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Faculty Perspectives on UDL: Exploring Bridges and Barriers for Broader Adoption in Higher Education

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Abstract

Universal Design for Learning (UDL) strategies aim to reduce learning barriers in the classroom for all students and remove the need for students with disabilities to advocate on their own behalf. Leadership in Scholarship of Teaching and Learning has a role to play in advancing inclusive learning cultures in higher education. At the frontline of higher education delivery, faculty are best positioned to implement UDL practices. Initiatives to encourage broader implementation of UDL require an understanding of the barriers and opportunities in higher education. Published studies that investigate faculty understanding and implementation of UDL have been almost exclusively conducted in US institutions. Our study enriches the existing literature through a mixed methods approach with interviews and a faculty survey in a Canadian context. Themes revealed in our interviews were reinforced by survey findings. Many of the issues raised by faculty, including time and resource constraints, a lack of institutional support, and a lack of understanding are consistent with previous research done in the US, highlighting the systemic challenges for UDL implementation in higher education. To conclude, we explore the limits of a strictly bottom-up approach and contend, in line with recent studies, that top-down initiatives are also vital to encouraging broader implementation of UDL practices.

Les stratégies de la conception universelle de l'apprentissage (UDL - Universal Design for Learning) visent à réduire pour les étudiants et les étudiantes les obstacles à l'apprentissage dans la salle de classe et à supprimer le besoin qu'ont les étudiants et les étudiantes handicapés de défendre leurs intérêts pour eux-mêmes. Le leadership en matière de recherche en enseignement et en apprentissage a un rôle à jouer pour faire avancer la culture de l'apprentissage inclusif dans l'enseignement supérieur. En première ligne de l'enseignement supérieur, les professeurs et les professeures sont bien placés pour mettre en application les pratiques de la conception universelle de l'apprentissage (UDL). Les initiatives pour encourager une mise en application plus vaste de la conception universelle de l'apprentissage exigent une compréhension des obstacles et des opportunités dans l'enseignement supérieur. Les études publiées qui portent sur la compréhension des professeurs et des professeures et sur la mise en oeuvre de la conception universelle de l'apprentissage ont presque toutes été menées dans des établissements américains. Notre étude enrichit les publications existantes grâce à une approche à méthodes multiples, à des entrevues et à un sondage auprès de professeurs et de professeures, dans un contexte canadien. Les thèmes révélés par nos entrevues ont été renforcés par les résultats du sondage. Un grand nombre des questions soulevées par les professeurs et les professeures, y compris les contraintes liées au temps et aux ressources, à l'absence de soutien de la part des établissements et au manque de compréhension, sont conformes aux recherches préalables menées aux États-Unis et mettent en valeur les défis systémiques pour la mise en oeuvre de la conception universelle de l'apprentissage dans l'enseignement supérieur. En conclusion, nous explorons les limites d'une approche strictement ascendante et nous soutenons, conformément aux études récentes, que les initiatives descendantes sont également vitales pour encourager une mise en oeuvre plus vaste des pratiques de la conception universelle de l'apprentissage.

Keywords

Universal Design for Learning, higher education, faculty, inclusion; conception universelle de l'apprentissage, enseignement supérieur, professeurs et professeures, inclusion

Cover Page Footnote

Please note that Drs. Hills and Overend contributed equally to this work.

Moving away from a one-size-fits-most model of learning, as well as reducing the need for accommodations for students who meet disability and/or mental health criteria, Universal Design for Learning (UDL) strategies aim to create a more accessible learning environment for increasingly diverse student populations (CAST, 2018). Currently, UDL implementation at many universities relies on individual faculty members to seek training and implement UDL, rather than embedding the tenets of inclusive education into the broader institutional culture. In their manuscript “Leading up in the Scholarship of Teaching and Learning (SoTL)” Miller-Young and colleagues (2017) describe the ability of SoTL scholars to “influence decisions, and to effect change in their local environment, in the broader Canadian context, and beyond” (p. 1). Thus, SoTL research on UDL creates an opportunity to promote inclusive learning locally at the institutions where it is pursued while also bolstering national and international dialogue and understanding.

Globally, higher education is not an inclusive environment for persons with disability, despite legally mandated accommodations and anti-discrimination laws (Dolmage, 2017; Francis et al., 2019). Students with disabilities (SwD) consistently report facing attitudinal and structural barriers (Lopez Gavira & Moriña, 2015). Under the medical model of disability commonly used by universities, it is the student’s responsibility to prove the need for accommodation by providing documentation to support the diagnosis of a disability and/or mental illness. It is therefore the student with the disability who must overcome shortcomings in course design to be able to fully participate in their own learning (Kumar & Wideman, 2014). Research has shown that accommodations are under-utilized by SwD for fear of stigma from peers and faculty, desire for self-sufficiency, and/or lack of awareness of available accommodations (Francis et al., 2019; Lyman et al., 2016; Miskovic & Gabel, 2012).

As the number of students with disabilities in post-secondary continues to rise, alongside broader changes to student demographics (Costello-Harris, 2019), UDL is widely lauded as a best practice for post-secondary learning. UDL actively removes barriers for student learning, including those inherent in accommodations-based approaches (Toutain, 2019), can positively affect student outcomes, satisfaction, and engagement (Al-Azawei et al., 2016), and mitigates feelings of discouragement, debasement, insecurity, and isolation commonly experienced by SwD (Francis et al., 2019). The values of UDL also map onto effective teaching practices more broadly, such as creating stimulating learning environments, respect for students, and recognition of student diversity (Allan et al., 2009). Dwyer (2019) points to an additional benefit of UDL as an effective mechanism to support cross-cultural learning.

From a UDL perspective, “it is the course that must be altered, not the student” (Kumar & Wideman, 2014, p. 129). Initially developed in the field of architecture, universal design aimed to render the built environment accessible to the greatest number of users (Kumar & Wideman, 2014). Curb cuts, for example, benefit a parent pushing a stroller, a young child, the elderly, and wheelchair users. In the context of higher education, the choice between an in-class exam or a take-home assignment, for example, may benefit a student with test anxiety, a student-worker with a restrictive schedule, a student with a busy household, or one whose first language is not English. UDL operates from the premise that the more inclusive the course design, including variation in delivery, assessment, and engagement, the more accessible the course content will be to the greatest number of learners. UDL strategies aim to reduce learning barriers in the classroom and remove the need for students, including SwD, to advocate on their own behalf. Table 1 summarizes the differences between an accommodation approach based on the medical model of disability and the UDL approach based on the social model of disability.

Table 1
Accommodation Versus UDL Approaches

Accommodation Approach (based on medical model of disability)	UDL Approach (based on social model of disability)
Accessibility is a problem for students with disabilities (SwD).	Accessibility is a problem of course design.
Accessibility is achieved through individual accommodations.	Accessibility is achieved by implementing UDL principles in course design and delivery.
SwD have to seek out their own accommodations.	Accessibility is built into instructional design and delivery.
Accessibility is retroactively fitted to the needs of SwD.	Accessibility is proactively implemented for the benefit of all students.
Course content and assessments are exclusive (i.e., targeted to a narrow range of learners).	Course content and assessments are inclusive (i.e., targeted to a wide range of learners).
Accessibility is temporary and consumable (i.e., only applied for the duration of the course).	Accessibility is holistic and sustainable (i.e., doesn't need to be renewed).
Accessibility is superfluous to course design (i.e., only applied as an add-on).	Accessibility is built into course design.

Note. Adapted from Mole (2013).

At the frontline of higher education delivery, faculty are best positioned to implement the UDL practices necessary for inclusive learning. While many faculty perceive value in inclusive teaching practices, research has shown this does not necessarily translate into improved implementation (Cook et al., 2009; Gawronski et al., 2016; LaRocco & Wilken, 2013; Lombardi et al., 2011; Lombardi et al., 2015; West et al., 2016). A lack of understanding can contribute to a lack of UDL implementation (Dallas et al., 2014; Dallas et al., 2016; Izzo et al., 2008). Moreover, a lack of institutional support, resources, information, training, and time may also contribute to low UDL implementation (Lombardi et al., 2011; Lombardi & Murray, 2011; Raue & Lewis, 2011). Izzo et al. (2008) reported that educators express frustration with their own lack of understanding of UDL and their inability to provide inclusive learning experiences for students, and that they want more training opportunities. Institutional training opportunities can improve both attitudes toward UDL and implementation of these practices, and faculty recognize the need for this training (Dallas et al., 2016; Izzo et al., 2008; LaRocco & Wilken, 2013; Lombardi & Murray, 2011; Lombardi et al., 2011; Murray et al., 2014).

In their recent review, Li et al. (2020) identified fourteen published studies investigating UDL awareness among faculty. These were conducted at US colleges and universities, most focusing on a single institution, with the exception of one study that presented a comparison of a single Eastern Canadian university to a US university and universities in Spain (Lombardi et al., 2015). The focus of the latter was on geographical differences, rather than an exploration of Canadian faculty attitudes. Additional data is therefore needed on Canadian universities to better

understand the opportunities and challenges to inclusive learning that exist in higher education in Canada, as well as to better understand the similarities and differences to universities elsewhere. Moreover, previous studies rely almost exclusively on survey data, with only one study reporting faculty focus group data (Izzo et al., 2008). Our study employs a mixed methods approach, using qualitative interview and quantitative survey data, providing data triangulation (Hastings, 2010). Finally, a majority of the previously published studies on faculty UDL awareness maintain a dual focus on disability accommodations *and* UDL. Our study focuses explicitly on UDL, offering UDL specific findings to better align with disability advocacy in higher education (Dolmage, 2017).

The purpose of our study is to explore faculty awareness and understanding of UDL to identify bridges and barriers to broader implementation of UDL practices. This study was completed at a Canadian university, but given the parallels we identify with previous studies, we believe there are systemic challenges to UDL adoption in post-secondary education. Therefore, these findings are useful to other institutions, both in Canada and beyond. We investigated the following research questions: How well do faculty understand UDL? What UDL practices are faculty employing? What are the barriers to broader UDL implementation? What opportunities exist to encourage broader implementation of UDL?

Sample Site

The study was conducted at a mid-sized Canadian undergraduate university. At the time of the study there were approximately 475 tenured/tenure-track faculty and approximately 650 contract faculty serving nearly 19,000 full- and part-time students. We selected this university because of familiarity with the institutional context, access to faculty, and established relationships between researchers and interviewees. The university operates predominantly on an accommodation model for students with diagnosed disabilities through Disability Services (DS), as mandated and funded by the provincial government. The institution also offers optional UDL training through new faculty orientation and professional development workshops. On average, 6 - 7% of students at this university use disability accommodation services, which is approximately 1200 students. These accommodations are overseen by a DS team who communicate student accommodations to instructors, proctor exams, and provide administrative support where necessary.

Method

Interviews

Purposive sampling of participants was used to capture broad institutional perspectives on our research questions. The selected participants had specific expertise in UDL as well as diverse experiences with students and faculty in their administrative and/or student support roles. Of the nine participants, five were also working, or had worked, as faculty in a teaching capacity. Collectively, the experiences and expertise of the participants allowed us to identify key themes that captured institutional challenges and opportunities for UDL. Interviews ranged between 45 and 85 minutes and were transcribed verbatim. To preserve anonymity, participants are referred to only by a letter designation, gender-neutral pronouns are used, and we make no mention of specific job titles held. A semi-structured interview guide was used to explore understanding of UDL as well as bridges and barriers to its implementation (available from the authors upon request).

Content and discourse analysis was used to evaluate the interview transcripts (Tonkiss, 2004). To code and analyze the data we focused on the repetition of key words and themes, paying attention to variations within and among the assortment of texts, and reading for emphasis and detail. Research Ethics Board approval was received for both the interviews and survey data collection, all authors have TCPS2 certification, and participation was voluntary and informed consent received.

Survey

The findings from the interviews formed the basis of our survey questions. The 15-question survey was administered through Google Forms, and included multiple response, single response, Likert scale, and open-ended questions (available from the authors upon request). The recruitment email and survey were distributed to all teaching faculty. A total of 205 faculty responded to the survey for a response rate of 18.3%. The large majority of surveys were completed in full, with between 202 and 205 responses to each individual question. There was broad representation across the university with respect to employment type (full-time continuing and contract faculty), years of service, and Faculty/Schools. Data analysis consisted primarily of descriptive statistics. In addition, ordinal and binary logistic regression were conducted in SPSS (IBM) and hierarchical regression models were used. Independent variables were appointment type (contract vs. tenure/tenure-track), personal experience of disability, years of service (0-4, 5-9, 10-14, 15+ years), and Faculty/School. Our dependent variables included faculty reported understanding of UDL (no, little, some, good, or full understanding), perceived barriers identified by faculty to implementing UDL (time/workload, knowledge/awareness, lack of opportunity to learn, institutional barriers), and faculty misconceptions of UDL (would disadvantage students in the workforce, would result in less rigorous expectations).

Results

Interviews

The following barriers to UDL adoption were identified by our interview participants: (a) inconsistent understanding and implementation, (b) misconceptions, (c) time/workload constraints, (d) resource constraints, and (e) student discomfort. The following two bridges were identified by our interview participants: (a) growing awareness and willingness to adopt UDL principles, and (b) faculty and institutional champions committed to UDL pedagogy and practice.

Inconsistent Understanding and Implementation of UDL

Eight of our nine interview participants referred to an inconsistent understanding and implementation of UDL. There was consensus that while some people understand and effectively implement UDL strategies in their teaching, service, and/or administrative positions, this understanding was far from consistent across the institution, and in some cases was even quite poor. According to Participant A, “I’ve known faculty here who have said ‘my job is to put the box of Kleenex in front of [a stressed out] student and wait it out.’ The awareness [of UDL] is still pretty low. It’s low in the places that matter.” Participant H also spoke to a relatively low understanding of UDL among faculty when they stated, “I don’t know if I would have a percentage

guess of faculty who have an awareness of what UDL is. I think it's probably somewhere around half. And when I bring it up to faculty who say they have an awareness, and then we talk more, I realize they don't, or it's limited."

There were equally repeated references to inconsistent implementation across the institution. As Participant B noted, "I think there's an inconsistency, not so much in terms of the understanding, but there's an inconsistency in the application. If you don't have [institutional] guidelines, faculty go back to their own subjective definitions and that's where we see the inconsistencies." Part of the inconsistency in application, according to Participant C, is that people do not realize that "the price of textbooks is a UDL issue, the firmness of deadlines is a UDL issue, ensuring equal opportunity to take leadership roles in group work is a UDL issue. So it's really quite broad." Part of the inconsistent awareness and implementation of UDL across the institution, according to a few of our participants, stems from the lack of a formal, institutional policy on UDL. In Participant G's words, "if you want universal design you can't just ask for it, you have to tell people what that means and what that would look like for them. People may mean well, but don't really know what is reasonable and what is not."

Misconceptions of UDL

Eight of our participants also spoke to misconceptions about UDL. There were two recurring misconceptions that arose from the interviews. The first is that UDL lowers educational standards. As Participant D noted, "people think [UDL] means compromising expectations and a sense they're lowering the bar and making it easier [for students]. It isn't." In some cases, faculty worry about the employability of our graduates. Participant C explained that "having a high standard for someone's ability to produce content or to produce a learning object is not the same as having a high standard to meet an arbitrary deadline. So the *quality* of the work is what I think we should focus on with a mind toward UDL rather than meeting arbitrary requirements for page length or time of day that it was submitted, or you know the minutiae of the guidelines that we put up for a variety of different assessments" (emphasis in original).

The second misconception that connects to UDL is that students are "faking it" or "taking advantage" of disability accommodations. As Participant F remarked, "some instructors believe that people put it on. That they're faking. I think you gotta go with the likelihood that someone isn't going to fake that" and go through all the hassle and stigma still too often associated with disability accommodations. Similarly, for Participant G, "there's a misconception that is created by some students who will inform people that they have accommodations because of their anxiety and that doesn't exist. What is usually the case is that they have something else that they don't want to reveal. You know, 'those millennials. They're so weak. They get all this special treatment.' They are 'special snowflakes' and 'the problem children' instead of seeing them as legitimate students who have a barrier." Where misconceptions exist about legally mandated accommodations for students with a diagnosed disability, challenging faculty to introduce UDL practices will continue to be a challenge.

Time/Workload Constraints

Time/workload constraints, widely defined, were mentioned by six of our participants. Sentiments highlighting the time needed to make necessary UDL changes to curriculum and pedagogy were common. As Participant I stated, "probably the only institutional barrier that exists

is time. I think most, if not all, faculty would be happy to engage with principles and ideas about working with SwD. It's just that in the middle of a heavy teaching load, how do you find the time to do that kind of extra training or going to that extra workshop?." Participant H similarly noted there is a general willingness by faculty, but a lack of time; they stated, "I hear a lot of faculty saying 'I would like to do a lot of these things, but I don't have the time given my teaching load.' Especially for [contract faculty] in terms of what they're having to accomplish in a term." Participant C understood time constraints as a *perceived* barrier to UDL implementation. In their words, "I think that when people feel busy they are reluctant to change because change takes thought and effort. With more understanding of some of the techniques that can be used [in UDL], and even relatively small changes that can have a big impact."

Resource Constraints

All nine of our participants spoke to their perceptions of resource constraints, including resources for faculty learning and awareness, broader institutional and infrastructural support, and budget constraints. With regard to a lack of resources for learning about and implementing UDL practices, Participant D stated that if faculty "are interested in [adopting UDL], there aren't enough resources to actually support them in doing it." Participant H likewise commented, "I would like a lot of time, energy, resources, and direction provided to faculty at the course design stage, with really detailed information, so that they can make choices around course design." Connected to resources for helping faculty learn and implement UDL, there was also discussion about the need for an institutional-level faculty UDL coordinator position. Participant D, "put forward a recommendation that we need a coordinator, we need at least a half-time faculty member to be a UDL expert." Participant I echoed, "one of the things we're hoping to do if we get some extra money is to hire a specific expert on UDL and to have that person work full time on building UDL principles into the institution" and with faculty.

Beyond learning support specifically for faculty, there was also consistent mention of a lack of institutional and infrastructural support for UDL across various layers of the institution. Participant E noted that "it's just a matter of what kinds of supports are in place to transition people into something as comprehensive as universal design. I think people are going to start wondering, 'How much is this going to cost? Where is this going to come from? Who's going to vet it? Who's going to manage it?' Because it's quite a major endeavor. [...] When we talk about universal design, we're not talking about just the classroom". Participant C comments that "there are a couple of areas where professional development for staff members would be really beneficial. One of those would be among faculty advisors. [...] I would [also] love for the institution to come out with a statement of principles for UDL" to help guide best practices across the institution.

A handful of participants spoke to the need for a redistribution of resources away from costly, sometimes inefficient accommodations for SwD. Participant H explained, for example, that "there's quite a use of resources that go towards providing accommodations for exams for SwD. It's very costly and requires so many students that are already being challenged [...] to do all these additional steps to book these exams, plan their classes around this extended exam time, go to another place, and have less access to their instructors during exams." Participant G remarked that "if all exams and tests are universal design, that eliminates 90% of the accommodations [needed for exams] and we can redistribute those resources." Participant F corroborated that with the current accommodations system in place, "students are telling me they can't get in to see their case worker for 3-5 weeks [which means] many of them are taking their tests without their

accommodations. It's a backed-up system that is looking doom-filled [because] we're continually adding more students." Finally, many of the students themselves are facing battle fatigue from having to advocate on their own behalf. "It is really telling what students have to do in order to make an accommodation request, justify the need, and have to go into further explanation beyond the letter of accommodation, which is such an intense conversation to have and a conversation that is technically not supposed to happen" (Participant E).

Student Discomfort with Moving Away from an Accommodation Model

Despite the above-noted issues with accommodations, a few participants also spoke to the uncertainty students express in moving fully towards a UDL approach. As Participant C remarked, "one of the things that I didn't expect when I started including a variety of UDL practices was that there would be some pushback from students [with disability accommodations]. There is a tendency among some students to protect the methods that have benefitted them at the exclusion of others, and any notion that some other student is getting off easy by having a different deadline or by displaying their learning in a different way, they get cranky." Participant D likewise commented, "that students who are accustomed to having accommodations may be challenged to adjust to a world when they're not asking for them. Because it doesn't feel right and it doesn't feel safe. [Part of our challenge] is reconciling the accommodation versus accessibility approach and getting to a place where students can feel completely confident and experience full access before we drop accommodations. Right now, I think accommodations for many students are a safety net."

Growing Awareness and Willingness

In terms of bridges enabling UDL adoption, all nine participants spoke to a growing awareness among faculty and the institution and willingness to offer an inclusive learning experience. As Participant H highlighted, "in the past five years, I've seen a huge shift in improvement in faculty's willingness to consider being inclusive. I appreciate that that's even happening now because 10 years ago, I barely heard anything like that. So as much as that's still very far from what UDL is, it is a huge improvement." Participant D also affirmed that "I'm being challenged less and less on things like lecture recording or access to PowerPoint slides. And just this last year, I was quite surprised when a prof told a student, 'oh I've designed my quiz so that there will be double time for most students, so you won't need an accommodation'. So, yes, I think little by little we're moving towards it."

Part of this shift in awareness was attributed to newer faculty members who are "quite savvy" to UDL practices (Participant F), as well as to the implicit pressure placed on universities by the K-12 education system. As Participant H questioned, "I wonder if this increased awareness has to do with 'profs themselves hav[ing] kids in school and see[ing] that these are the trends'". Participant D also noted that "the increase in demand in recent years [for UDL principles] comes from high schools where they adopted UDL concepts a long time ago." Likewise, Participant C stated, "I've seen an increase in attention to accessibility. I've seen an increased awareness among students as well. And I think that that's tied to changes that have happened in the K-12 system where students are aware of particular practices that reduce barriers. They're accustomed to having particular options or they're accustomed to having particular ways of demonstrating their knowledge and they're then asking for these things."

Institutional and Faculty Champions

Seven participants spoke to the importance of individuals who act, or can act, as faculty and institutional champions in promoting and advancing UDL issues on campus. While UDL awareness is far from consistent across faculty members, it does exist in pockets among faculty. According to Participant D, “there are a few faculty champions [...] and it’s been our hope if we can just find at least one or two champions in each Faculty and School then they’ll tell two friends, and hopefully, maybe the message will spread” (D). Participant H also notes the importance of faculty champions in promoting UDL in ways that some of the institutional support services are not able to. As H remarked, “faculty champions are huge. It tends to be word of mouth between faculty members. Because you know, and as it should be. I’m respected in a different way from peer-to-peer. And what works within a classroom and a course.”

Unsurprisingly, the DS office was listed as a major advocate of UDL, albeit with the resource limitations discussed above. As Participant B remarked, “there’s some really strong champions around DS that have really made sure UDL principles have been top of mind in anything that [the institution] has been talking about or doing. Similarly, for Participant C, “[DS] has done a good job encouraging people to consider UDL principles so that accommodations are less necessary.” Despite a formal policy or set of guiding principles on UDL, which the institution currently lacks, Participant C favourably noted the recent institutional decision to move away from asking students to procure medical notes for missed coursework. In their words, “I was very pleased when [the institution] gave up the Sisyphean effort of gathering doctors’ notes for everything, that was a huge move forward in a variety of ways [for UDL].” In terms of institutional champions, other areas mentioned included teaching services, and student mental health services.

Survey

Our survey was designed to explore themes that emerged from the interviews to determine if these were reflected more broadly amongst faculty. Overall, there were similar responses in our interview and survey findings. When asked how well faculty understood UDL, 29.3% self-identified as having a good or full understanding, 38.5% some understanding, and 32.2% little or no understanding. There was no difference in the level of reported understanding based on faculty appointment type, immediate experience of disability (they or someone in their immediate family have a disability), years of service, or Faculty/School. The most commonly identified resources for learning about UDL were offices at the university that provide teaching and learning training, and DS who provide accommodations for students with diagnosed disabilities (both 30.2%). In addition, 19.2% of respondents identified that they had learned from a colleague at the same university, and 11.2% from a colleague elsewhere. Faculty also identified the scholarly literature as a common resource (26.3%) followed by training (18.5%) and conferences (11.2%).

While reported understanding of UDL was low, it is possible that faculty unfamiliar with the specific terminology still employ UDL practices. We identified sixteen common UDL practices and asked faculty to identify which, if any, they implemented in their teaching (see Table 2). We cannot rule out the potential that any proportion of negative responses for some of these practices may be because faculty do not use that learning method in their course, rather than indicate unwillingness to incorporate this particular UDL practice. For example, faculty may not use group work or oral presentations and therefore offering alternatives to these does not apply.

Table 2
Faculty Identified Implementation of Common UDL Practices (n=205)

UDL Practice	Percent of Faculty that Implement (%)
Post course materials in advance	74.9
Variety in assessment	71.9
Varied lecture delivery	66.0
Flexibility with deadlines	50.2
Students may record lectures	48.8
Alternative text for images	44.8
Share discussion questions ahead of time	43.8
Content or trigger warnings	36.0
Extra time for exams	34.5
Choice in assessments or formats	29.1
Alternatives to groupwork	26.6
Alternatives to oral presentations	26.1
Take home exams	25.1
Documents that can be read with a screen-reader	21.7
Closed captioning for video	20.2
Posting lecture recordings	10.8

To assess faculty's willingness to grant accommodations to students in general (i.e., all students, not due to disability), we asked about common student requests including the ability to record lectures, defer an assessment, or complete an assessment in an alternative format. 70.6% of faculty were willing to allow students to record lectures upon request, 69.1% deferred assessments, and 58.3% alternative assessments. In total, 89.2% of faculty were willing to accommodate at least one of these requests, with 41.7% indicating they would be willing to do all three. A total of 10.8% of faculty did not indicate a willingness to agree to any of these student requests for accommodation. Faculty's willingness to offer accommodations to students upon request was not always reflected in the integration of these practices into their course structure. For example, while 70.6% of faculty were willing to permit students to record lectures upon request, only 10.8% reported that they post lecture recordings. It is important to note that there was little technological support at this institution for lecture recordings at the time of this study, and that not all pedagogy is recording friendly. Similarly, while 69.1% agreed to defer an assessment upon request from a

student, only 50.2% reported providing flexibility with deadlines proactively. Finally, though 58.3% would be willing to permit students to complete alternative assessments, only 29.1% provided choice in assessments or formats in their courses. This contrast between the willingness of faculty to provide reactive accommodations vs. the lack of proactive inclusive teaching practices may lead faculty to believe they are providing an inclusive learning environment, while in reality the need for students to make a request in the first place represents a significant barrier for students (Lyman et al., 2016).

When exploring barriers to UDL adoption, time/workload constraints were the most consistently identified barrier by faculty (62.0%). A lack of knowledge and awareness was cited by 43.4%. Interestingly, only 17.6% indicated a lack of opportunity to learn, suggesting the lack of awareness was not due, for the most part, to a lack of perceived opportunity. This contradicts statements made by some of our interview participants that a lack of opportunity to learn about UDL was a barrier and underscores the importance of challenges to implementation. Additionally, 10.2% of respondents identified that they do not implement more UDL because they do not want to (i.e., they are pedagogically or ideologically opposed or do not perceive value in doing this). There was no difference in these perceived barriers based on faculty appointment type, immediate experience of disability (they or someone in their immediate family have a disability), years of service, or Faculty/School. A total of 24.4% of respondents identified institutional barriers to UDL implementation. When asked to elaborate on institutional barriers faculty spoke of workload, a lack of resources, and concerns related to institutional culture (see Table 3).

Table 3

Faculty Identified Barriers to Broader UDL Implementation (n=205)

Barrier to UDL Implementation	Percent of Faculty (%)
Time/workload constraints	62.0
Knowledge/Awareness of UDL	43.4
Institutional barriers (a lack of support)	24.4
Lack of opportunity to learn about UDL	17.6
I don't want to (i.e., I am pedagogically or ideologically opposed and/or I don't perceive value in doing this)	10.2

Faculty misconceptions about UDL also serve as a barrier to implementation. We asked faculty if UDL practices disadvantaged students upon entry to the workforce: 35.1% agreed and 43.5% disagreed. When asked if they represented less rigorous expectations for students, 33.6% of faculty agreed and 51.2% disagreed. When asked if an institutional mandate that UDL be implemented in the classroom would infringe on academic freedom, 41.4% of faculty agreed and 44.1% disagreed. Once again, there were no significant differences in these beliefs based on appointment type, years of service, Faculty/School, or immediate experience of disability (they or someone in their immediate family have a disability).

Discussion and Implications

The barriers to broader UDL implementation identified in our interview analysis aligned with our survey data, namely inconsistency in faculty understanding and implementation of UDL, misconceptions (i.e., UDL compromises academic rigour), time/workload concerns, and other resource constraints. The low number of faculty who indicated a good or full understanding of UDL (only 29.3%) is noteworthy given that interview participants spoke to an *increased* awareness of UDL in recent years and the knowledge that UDL training opportunities are consistently available to faculty at this institution. A lack of consistent understanding of UDL is also prevalent at US universities (Dallas et al., 2014; Dallas et al., 2016; Izzo et al., 2008). The consistency in the findings at this Canadian institution compared with US institutions highlights the systemic, not institutional or geographical specificity, of barriers to UDL implementation.

Faculty express a willingness to provide an inclusive learning environment for students, as identified in both our interviews and survey, and echoed in other studies (Cook et al., 2009; Dallas et al., 2016; Gawronski et al., 2016; Lombardi & Murray, 2011; Lombardi et al., 2011; Lombardi et al., 2015; West et al., 2016). This willingness is also reflected in the interest faculty expressed in UDL training in our survey, consistent with other studies (Dallas et al., 2016; Izzo et al., 2008; LaRocco & Wilken, 2013). The institution in this study ran nine UDL faculty learning sessions in the academic year that this research was conducted. These sessions were attended by a total of 64 unique participants, which is only about 6% of total faculty. This low uptake may be attributed to the concerns expressed in both the interviews and the survey about time/workload. Evidence that a lack of time acts as a barrier to broader implementation of UDL is consistent with previous research (Cook et al., 2009; Lombardi et al., 2011; Murray et al., 2008; Dallas & Sprong 2015).

What emerges from this analysis is that broader implementation of UDL practices requires an institutional environment where UDL is more fully nested into institutional culture. Such a shift would mean that faculty not only have access to UDL development and training (Moriña et al., 2015), but also the time and other resources required to effectively implement UDL. Miller-Young et al. (2017) describe a framework for institutional support for SoTL that considers both macro- and micro-level institutional contexts needed to shift an institution's SoTL culture. This framework aligns with our own conclusions that the bottom-up approach to improving implementation of UDL must be supported by top-down initiatives to connect stakeholder groups and better embed inclusive learning strategies into the culture of higher education. Examples of bottom-up and top-down UDL initiatives can be used together to improve UDL understanding and implementation are provided in Table 4.

A Bottom-up Approach to Raising UDL Awareness

Unless universities have some formal binding policy that guides UDL adoption, most, including the university where this research was conducted, rely on a bottom-up approach, meaning it is up to individual faculty members to learn about and implement UDL strategies. Such an approach seeks to raise UDL awareness by reaching faculty individually, relying on their initiative and aligned pedagogical philosophies for its implementation. It is a necessary but not sufficient strategy as it fails to acknowledge the time pressures faculty face, to reach a critical mass of faculty and to reach faculty most in need of training (i.e., those with the least awareness and/or attitudinal barriers) and is therefore limited in scope. Even with access to UDL training as described above, faculty understanding remains low. We are not recommending abandoning the

bottom-up approach, but rather proposing a more strategic and selective use of educational and outreach opportunities in tandem with a partial top-down approach. One area in particular where a bottom-up approach may be effective is in training opportunities that address common misconceptions that we identified in our study, such as UDL compromising academic rigour, catering to entitled students, and ill-preparing students for the workforce. Based on our observations, training opportunities that provide faculty with “quick fix” UDL solutions such as flexible assessment deadlines, alternative assignment ideas, providing templates and common clauses for UDL strategies (such as the open recording of lectures), are also important. However, while training can improve understanding of UDL and attitudes toward inclusive learning, this does not necessarily translate to improved implementation (Cook et al. 2009; Lombardi et al. 2011; Lombardi et al. 2015; Cook et al. 2009). As Chang and colleagues (2019) found in an examination of the effects of optional diversity training, stand-alone solutions like this can have limited efficacy among groups whose behaviors are most in need of change. Optional faculty training may help a small percentage of faculty but is insufficient in ensuring broader implementation of UDL.

A Top-down Approach to Raising UDL Awareness

Top-down initiatives nest the values of UDL within the structure and culture of the institution, rendering it central, not superfluous, to its day-to-day workings. For example, while the value of teaching awards has been debated, these can act to signal the importance of teaching (Seppala & Smith, 2020). Similarly, a teaching award specific to UDL leadership may serve to highlight its importance to the institution. Reflective practice is a cornerstone of good teaching (Finlay, 2008) and a requirement that UDL be addressed in teaching reflections may likewise emphasize its importance and encourage faculty to explore successes and identify areas for improvement. Leadership training in UDL for administrators such as Department Chairs and Faculty Deans may also support organizational change (Bystydzienski et al., 2016). Top-down initiatives must take into consideration the workload implications for faculty. Course releases and instructional assistants trained to support implementation of UDL practices can address the major barrier of faculty time/workload.

As discussed by our interview participants, the current accommodations model is an inefficient use of disability resources, used mainly to proctor thousands of exams per year requiring extra-time. By mandating extra-time for exams, disability funding could be better directed to more proactive initiatives, such as a paid, full-time UDL coordinator who could provide sustained help to faculty wishing to make curriculum changes, addressing, at least in part, some of the time and resource constraints expressed by faculty in our study. The potential challenge of student discomfort with losing the safety net of accommodations was raised in our interviews, so care must be taken to communicate effectively with SwD about these changes. It is important to acknowledge that there may be faculty resistance to some top-down strategies. For example, our survey identified that 41.4% of faculty considered an institutional mandate that required UDL be implemented in the classroom an infringement on academic freedom. However, as Madriaga et al. (2010) note, framing UDL inclusion in terms of instructional quality, rather than compliance, is an effective step towards greater UDL adoption and a shift in institutional culture. Additionally, connecting UDL to the goals of equity, diversity, and inclusion may better communicate its importance to faculty.

Table 4

A Combination of Bottom-up and Top-down Approaches is Needed to Encourage UDL Adoption

Bottom-up approaches to encouraging UDL adoption
<p>Provide diverse learning opportunities that model UDL best practices</p> <ul style="list-style-type: none"> - Combine varied training with access to individual consultation and online resources - Identify strategies faculty are already using (but may not identify as UDL) and build on them - Target common misconceptions (e.g., reduction in rigor, undermining of employment standards) and highlight strategies that are not labor intensive
<p>Simplify implementation</p> <ul style="list-style-type: none"> - Develop statements for course syllabi that capture a commitment to UDL best practices - Provide access to example courses that model UDL - Share example assignments and templates that model UDL
<p>Connect early adopters across areas to promote sharing and build momentum</p> <ul style="list-style-type: none"> - Form faculty learning communities for collaborative learning - Establish informal opportunities to share UDL success, such as a brown-bag lunch series
Top-down approaches to encouraging UDL adoption
<p>Acknowledge and reward UDL activities</p> <ul style="list-style-type: none"> - Ask faculty to discuss UDL in teaching reflections - Implement a teaching award for UDL leadership
<p>Invest in strategies that can mitigate barriers linked to faculty time and workload</p> <ul style="list-style-type: none"> - Hire instructional assistants to support UDL implementation - Offer course releases for implementing major UDL innovations - Hire a UDL coordinator
<p>Identify potential leaders and empower them to make change</p> <ul style="list-style-type: none"> - Train Department Chairs and Deans in UDL leadership - Appoint faculty champions across the institution - Form UDL Committees or working groups that include representatives from key stakeholder groups including student support staff representatives and students
<p>Formalize UDL in institutional practices</p> <ul style="list-style-type: none"> - Include UDL in relevant institutional policies and/or strategic planning - *Mandate some inclusive practices (time and a half for exams, flexible attendance, etc.) - *Consider requiring training for faculty
<p>*These types of approaches must be implemented carefully in a way that respects faculty workload and autonomy</p>

In line with existing research on institutional UDL adoption, we advocate that sustained and coordinated UDL initiatives are best carried out by a combination of bottom-up and top-down approaches (Hockings, 2010; Marquis et al., 2012; Marquis et al., 2016; Moriarty & Scarffe, 2019;

Olaussen et al., 2019). Synthesizing key findings from recent UDL scholarship, Lawrie et al. (2017) also argue for a whole institution approach to effective UDL implementation, which includes top-down strategies. Moriarty and Scarffe (2019) describe success using a “middle-out” approach to institutional adoption of UDL with a full project team supported by leadership and through local discipline based “UDL Champions.” The need for all stakeholder groups to work together and start with small achievable steps is also echoed by Olaussen et al. (2019) who state that “the answers lie in the formation of positive strategic collaboration and alliances amongst key players within institutions from the top-down and bottom-up” (p. 30). The question of UDL implementation is arguably even more pertinent with the COVID-19 pandemic both amplifying existing disparities between learners and bringing attention to the value of inclusive learning practices. Without top-down initiatives including centrally provided tools and infrastructure, UDL will remain inconsistently applied, perpetuating learning barriers for students, especially for students with disabilities who are already disadvantaged in higher education.

Limitations and Future Research

Our research is not intended to represent a definitive statement on faculty awareness and implementation of UDL, but rather to supplement some of the existing literature in the field, particularly the gap in research at Canadian universities. This research was conducted at a single university where response rates for our survey were relatively low (18.3%, 205 faculty). A limitation of our study is that interview and survey participants self-reported their own responses. Furthermore, we did not gather student data to explore whether faculty claims are reflected in the student experience. Subsequent studies should increase sampling sizes, offering multi-institution comparisons across Canada and include data on student experiences. Finally, this research was conducted before the COVID-19 pandemic. During the pandemic, there have been (and continue to be) major changes in higher education in Canada and abroad. Educators are just beginning to reckon with the effects of these changes on faculty and students and subsequent research will need to be conducted on how post-pandemic universities can be best tailored to meet UDL aims and strategies. Studies such as this one may provide a useful benchmark to compare faculty UDL attitudes pre- and post-pandemic. Additionally, more research is needed to develop proven strategic frameworks for implementing university-wide adoption of UDL and to evaluate outcomes from the perspectives of all stakeholders, including students. For example, Moriarty and Scarffe (2019) outline a process-driven, systemic whole university approach to UDL development, but acknowledge that “further work is required to identify the broader pedagogic influence on student experience and educational outcomes” (p. 64).

In addition to contributing to a better understanding of the challenges of fostering a culture of inclusive learning in higher education, this study has provided us the opportunity to leverage our scholarship to work toward effecting change at our institution. In an attempt to “lead-up” (Miller-Young et al., 2017), we have used this research to raise awareness of challenges and opportunities for UDL through workshops, internal presentations at meetings and events, participation in DS outreach, and internal newsletters and communications. Linking back to the broader aims of SoTL, we draw on Simmons and Taylor (2019) who state, “while some bridges need to be built within and between departments where colleagues may not be aware of the SoTL contributions of their peers, others need to be built vertically to bring the value placed on the SoTL by individual scholars into institutional culture” (pp. 10-11). It is our aim that this work contributes to increased institutional engagement, connection, collaboration and advocacy as we explore

additional opportunities to shift institutional and higher education culture around inclusive learning. After all, it is UDL strategies, not accommodations, that effectively target disability barriers—barriers that exist in the learning environment, not in the individual learner.

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