secondary institutions and stakeholders to develop and implement an open educational resource in the form of a dedicated and centralized certificate program that enhances faculty and instructors' abilities to develop, implement, and teach blended and online courses.

BIFRT: The Ministry of Colleges and Universities should, after consultation with the Ontario Confederation of University Faculty Associations and Council of Ontario Universities, provide grants to post-secondary institutions for successful and widespread completion of the aforementioned dedicated and comprehensive certificate program by faculty and instructors.

BIFRT: The provincial government should provide funding to post-secondary institutions to improve classroom technology to align with recommendations from the Postsecondary Education Standards Development Committee AODA.

BIFRT: The province of Ontario should create guidelines for post-secondary institutions to begin supporting hybrid learning through consultation with HEQCO, student groups, industry professionals, and equity and diversity experts.

BIFRT: The provincial government should provide envelope funding to post-secondary institutions to cover the additional costs associated with offering hybrid learning models,adequate support staff, and accessible technology and platforms.

BIFRT: Within six months of regulation being enacted, the Ministry of Colleges and Universities should provide and adopt clear and consistent definitions across the education sector for key terms relating to digital learning and technology.

BIFRT: Within six months of regulation being enacted, each postsecondary institution must develop and make publicly available a plan to seamlessly include accessibility in the digital learning and technology used throughout the academic journey of all students with disabilities.

BIFRT: The provincial government should provide grant funding to institutions developing and expanding inter-institutional access to digital learning tools and platforms.