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## 26. Universal design in Canadian higher education

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### INTRODUCTION

Since the introduction of the concept of universal design into the North American educational landscape more than two decades ago (Bowe, 2000), Canadian higher education has explored and incorporated a number of different frameworks: Universal Design of Instruction (Burgstahler, 2001), Universal Design for Instruction (McGuire & Scott, 2002), Universal Design for Learning (Rose & Meyer, 2002), Universal Instructional Design (Yuval et al., 2004), and Universal Design in Higher Education (Burgstahler & Cory, 2010). In this chapter, a diverse group of researchers, educators, and service professionals from across Canada reflect on the history, research and practice, and future of universal design in Canadian higher education.

### HIGHER EDUCATION CONTEXT IN CANADA

In this section, we will share how universal design (UD) developed in the unique landscape of Canadian higher education, and some of the most notable moments, influences, and motivations for change. Canada has 10 provinces and three territories, along with several First Nations, Métis, and Inuit communities. Canadian postsecondary institutions operate under provincial (or territorial) jurisdiction, and each province has unique legislation that affects postsecondary education, including accessibility legislation, and human rights codes. Canada also has two official languages (French and English) with different prevalence in each province. In most of Canada, English dominates as the primary language, though the province of Québec is dominantly French and New Brunswick is officially recognized as a bilingual province.

Another consideration in the national context is the role of accessibility legislation. In 2005, Ontario passed the Accessibility for Ontarians with Disabilities Act (AODA; Accessibility for Ontarians with Disabilities Act, 2005) which created new guidelines and reporting expectations for many sectors, including higher education. In addition to Ontario, there are only three other provinces with dedicated legislation which mandate accessibility: Québec, Manitoba, and Nova Scotia. However, New Brunswick, Saskatchewan, and the Northwest Territories have been making progress towards this type of legislation (Doyle, 2021), and British Columbia passed their bill

in September 2022 (Accessible British Columbia Act, SBC 2021, c 19). As accessibility legislation was introduced, UD evolved in Canada as part of the solution to improving accessibility to learning in higher education. Provincial accessibility legislation, with a focus on ensuring accessible classrooms and educational materials and designing barrier-free environments prompted more interest in UD in the education sector. However, the early focus remained somewhat centred on supporting students with documented disabilities.

## DEVELOPMENT OF UNIVERSAL DESIGN IN CANADIAN HIGHER EDUCATION

UD is understood for the purpose of this chapter as a design philosophy that has served as an inspiration for the emergence of various frameworks or models specific to educational environments. The evolution of UD, and frameworks that emerged in Canadian higher education has not been identical across institutions or regions. For this reason, we suggest thinking about UD development in Canada in three broad waves, with each wave having certain themes or common traits (Black, 2021). While not everyone experiences each wave at the same time or in the same way, and some experiences do not fit into these broad themes, it does provide a way to examine the context for UD growth in Canadian higher education.

The first wave builds from UD. As is the case in many other regions of the world, the concept of UD comes from the built environment and the acknowledgment and the need to design physical spaces to be accessible, not only for people with disabilities, but also for anyone who might benefit (Mace et al., 1991). From these roots of UD in the built environment, early foundations were set for the introduction of Universal Instructional Design (UID), and the idea that if the built environment could be barrier-free by design, could the learning environment be barrier-free by design as well? An early example of the work done in removing barriers in Canadian higher education is the University of Guelph's UID project (n.d.), which started in the early 2000s. It focused on supporting instructors in designing accessible learning environments through seven principles: flexible, accessible, consistent, explicit, supportive, minimize effort, and learning space (Yuval et al., 2004). The University of Guelph has been a national leader, and their work predates the introduction of an important piece of legislation in the province of Ontario, the AODA (2005), which introduced the second wave.

The beginning of the second wave was marked by the introduction of the AODA in 2005. The AODA prompted a surge of accessibility-related activities in Ontario postsecondary institutions and a growing interest in how to systematically improve accessibility in postsecondary learning environments. For example, George Brown College in Ontario created the position of an accessibility specialist who had the scope and influence to support accessibility across the institution. At this time, there were a variety of frameworks being used as educators worked to improve accessibility and meet the requirements outlined in the AODA. The first CAST Universal

Design for Learning (UDL) guidelines and the philosophy and neuroscience informing UDL were published in Rose and Meyer's *Teaching Every Student* in 2002, but the UDL guidelines were not consistently used at this time in Ontario. Universal Design (UD), Universal Design for Instruction (UDI), Universal Instructional Design (UID), and Universal Design for Learning (UDL) were all acronyms and frameworks used by early practitioners. Meanwhile, the Nova Scotia Community College (NSCC) established a UDL specialist role to liaise between accessibility services and the curriculum team, with the goal to improve systemic integration of UDL in teaching and learning. This project was firmly aligned with the 2002 CAST UDL Guidelines, and clearly identified UDL as the focus of the work. Also, as part of this wave, McGill University in the province of Québec began a UDL project emanating from their disability services office (Beck & Fovet, 2015).

The third wave was marked by the publication of CAST's updated UDL guidelines in 2008, including the introduction of expert learning as a main goal of UDL which facilitates the development of students as purposeful and intentional learners. This change and the focus on curriculum features including teaching goals, methods, materials, and assessments that support both accessibility and expert learning helped more Canadian educators and institutions to adopt the CAST UDL 2.0 guidelines and move away from other models of UD. This shift did not occur at once but happened, and is still happening, at institutions utilizing distinct timelines. Educators and institutions are increasingly employing the CAST UDL 2.0 guidelines and the three principles of UDL: multiple means of representation, multiple means of action and expression, multiple means of engagement (CAST, 2018). For example, in 2016, Mohawk College in Hamilton, Ontario created a UDL specific role in the Centre for Teaching & Learning to provide strategic direction for broad academic UDL implementation (D. Benton-Kearney, personal communication, March 29, 2022). Although UDL was to some degree occurring nationwide and to a different extent in each province, the CAST guidelines now provide a more consistent framework across the country. The scholarship that informed the CAST guidelines make them the international standard for UDL design and delivery.

We are currently in a fourth wave of the evolution of UD, specifically UDL as the leading framework, marked by the beginning of the COVID-19 pandemic and the pivot to hybrid and online course delivery in many Canadian colleges and universities. Increased interest in UDL as a framework to support quality learning experiences that are accessible and flexible brought it to the forefront in new ways. With the increase in hybrid and online learning and digital access, educators have been eager to explore UDL as a framework to help them design learning experiences that work well for all students in any learning environment – traditional face-to-face, online, or hybrid. Digital design and accessibility bring new ways to design experiences that align with the three principles of UDL.

Throughout each of these waves, leadership has come from various sources in institutions, including centres for teaching and learning, teaching faculty, administration, and accessibility services/student services. However, not all efforts have had systems level coordination, and there are numerous unpublicized efforts by

individuals and groups of educators working to integrate UDL into their practice. National coordination is evolving too. The Pan-Canadian conference on UDL began in 2015 and focused on UDL from kindergarten to higher education (UDL Canada, n.d.). Additionally, Canadians have been active in the international UDL conference communities led by the Universal Design for Learning Implementation and Research Network and CAST. The UDLHE Network was co-founded by a Canadian and has substantial Canadian membership. At the college level, the interest has grown as well, and Mohawk College hosts a listserv for UDL which is open to all staff at Canadian postsecondary institutions.

## RESEARCH AND EVALUATION OF UDL IN CANADIAN HIGHER EDUCATION

To acknowledge the unique evolution of UD in Canadian higher education and the emergence of UDL as the dominant paradigm, our review of research and program evaluation is specifically focused on the UDL model.

### **UDL Research in Canada**

An analysis of peer-reviewed journal articles on UDL research published from 2012 to 2015 (Al-Azawei et al., 2016) found only one article on UDL at a Canadian higher education institution (Kumar & Wideman, 2014). The scarcity of Canadian research during that period is not surprising as the implementation of UDL in colleges and universities only began in earnest in the early 2000s and UDL did not gain a foothold in Canada until a decade later. Although UDL is described as a proactive approach to making learning materials accessible to students with disabilities, research in Canada has rarely focused on students with disabilities specifically but has examined accessibility for all students and other members of the academic community. The results of a Google Scholar search to cover the years 2016 to 2022 reflects the progress to date (for a research review of the years prior in the context of North American higher education, please see Rao et al., 2014).

Kumar and Wideman (2014) applied the principles of UDL to a health sciences course for first-year students in a nursing program. Students responded positively to the UDL inspired course design and felt that the integration of UDL throughout the course resulted in increased flexibility, positive engagement, reduced stress, and enhanced success in the course. The UDL course design also led to increased satisfaction from the instructor's perspective and a reduced need for accommodations.

In 2021, Celestini et al. conducted a similar study with first-year baccalaureate nursing students, in which academic success was measured in terms of average final grades rather than student perception. The instructors redesigned a course following UDL principles, including strategies for active student participation, a tool in the learning management system to determine accessibility standards, multiple means of assessment to allow for expression of learning, and flexible assignment due dates.

Many of the findings in this study were consistent with those of Kumar and Wideman (2014) regarding student appreciation of incorporating multiple means of action and expression in assessments, interpersonal connections among participants to contribute to course engagement, and flexible due dates resulting in stress reduction and increased confidence in the ability to succeed. The average final grade for the course was 10 percent higher than in the previous year's offering but possible explanations for this gain included an increase in the weighting of participation marks and the use of a variety of strategies for student expression (Celestini et al., 2021).

Kennette and Wilson (2019) surveyed students to find out how much UDL they experienced in their courses and how important they perceived it to be to their success. The UDL elements frequently encountered (e.g., rubrics, communication, sharing lecture slides) were the same ones they perceived as most helpful for their learning. How faculty thought students perceived and valued their use of UDL was also examined. The elements faculty perceived as key to student learning were often integrated into their courses, and students perceived certain UDL elements as more useful than faculty did. The authors recommended future research examine whether the perceived usefulness of these UDL principles by students correlates with performance data such as course grades.

Members of a UDL community of practice in a Québec college examined the implementation of UDL tools and strategies on the improvement of written language in basic level courses in French as a Second Language (Galipeau et al., 2018). The implementation of UDL was evaluated in terms of student writing skills and their appraisal of the tools and strategies used. The results demonstrated an overall improvement in writing for all participants, with and without disabilities. Findings indicated that the three UDL principles were applied and resulted in the inclusion of all students throughout the course. The greatest impact attained, regardless of the students' level of appraisal of UDL tools and strategies, was the interaction of student autonomy and engagement. The researchers suggested that students exposed to UDL tools and strategies might be capable of transferring them into other spheres of their learning and into their personal lives. Finally, the importance of a community of practice to allow the implementation of the UDL model was stressed, as was institutional and governmental support (Galipeau et al., 2018).

Fovet (2021) used phenomenological qualitative research (Webb & Welsh, 2019) to explore his lived experience as a UDL expert and consultant. He examined the organizational challenges that arise in the campus-wide adoption of UDL in Canadian colleges and universities. Implementation efforts are frequently led by disability service providers who may not be best positioned for the task due to the funding models, medical model-driven service delivery, and a focus on disabilities rather than diversity. A noted organizational challenge is the lack of collaboration and silo mentality among the stakeholders. He suggested developing a strategic approach to UDL integration, framed around ecological theory to develop a strategy for change specific to the culture of the institution.

More recently, an investigation of faculty understanding and implementation of UDL was conducted in a Canadian university using a mixed methods approach (Hills

et al., 2022). Challenges identified by faculty as being associated with UDL implementation included time and resource constraints, a lack of institutional support, and a lack of knowledge and awareness of UDL. A bottom-up approach was considered effective regarding training opportunities and forming communities of practice. However, top-down initiatives were seen as vital because they can place the values of UDL within the structure and culture of the institution. Examples were given such as including UDL in relevant institutional policies and strategic planning, and mandating certain inclusive practices such as time and a half for exams for all students.

What direction will UDL research take in the future? In a policy research note, Murphy (2021) of the University of Ottawa, argued that no rigorous published research has demonstrated any improvement in an education intervention designed with UDL principles. The research thus far has shown the use of the UDL framework to create learning environments that are perceived by students and faculty as more accessible and equitable. University faculty demonstrate equal levels of positive attitudes and practices related to inclusive teaching anchored in UD (Vukovic, 2017). Facilitators and barriers, along with strategies for implementation of UDL have been investigated. However, what is absent is research that demonstrates the effectiveness of UDL on measurable academic outcomes. Canadian researchers must continue to pursue a scientifically rigorous understanding of UDL so it can find its rightful place in inclusive pedagogy within higher education.

### **UDL Program Evaluation in Canada**

Evaluation of the implementation of UDL in Canadian higher education institutions is evident at three levels: course, program, and institution. Each type of evaluation can provide a distinct way of examining initiatives and plans to gauge the extent to which UDL is being successfully incorporated across campus.

At the course level, many individual instructors informally evaluate their own courses, including lessons and modules, to reflect on how UDL is currently being incorporated, what additional strategies might be used, and their perceptions of whether it is having an impact on student learning. Many instructors examine their courses to ensure that course materials are accessible. This includes gauging learning technologies with criteria such as accessibility, functionality across various platforms, and ease of use (Anstey & Watson, 2018). Learning management systems such as Moodle (2022) and Brightspace (D2L Corporation, 2022) have checkers to ensure that web content meets accessibility standards, and other tools such as Microsoft Word and PowerPoint have accessibility checkers instructors can use on course materials (Microsoft, 2022). Additionally, numerous instructors evaluate their courses based on principles of UDL, such as variety in student engagement methods, supportive learning environment, and student choice (University of Waterloo, n.d.), which apply to both online and in-person classes. As an example, members of Seneca College and Humber College (McPherson & Dunn, n.d.) have collaborated to produce a self-evaluation checklist that instructors can use to evaluate accessibility within their courses.

At the program level, many faculties conduct program or curriculum reviews that typically fall under the umbrella of quality assurance. These review processes examine the effectiveness of a program in terms of student learning. The specific focal points of a review depend on several factors such as whether accreditation requirements must be met, along with identified priority areas of the faculty and the institution. However, program review processes usually permit the group that is conducting the evaluation to select additional areas of investigation such as UDL as part of the review. The Higher Education Quality Council of Ontario's report on improving the accessibility of remote learning in higher education outlined some of the factors groups might consider when conducting a program review from the perspective of accessibility: transferable skill development, accessing courses, services and accommodations remotely, building relationships and community online, accessibility of assessments, reducing barriers, student flexibility and choice, and inclusive pedagogy (Pichette et al., 2020).

A department at the University of Calgary conducted a curriculum review in which they incorporated elements of UDL into their investigation. They gathered evidence relating to questions such as: How do we generate a flexible, streamlined curriculum that serves the students' needs? How does our department address anti-racist, decolonizing, and inclusive practices in our curriculum? How do we recognize and understand systemic inequities within our field and our current program? (S. Cahill, personal communication, March 30, 2022.) Based on their findings, groups conducting such investigations can identify future actions and policies to enhance inclusive curriculum and practices.

Some institutions incorporate elements of UDL into their strategic plans and priorities, and/or policy documents. Such top-down approaches demonstrate the importance an institution places on values such as accessibility, diversity, and inclusion. For example, McGill University has a stated objective to expand diversity in their current academic plan (2017), in terms of social, economic, and intellectual diversity. They also have targets to expand accessibility to programs in terms of financial assistance, enhancing physical accessibility, and expanding cultural diversity, which will allow them to measure their progress over time. Concordia University (2022) has had a policy on accessibility and accommodations for students and employees for many years, with the updated policy stating a commitment to the principles of UDL. In the college sector, The Centre for Teaching and Learning at Mohawk College has developed a UDL Standard (Mohawk College, n.d.) outlining considerations for course design, development, and delivery. The standard aligns with Mohawk's Program Quality Policy, UDL literature, and is grounded in teaching practice, providing criteria to use in evaluation activities.

Another way in which institutions incorporate principles of UDL is during their evaluation of learning technology purchases and license renewals. The Ontario Council of University Libraries (n.d.) has outlined a list of criteria for evaluating hardware and software in terms of accessibility. As an example, the University of Calgary considered several criteria relating to UDL when renewing the license for their learning management system, including features such as incorporating different

types of student content on discussion boards (video, audio, text), individualized access to timed assessments, and fostering student choice through self-enrollment in discussion boards (A. Pletnyova, personal communication, March 25, 2022). While final decisions on learning technologies take many considerations into account, incorporating UDL principles could tip the balance in creating a more accessible learning environment for all.

## CONSIDERATIONS IN PRACTICE

As the appreciation of UD practices, and specifically the UDL model, continues to grow, it is important to note there is significant variability in the impact, sustainability, and evolution of UD practices in the Canadian higher education landscape. The origin of this variability, in part, is attributable to which of the following two divisions “owns” or champions UD initiatives and its influence on the courses and academic programs: the academic division or the student affairs and services division. Embedded within this ownership paradigm are further discrepancies in funding, resourcing, and reportable outcomes which lead to siloed experiences and realms of practice within the institution. Perhaps the most successful initiatives include partnerships between the academic and student services divisions and focus on supporting accessible and quality learning throughout the entire student experience.

Within the academic division, we tend to encounter relatively more robust and sustainable resourcing in areas responsible for online learning and the utilization of technology in pedagogy exemplified by George Brown College’s depth of resources for course delivery and development (George Brown College, 2022). These types of UD activities tend to be “top-down” in their approach and reside in offices that steward and support the use of the learning management system and learning technologies across the institution. The result is one that presents an opportunity for UD principles to become embedded in the evolving role of technology at the institutions. Another contribution to UD principles and practice also originates from connections to research and researchers in different fields contributing to accessibility, for example, disability studies, industrial design, architecture, and others. This has resulted in the creation of interdisciplinary research groups such as the READ Initiative at Carleton University (Carleton University, 2022), that mobilizes national, cross-sectoral collaborations (Canadian Accessibility Network, Carleton University, 2022). When there is institutional support, the net result within the academic division appears to be a steady and sustained, albeit slow, growth of advancing UD research findings and integrating practices further as technology enriches the instructional, assessment, and learning environments in higher education.

The student affairs and services division tends to focus on responding via a service model competency approach (Fernandez et al., 2016) to the many challenges that are faced when UD principles are not followed or when there is overwhelming demand. Thus, UD in practice is more “bottom-up” as an approach and spans an extensive realm that includes student learning support services, accessibility or academic



accommodations services, health and wellness, adaptive technologies, and more broadly, equity, diversity, and inclusion units. The responsiveness required in this division is challenged by comparatively less sustainable funding, more limited-term appointments of people, and subsequently, a shifting funding paradigm to mobilize new or expand existing resources rapidly (National Educational Association of Disabled Students, 2018; Seifert & Burrow, 2013). Within the student affairs and services division, there are growing calls to integrate and align UD practices and research. The Canadian Association of College and University Student Services (CACUSS) Strategic Long-Range Plan (CACUSS, 2017) is representative of this shift in practice, as is “From Accommodation to Universal Design for Learning” pertinently named, from Humber College (Humber College, 2022). The net effect is a plethora of rich and robust resources for learners and instructors to advance UD principles and practice. However, mobilizing these principles consistently across the silos of the institution and to instructors, remains a significant resourcing, access, and credibility challenge as outlined by CACUSS and the practice literature (CACUSS, 2017).

Despite the rich knowledge, practice, and resources created within each of these divisions, there are calls to mobilize and integrate best practices within organizational structures across these silos. Fovet (2021) argues in favor of utilizing an ecological theory as a framework to guide the design and implementation of UD. At a practical level, a collaborative and inclusive approach has stimulated enhanced and expanded activity by centres for teaching and learning in areas of faculty development, educational development, continuous curriculum improvement, and curriculum (re)design across the country. From NSCC (2022) in eastern Canada to Dawson College in Québec (Dawson College, 2022), University of Calgary in the Prairies (Taylor Institute, 2022), to further west at the University of British Columbia (Centre for Teaching, Learning and Technology, 2022), there are a wealth of Teaching and Learning Centres (TLCs) advancing UD, and UDL practices and research. Organizationally, this signals a potential solution to working across silos created within and between academic and student affairs and services divisions. One primary reason for this is that TLCs interact with, and create opportunities for, teaching assistants, sessional instructors, and full-time faculty members. Simultaneously they also conduct and utilize the scholarship of teaching and learning (Felten, 2013) and engage with disciplinary researchers (Williams et al., 2013). They tend to report and connect with the academic leadership of the institution. Underlying this is the TLCs’ capacity to facilitate and guide change, as well as connect the micro, meso, and macro networks of the university, including instructors, decision makers, and institutional strategy leaders (Fields et al., 2019; Roxå et al., 2011). Needless to say, the scholarly communication and gravitation towards UD practices burgeoned as the pandemic progressed. A search of multiple scholarly databases performed for our review demonstrates at least a 50 percent increase per year in peer-reviewed publications related to UD (2020-2022), when compared to the previous 10 years (2010-2019). From a practice point of view, there are clear signals that the postsec-

ondary landscape in Canada is in a relatively “evolutionary” and receptive state to adopt and utilize UD principles.

## FUTURE OUTLOOK

In this chapter, we presented a retrospective of UD in Canadian higher education. Since its introduction in the early 2000s, UD and in particular UDL has received a significant degree of attention and engagement in Canadian colleges and universities. Our assessment of its historical development, research and evaluation, and its applications in practice leads to some high-level reflections on the future of UD in Canada.

The Canadian experience of UD demonstrates a synergistic relationship between the growing accessibility awareness, related legislative requirements, and UD developments. Collectively, these factors reflect an accessibility culture that emerges across Canadian regions, sectors, and institutions, including those in higher education. UD recognition appears to align with the shaping of this culture of accessibility in recent years, and a growing commitment to design postsecondary learning experiences that empower all learners with meaningful options, strategies, participation, and access. This demonstrates the power and opportunity of broader efforts in advancing accessibility in Canada for the recognition of UD generally and the UDL model specifically as one of the key mechanisms for driving accessibility in higher education. Continued efforts to promote accessibility-confident and -competent higher education, through provincial legislations, institutional policies, knowledge building, and grassroots initiatives, should lead to greater recognition of UD and UDL across Canada.

At the same time, we must be mindful of the future challenges to the successful implementation of UD in Canadian higher education. Similar to other movements where cultural shifts create greater awareness, to make meaningful changes in this area, our colleges and universities need to respond strategically with effective and concrete ways for UD uptake and implementation. One significant gap and opportunity is the research and evaluation of UDL as the dominant UD model in Canada. Canadian researchers and funding programs should identify UDL, and more generally accessible and inclusive higher education, as a national research priority. Importantly, the knowledge building of UDL in Canada must be interdisciplinary and transdisciplinary, and promote a collaborative, collective approach that bridges the academic and student services sides in our postsecondary institutions. Most critically, breaking out of silos and crossing institutional portfolios to promote UDL implementation must incorporate the voices of lived experience of disability.

Institution-wide strategies, such as the Coordinated Accessibility Strategy at Carleton University and similar initiatives at NSCC and Mohawk College, are examples of the approach that consider UD in the context of the entire institutional ecosystem. These collective initiatives, endorsed by all members of the campus community, allow for engagement of UD champions from all areas including student services,

teaching and learning services, academic faculties, senior leadership, and student bodies. They are also embedded within the broader equity, diversity, and inclusion (EDI) frameworks and policies, ensuring that UD is recognized as a contribution to greater EDI aspirations and institutional excellence, rather than being perceived as a niche approach relevant only to a particular subpopulation in Canadian higher education.

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